

Key Competencies in 21st Century Schooling

Introduction

As we move further into the 21st Century there is a realisation in many economies that education must adapt to the demands of a 21st Century economy and lifestyle. Education is taking place in an environment of fast social, cultural, economic, technological and global change.

In some economies such as the United States, these changes are part of a discourse around 21st Century skills. In Australia there has been a similar discussion in a number of sectors on 21st Century skill requirements. In China, discussion has focussed on the New Goals Reforms. In New Zealand, this dialogue has been framed around the Key Competencies – a term deployed by the OECD.

The changes in curriculum and pedagogy required to reflect shifting demands in the workforce and society tend to be focussed more on the teaching and acquisition of certain commonly demanded competencies (skills, knowledge, attitudes and values that are commonly required for participation in a knowledge based economy) than about teaching content.

New Zealand has recently undertaken a major review of its school curriculum that has drawn heavily on the best theoretical and empirical research surrounding the teaching and learning of key competencies. While aspects of key competencies can be found in our earlier national curriculum documents as “essential skills”, the emergence of a more coherent framework for describing key competencies and for incorporating these in teaching and learning programmes has resulted in a more integrated approach to curriculum formulation. The revised national curriculum was launched in November 2007.

Key competencies also informed the guiding framework for the development of the *New Zealand Early Childhood Curriculum (Te Whariki)*. A separate discussion document on *Key Competencies in Tertiary Education: Developing a New Zealand Framework* published in February 2005 is helping to inform the thinking on core areas for learning and teaching in our tertiary institutions.

This paper summarises the research findings that New Zealand drew on to build its new National Curriculum. The paper, in effect, summarises a longer paper *The Nature of the Key Competencies: A Background Paper* produced by Rosemary Hipkins from the New Zealand Council for Educational Research (NZCER)¹. *The Nature of the Key Competencies: A Background Paper* was written as part of background preparation for revision of the New Zealand Curriculum.²

The paper explores the nature of the five key competencies as outlined in the New Zealand revised national Curriculum. Its aim is to contribute to the development of a shared understanding as the competencies have now been described, by those who work in or with the school sector. Oates (2001) suggests that success in introducing competencies into the curriculum will depend on the development of such shared understandings and so this paper aims to:

¹ The original paper can be referenced on http://nzcurriculum.tki.org.nz/the_new_zealand_curriculum/key_competencies/more_reading)

² In the evolving context of key competencies implementation, since this paper was produced, the author and her colleagues have begun an exploration of what it takes to teach for systems thinking.

- link each competency to appropriate broad areas of theory and research relevant to that competency;
- provide practice-linked insights into the nature of each competency;
- demonstrate ways the competencies could integrate with each other, both theoretically and in practical classroom applications, to emphasise their holistic nature; and
- provide a catalyst for wider professional conversations about the key competencies by identifying areas in need of further discussion and debate.

Background

The key competencies have replaced the “essential skills” of the former curriculum framework in New Zealand. There have been eight groupings of these skills (Ministry of Education, 1993, pp.17-20): These included communication, numeracy, information, problem solving, self-management and competitive skills, social and co-operative, physical and work and study skills.

In her paper on the key competencies, Melissa Brewerton described three important government policy influences that led to the Curriculum Stocktake recommendations being further developed and “skills” replaced with “competencies” (Brewerton, 2004a). Students were now seen to need to be able to:

- participate appropriately in an increasingly diverse society;
- use new technologies; and
- keep on learning in order to cope with rapidly changing workplaces (so-called lifelong learning).

While the essential skill “work and study habits” did mention the idea of lifelong learning, skills per se can never be an adequate response to this goal because people have to *want* to do these things. Thus a focus on *dispositions* was an important part of the shift from skills to competencies. Unlike skills, competencies focus on all the requirements of a task and this includes what you need to know, not just what you can do. Accordingly, knowledge was also brought into the definition:

- Competencies include the skills, knowledge, attitudes and values needed to meet the demands of a task;
- Competencies are performance-based and manifested in the actions of an individual in a particular context; and
- Key competencies are defined as those competencies needed by everyone across a variety of different life contexts to meet important demands and challenges (Brewerton, 2004a, p.2).

Defining the actual competencies

The idea that curriculum development across a range of differing national contexts could be guided by the identification of a common core of key competencies originated with work carried out by the OECD (OECD, 2005). The OECD’s purpose in producing the list below was to align the underpinning educational assumptions of its various monitoring instruments (for example the PISA assessments of mathematical, reading, and scientific literacy and problem solving). A project to define and select competencies (DeSeCo), grounded in existing OECD educational survey work, produced the following list:

- Functioning in socially heterogeneous groups;
- Acting autonomously; and
- Using tools interactively.

To these “thinking” was added as a “cross-cutting” key competency. This means that it is included as an aspect of all of the other three competencies (OECD, 2005).

The nature of “key” competencies

While learners may draw on a wide range of competencies, those labelled as “key” are seen to be *universal* rather than situation specific. The DeSeCo project defined them as the things all people need to know and be able to do in order to live meaningfully in, and contribute to, a well functioning society. While any one task will also require certain situation-specific competencies, key competencies are needed across a wide range of situations. The *curriculum* challenge that follows is that every learning area will need to demonstrate how the key competencies are specifically manifested *in that area*.

Rychen and Salganik (2003), the researchers who documented the DeSeCo project, describe key competencies as *complex*, and as demonstrated in *real contexts*, where learning requires students to draw on cognitive and other types of abilities. They combine the more traditional focus on curriculum *knowledge* with the use of appropriate *skills* and *values*. In this way, they integrate all these aspects of curriculum. Again, the curriculum challenge will be to show how this might happen in each learning area, as well as in integration between learning areas where relevant.

This focus on dispositions connects the key competencies initiative with the idea of “*lifelong learning*”. The disposition to continue learning in the years beyond school is seen as one important outcome of education for life in the “knowledge society” of the twenty-first century (see for example Gilbert, 2005).

Do the key competencies reflect population diversity?

There have been some suggestions that the DeSeCo work was too focused in Western European cultural values. Addressing this issue, Carr and Claxton (2002) note that dispositions reflect culturally determined values. For example, some cultures value co-operation over competition. Rychen and Salganik (2003) suggest that the differences may not be in regard to the types of generic competencies but rather in the weight given to them, or the way they are interpreted, between cultures.

A theoretical framework for the key competencies

The identification of sociocultural theory as an underpinning framework has several important implications for the descriptions of the key competencies and for their implementation as the central heart of the curriculum.

Taking contexts of learning into account

Within a sociocultural theoretical framework *contexts* and *relationships* are seen as very important aspects of learning. The context of school is characterised by *cultural* values and ways of doing things that are more familiar to some students than to others. Aspects of school culture can be so pervasive and transparent that they are seen as “normal” even though, from other cultural perspectives, that might not be the case at all. The key competencies, with their focus on reflection, challenge both teachers and learners to think carefully about the ways in which aspects of culture impact on learning.

Similarly, within a sociocultural framework pedagogy is seen as learner-centered, whereas within a more traditional school framework teaching might be seen as content-centered. Teachers often ask why the term “pedagogy” is used and not just “teaching”. Davis (2004) provides a helpful definition. He says that the term pedagogy is “more a reference to the teacher’s *interpersonal* competencies, and is thus used to refer to the moral and ethical—as

opposed to technical—aspects of the teachers’ work with learners” (pp. 143–144, emphasis added).

The ideas of situated and distributed learning

From the perspective of sociocultural theory, learning is seldom the act of an isolated individual but is accomplished in *social situations* where the tools of a culture are being employed. This is reflected in the theoretical idea of *situated learning*. The tools of a culture carry with them important aspects of prior learning. This is obvious for books and other cultural tools that convey ideas as language, but can be applied more widely.

If competency is seen not to reside in individuals alone there are implications for the role of the teacher and for assessment. Each of the following sections includes a discussion about ways teachers can support learning of the relevant competency under the heading “opportunities to learn”. This acknowledges the central importance of conditions for learning, for which the teacher and student *together* are responsible, but to which other people and many cultural artefacts may also contribute.

Assessment as adaptation

Situated and distributed views of learning raise interesting questions about the types of assessment that assume transfer, especially of “content” recalled under solitary test conditions. The issue is even more challenging when what is being assessed are competencies that imply some sort of action (in addition to knowledge recall). If meaning is bound up in a specific situation, and distributed across all the resources of that situation (both people and things) can we expect that competencies demonstrated in one context will be able to be usefully transferred to another? Carr and Claxton (2002) suggest that dispositions are *both* transferable and situational. Rychen and Salganik (2003) conceptualise the ability to transfer learning to new situations as “adaptation”. Adaptation entails:

actively and reflectively using the knowledge, skills or strategies developed in one social field, analyzing the new field, and translating and adapting the original knowledge, skills or strategies to the demands of the new situation (p. 48).

Reflection and metacognition

“Reflectivity” is a cross-cutting theme across all the key competencies. Rychen elaborates this as flexible thinking across social fields, with recognition of the dynamic relationship between the individual and society, and an expectation that learners will construct their own knowledge and guidelines for action (2003 pp. 77–80).

The prefix “meta” means “about” so metacognition can be broadly translated as thinking about cognition—i.e. thinking about one’s own thinking. However, an important challenge for the key competencies from the perspective of sociocultural theory is that “cognition” is not just a brain-based mental activity. A non-dualistic view challenges us to consider “embodied” ways of knowing—ways our minds and bodies respond without us necessarily being consciously aware of them.

Key Competencies

The key competencies are introduced in the following order:

Thinking comes first because of its cross-cutting role as an aspect of all competencies (see above). It is also likely to be more familiar, and more often already explicitly addressed in learning programmes (at least in some aspects) than the other four key competencies.

Using language, symbols, and texts is introduced next for the opposite reason—it is likely to be the least familiar, at least in its broadest manifestations. As for thinking, the primary focus is cognitive, although affective and identity dimensions are not excluded.

Managing self then introduces a stronger focus on identity/belonging aspects of the key competencies. However the cognitive components are still important.

Relating to others logically follows. It is like one side of a coin that has managing self on the other face. Again, it has both cognitive and affective dimensions.

Participating and contributing is discussed last because it is seen as the key competency that integrates all the others with each other, and with the contexts of learning.

Key Competency: Thinking³

Thinking is about using creative, critical, and metacognitive processes to make sense of information, experiences, and ideas. These processes can be applied to purposes such as developing understanding, making decisions, shaping actions, or constructing knowledge. Intellectual curiosity is at the heart of this competency.

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.

The term “higher-order thinking” is often used to refer to the three types of thinking listed at the start of this definition.

This key competency focuses on all types of both critical and creative thinking, and includes innovation and entrepreneurial thinking. There are linkages to the “essential skills” groupings in the former curriculum framework. Skills outcomes that link particularly strongly to thinking as a competency include:

- Discrimination and analysis of media messages, and arguing a case logically and convincingly (communication skills);
- Analysis and organisation of numerical information in a range of formats (numeracy skills);
- Analysis, synthesis, evaluation, and interpretation of information (information skills);
- Developing self-appraisal skills (self-management and competitive skills); and
- Responding critically to discriminatory behaviours (social and co-operative skills).

³ The key competencies are the result of the thinking of many people. In particular, they owe a debt to Margaret Carr’s input, who produced several discussion papers that are available on the curriculum website: http://nzcurriculum.tki.org.nz/the_new_zealand_curriculum/key_competencies/more_reading.

That examples could be so easily listed from across the range of essential skills illustrates the *holistic* nature of key competencies. All the key competencies have strong cognitive and metacognitive (thinking) components. In this report it is discussed first, so that any cross-cutting themes can be easily identified in the other four key competencies that follow.

A note about the theoretical sources⁴

Leading researchers and research projects used to inform this section include:

- David Perkins from Harvard University, often cited as a pre-eminent expert on ways of developing students' thinking;
- Guy Claxton, a British educational psychologist, well known internationally for his ideas about fostering thinking and learning more generally;
- a team at Kings College, London led by Jonathon Osborne, which has been working with teachers for a number of years to develop a range of tools for teaching argumentation;
- Jane Gilbert, a chief researcher at NZCER, whose recent book *Catching the Knowledge Wave* translates a wide range of future-focused ideas into the New Zealand context; and
- Anat Zohar and Noa Schwartz, Israeli researchers of the challenges of teaching for thinking, who draw on interesting experimentation with pedagogy in some Israeli schools.

Opportunities to Learn

This section briefly outlines several interesting debates about the development of higher-order thinking in educational programmes.

General or specific thinking programmes?

Should thinking be integrated into specific curriculum areas or can it be taught in separate programmes? This is a contested issue and the answer partly depends on whether thinking is seen as a matter of developing general or content-specific competencies and dispositions. Recent research suggests it is wise to take a “both/and” approach to this question rather than seeing these as either/or alternatives. For example, Perkins sees some value in learning specific strategies but says these must be easy to use, and for the teacher to model in the normal flow of classroom discussion (Perkins, 2003). Such conditions will help students adopt and internalise the thinking processes, which they will need to do if they are going to develop the disposition to use them in other contexts.

Perkins also says that “general skills of thinking are no substitute for knowledge in particular subject matters” (Perkins, 1991, p.4). Perkins' short book chapter, which is available on the internet⁵, provides explicit examples of what he calls “subject specific mindware”. Key ideas are summarised in the table below.

⁴ The sources listed in this and other sections refer to the full report *The Nature of the Key Competencies; A Background Paper*. In this adapted paper, it has not been possible to include the work of all leading researchers and research projects but their names are listed here because their work informs the full report.

⁵ www.newhorizons.org/strategies/thinking/perkins.htm

Table 1 **Thinking competencies in different subject areas**

Subject area	Competency
Subject-specific problem-solving "mindware"	
Physics	Algorithms and equations
Literature	Fundamental dimensions of stories (plot, character, setting, etc.)
Creative writing	"Free writing" strategies
Subject-specific explanation and justification "mindware"	
Mathematics	Formal deductive proof
Sciences	Empirical evidence
History	Evidence from primary sources

It is important that a focus on subject-specific contributions to higher-order thinking is not taken to mean that thinking will develop automatically while the focus is on content. There is a tension between covering content and fostering thinking because the latter requires a lot of time. Teachers who try to do both at once often end up telling students *about* thinking, which amounts to doing their thinking for them. There is an equivalent danger in the generalist approach, if teachers use strategies like recipes, directing students to think in formulaic ways.

Many contested issues and situations are value-laden and cannot be settled by recourse to the formal knowledge (what Perkins calls "mindware") from any one discipline area. In that case students must learn to identify the types of intellectual tools needed to address different aspects of the situation. They must also learn to identify possible values positions, and to clarify why they hold the values they do, as they construct their arguments. In turn, that may lead to a need to learn about reasoning ethically, where rights and responsibilities of different groups are in conflict.

Caught or taught?

Zohar and Schwartz (2005) review previous research on teaching to develop higher-order thinking. They say that thinking competencies will only develop when they are specifically taught. Opportunities to learn are provided when:

- students have many opportunities to actively practice thinking as they complete cognitively challenging tasks;
- they are introduced to a variety of thinking patterns and skills;
- they have opportunities to transfer what they learn about thinking in one context into different contexts;
- teachers use and share a vocabulary of thinking words, to give students the language tools they need to think about their thinking;
- students receive specific feedback on their progress in learning to use these thinking tools and approaches;
- teachers encourage students to think in a free way, and help them to learn from any mistakes they may make in the process;
- students practice and get feedback about their developing meta-level thinking (thinking about thinking); and
- teachers adopt the role of initiator and coach rather than being the teller of information (Zohar and Schwartz, 2005).

To be able to do these things, teachers obviously need to know how to use and talk about a range of thinking approaches and strategies. It can be easy to take thinking vocabulary for

granted and so the next table provides an illustrative sample for comparison with current practice.

Table 2 **Words for a thinking vocabulary: an illustrative sample**

Nouns	Verbs	Adjectives	Linking words
Belief	Think	Wider	So/Consequently
Evidence	Test	Different	But/However
Reason	Connect	Explicit	Because
Idea	Rate	Observed	Instead
Claim	Create	Defined	Also
Theory	Compare	Deliberate	Therefore
Deduction	Generalise	Thoughtful	Conversely
Analysis	Speculate	Speculative	According to
Conjecture	Justify	Weighted	
Hypothesis	Challenge	Recognised	
Supposition	Verify	Convincing	
Principle	Refute		

Only for “bright” students?

One theme that Zohar and Schwartz identified in previous research is a tendency for teachers to see a specific focus on higher-order thinking as something that is not appropriate for “low ability” students. They refute this, saying that it is important for all students to have opportunities to develop their higher-order thinking abilities if they are to function successfully in our complex world. Thus, they see this as a social justice issue.

Is metacognition really necessary?

Research suggests that simply practising thinking practice without reflecting on the process is not sufficient to help students become mind-fit thinkers. The research programme of Perkins’ team identifies three different but inter-related active processes in developing thinking competencies (Perkins, 1991). All of them require reflection on the changes that are being made:

- Patterning occurs when students learn to organise their thinking in flexible ways.
- Repatterning occurs when students consciously replace existing patterns and strategies with more powerful ways of thinking.
- Depatterning occurs when students learn to recognise and change overly narrow and unhelpful thinking patterns.

Key Competency: Using language, symbols and texts

Using language, symbols, and texts is about working with and making meaning of the codes in which knowledge is expressed. Languages and symbols are systems for representing and communicating information, experiences, and ideas. People use languages and symbols to produce texts of all kinds: written, oral/aural, and visual; informative and imaginative; informal and formal; mathematical, scientific, and technological.

Students who are competent users of language, symbols, and texts can interpret and use words, numbers, images, movement, metaphor, and technologies in a range of contexts. They recognise how choices of language, symbol, or text affect people’s understanding and the ways in which they respond to communications. They confidently use ICT (including, where appropriate, assistive technologies) to access and provide information and to communicate with others.

This competency is about understanding and knowing how our perceptions of the world are constructed through language, and how we use language in different ways to do different things. It is important that it is not thought of as just the “literacy and numeracy” competency. There are linkages to the “essential skills” groupings in the former curriculum framework. Examples of wider and more traditional links to the previous “essential skills” include:

- Convey and receive information, instruction, ideas, and feelings appropriately and effectively in a range of different cultural, language, and social contexts (communication skills);
- Recognise and use numerical patterns and relationships (numeracy skills);
- Use a range of information-retrieval and information-processing technologies confidently and competently (information skills);
- Adapt to new ideas, technologies, and situations (self-management and competitive skills);
- Participate appropriately in a range of cultural and social settings (social and co-operative skills); and
- Develop specialised skills related to sporting, recreational, and cultural activities (physical skills).

A note about theoretical sources

Leading researchers and research projects used to inform this section include:

- James-Paul Gee, an internationally renowned American researcher of learning to read, and of the impact of ICTs on learning for literacy;
- Gunther Kress, from the London Institute of Education, well known for his work on making meaning in multi-modal environments, including research of what teachers actually do in their classrooms;
- Jay Lemke, an American socio-linguist who works in similar areas to Gunther Kress;
- a research project in which invited international experts analysed videotaped sequences of Australian senior secondary students at school, to establish the actual literacy challenges they faced on a daily basis (in this section it is called the ACER project for brevity); and
- Larry Yore, a well-known American science educator who discusses relationships between the nature of knowledge and the concept of “scientific literacy”. (He briefly appeared in section 1 of the original paper.)

What does this competency encompass?

The scope of the terms used in the title, and the reasons that these were chosen are outlined.

Language

Language is a tool for meaning making. As it is used here, this term encompasses all the organised systems we have for communicating and exploring ideas. It is far broader than just systems of words and grammar. In dance and drama specific ways of moving become languages—we could speak of the language of mime, drama, or classical ballet, for example. Mathematics uses languages of numbers to convey ideas. (Note that the plural is used—it is typical of complex cultural tools that the components of any meaning-making system can often be put together in quite different ways for quite different purposes.) Languages are not static. They keep evolving as we find new ways of communicating in new situations. (Think of the language of text messaging, for example.)

Symbols

Symbols are the components from which languages are constructed. Words are relatively “empty” symbols, which we infuse with meaning as we learn to say, read, and write them as others in the relevant cultural group do (Kress, 2003). Grammatical conventions symbolise relationships between words. As anyone who has learnt a second language knows, this acts as a powerful filter of the meanings it is possible to make in any home language.

Texts

Texts are the product of all this meaning-making activity. Kress describes them as tapestries we weave from the languages available to us (Kress, 2003). We are accustomed to thinking of text as written words on a page but even here, multiple methods of text presentation are possible. Texts can be oral or visual and texts can be kinaesthetic, eg, a dance is a text whose languages can be read. Increasingly, texts are becoming multi-modal, combining sound, moving images, 3-dimensional objects, colour, and so on with the more traditional modes of spoken, written, and visual languages.

Why focus on languages, symbols, and texts?

The knowledge age has seen a shift from the dominance of verbal print-based texts where language carries most of the meaning and other features illustrate the text, to screen-based texts where images carry most of the meaning and features such as written text act as supports. Differences between these two ways of making meaning are summarised in the next table.

Table 3 **Key features of verbal and visual media**

Verbal	Visual
Print/word-based/linked to sound	Screen/image based/linked to vision
Words follow in a temporal sequence (you read one after the other)	Images appear simultaneously (you read the arrangement in the space)
Sequencing implies cause/effect logic	Open to different sequences of reading
Words must be “filled with meaning”	Images already relatively full of meaning
Writing conveys the message, images “illustrate”	Writing is one (usually minor) part of message

This represents a very significant shift for the types of meanings that can be made and it is important that today’s children learn about this shift (Gilbert, 2005; Kress, 2003). They usually have many direct experiences of screen-based communication in their lives outside school and these types of experiences need to be drawn into their education rather than being seen as unwelcome distractions from real learning (Gee, 2003). For Gilbert, this means rethinking the ways we use ICT in learning programmes:

If constructing meaning is now multi-modal, it makes sense to use ICTs to develop young people’s literacy in these different modes. Literacy education programmes could then draw young people’s knowledge of these technologies into their education, not set it apart from them (Gilbert, 2005, p. 126).

Gilbert points out that ICT still tend to be used in traditional ways, to support students’ acquisition of *information*, rather than being used to explore how knowledge-building and meaning-making activities have changed in a screen-based, electronically networked world. In the “knowledge era” there has been a shift in emphasis from learning as storing up existing knowledge, to learning as a means of actively building new knowledge (Gilbert, 2005). Students need to learn to do this if they are to become the “knowledge workers” our economy now needs, whilst also providing a good standard of living for themselves.

For this reason it is important that students learn in ways that build understandings of the “rules of the game” of knowledge construction in each main discipline area. Ways of communicating ideas in science—for example using graphs, tables, words for properties and so on—are designed to convey ideas as objectively and precisely as possible, because objectivity and precision are valued in scientific methods of knowledge construction. This type of understanding is a “meta”-level understanding—i.e. knowing *about* science rather than knowing the science, and so involves metacognitive discussion of meaning making.

How all this relates to “basic” literacy

Few would dispute that learning to “read and write” underpins many other aspects of learning. However Gee says that the mere learning to decode the symbols of a text should not be taken as “reading”. To truly read material from any semiotic domain is to read it as an insider would—that is, you would know the “rules of the game”. When you can do that, you can be said to be “literate” in that domain. Similarly, to be a literate writer is to produce the language of the domain (or “discourse”) as an insider would. For example, when they work towards science literacy, students are supported to read and write science texts using the conventions of the domain that scientists would also use (Yore, Hand, and Florence, 2004).

For Gee, access to a rich range of experiences is an important principle for ensuring all students have equal opportunities to learn to become literate in this deep sense (not just to decode words on a page).

Opportunities for learning

Reflecting on the potential for multi-modal communication is a useful way to scope the importance of knowing how and when to make the use of different types of languages, symbols and texts more explicit.

General or specific literacy programmes?

Every subject has its own languages, symbols, and texts, so all curriculum areas should be seen as providing rich contexts for developing children’s understandings of similarities and differences between these. That is, there are subject-specific components to more generic literacy skills, even at the primary school level.

Key Competency: Managing self

Managing self; This competency is associated with self-motivation, a “can-do” attitude, and with students seeing themselves as capable learners. It is integral to self-assessment.

Students who manage themselves are enterprising, resourceful, reliable and resilient. They establish personal goals, make plans, manage projects, and set high standards. They have strategies for meeting challenges. They know when to lead, when to follow, and when and how to act independently.

On one level, “managing self” is about setting, working towards, and monitoring learning goals with reflective self-awareness, and about being organised and ready to learn and it is also about managing aspects of personal health such as fitness and relaxation. It also includes much wider cognitive and metacognitive components. It is about being aware of your strengths and weaknesses as a person and a learner, and being willing and able to use this self-knowledge to approach living and learning tasks strategically. There are linkages to the “essential skills” groupings in the former curriculum framework. “Managing self” does

encompass most elements of the “self-management and competitive skills”, “work and study skills” and “physical skills” from the former curriculum framework .

In the originating DeSeCo work, this key competency emphasises students’ developing *autonomy* as learners—finding out who they are in relation to others, how they learn, how their ideas and skills change over time, and why they think, act, learn, and interact as they do. Seen in this light, “managing self” is one face of a coin that has “participating and contributing” as the reverse face. The strong link between managing self and relating to others is also important to keep in mind. Students cannot learn self-management in isolation from their interactions with others, and they are unlikely to make good progress without support. Autonomy here does *not* mean “doing it by yourself without help”. Indeed, some researchers have found that children left to work alone too often are likely to become more passive and dependent on the teacher—the exact opposite of what this competency intends (Bullock and Muschamp, 2006).

A note about the theoretical sources

Leading researchers and research projects used to inform this section include:

- Psychologist Barry Zimmerman who has been particularly active in promoting educational theory and research on self-regulated learning;
- Carol Dweck, another American psychologist whose research of concepts such as “learned helplessness” has been much quoted by other researchers and developed further as the idea of “learning careers” by British adult education researcher Kathryn Ecclestone;
- a research team led by Jennifer Fredricks, who recently carried out an extensive review of empirical research on student engagement;
- Frank Coffield, a Professor of Education at the Institute of Education, London University. He led a team of researchers who recently spent 16 months analysing research on “learning styles” for the Learning and Skills Research Centre in London; and
- British researchers Kate Bullock and Yolande Muschamp have very recently reported UK research on students’ perceptions of learning to learn.

Why focus on self-management?

Perhaps the most compelling reason to value this key competency is that it is highly correlated with learning success in school and in tertiary study. The first PISA study found that students who used self-regulating learning strategies were more likely to perform to higher levels on the reading literacy scale than students who did not. However, this research also found only “moderate” use of such strategies by the students in the New Zealand sample (aged 15 years) (Ministry of Education, 2001).

The increasing attention being given to ideas such as self-regulated learning reflects growing awareness of the importance of the metacognitive aspects of learning. Learning to actively manage your own learning is seen as an essential competency for being both willing and able to carry on learning in the years beyond school—so-called “life-long learning”. This, in turn, is seen to be important for living in the “knowledge society” when ongoing rapid change means that the learning of most citizens can never stop if we want our economy to be sufficiently competitive to maintain our current living standards (Gilbert, 2005).

Gilbert also identifies a second type of reason that self-management is so important in the knowledge age. It relates to maintaining a healthy sense of our own identity in a complex, fast changing, electronically networked world. From a shared European cultural heritage many of us have inherited ways of thinking about each individual person as a single, unitary entity but:

In the new online forms of communication, the standard model of individuality is long gone. People routinely use Internet communities (chat rooms, online games and so on) to play with their identity, to construct and reconstruct themselves in ways that have very little to do with their real-world, real-time bodies (p. 117).

When the social world is changing rapidly our sense of self and of location becomes a critical anchor when considering how best to respond to that change. Yet there is no one “right” way to be that self anymore. This makes managing oneself an important aspect of wellbeing, as well as of learning.

Another “knowledge era” challenge for managing self relates to the extensive movement of people from place to place. Few communities are homogeneous any more. In New Zealand, culturally diverse classrooms reflect our diversity as a society. The first step to interacting appropriately with others of different cultural backgrounds is knowing yourself and your own culture.

Opportunities to learn to be self-managing

Should “managing self” become an important focus for curriculum planning and actual teaching? Issues associated with this question must be addressed because teachers are the people who orchestrate opportunities for students to learn this key competency—at least while they are at school.

Caught or taught?

“Self-regulated learning” (SRL) and “cognitive engagement” (CE) are overlapping areas of research that encompass aspects of the idea of managing self. One of the recent best-evidence syntheses, completed for the Ministry of Education, highlighted the promotion of SRL as one of 10 characteristics of effective *teaching* (Alton-Lee, 2003, p.79), which suggests very strongly that this competency should be taught, not caught.

Skillful teaching can foster SRL and CE. However it is equally true, as for “thinking” and for “using languages, symbols, and texts”, that the teacher cannot ultimately do these things for the student. Self-management improves with active practice. Zimmerman and Kitsantas (1997) observed and analysed the processes of learning new skills to describe a four-stage learning journey to self-regulation:

- Observation of the teacher—the skill is modelled so the learner gains a mental picture.
- Imitation—the learner tries the activity and receives feedback from the teacher as needed.
- Self-control—the learner no longer has to rely directly on the model or the teacher because they have become proficient in the skill.
- Self regulation— the learner is able to adapt the skill to use it in new ways in response to new challenges.

What about learning styles?

Teaching students to identify and use particular “learning styles” is one popular method of addressing self-management of learning. A team of UK researchers recently reviewed a wide range of learning styles models and found that the claims made for most of them were over-rated, that the evidence that they “worked” was not convincing, nor the theory underpinning them sound. They found competing, fragmented theoretical ideas with no common language for talking about what learning styles actually are (Coffield, Mosley, Hall and Ecclestone, 2004). These researchers reported that large-scale analyses of “effect sizes”⁶ show that both

⁶ Some carried out by John Hattie, from Auckland University.

teaching for metacognition and the use of formative assessment are more likely to make a difference to students' learning. With only so much time and energy to make change in practice, they recommended that teachers focus on one or both of these.

Not for all students?

In their extensive literature review, Jennifer Fredricks and her team identified a gap in current research knowledge about young school-age children's ability to self-regulate their learning. They suggest this gap exists because of the view that metacognitive abilities increase with age and hence self-regulation is developmentally inappropriate for young children. A counter view suggests that even very young children can learn to manage aspects of their learning, and to think metacognitively, if this is modelled for them and they are well supported by the environment and the adults working with them.

Is metacognition really necessary?

You cannot *manage* yourself without being proactive. When *learning* is what is being managed, thinking about thinking will be an important aspect of this proactive stance. Thus metacognition sits at the very heart of this key competency, as it has for the two already discussed.

Bullock and Muschamp (2006) talked to 24 British students who were about to make the transition from primary to secondary school. They found these students all had an instinctive metacognitive understanding of themselves as learners but that this was not well developed in most cases. The students had experienced very few opportunities to exercise choices in their learning, and the researchers said this needed to happen more often, if students were to actively think about themselves as learners. Thus it is not just what is *taught* that matters. Learning opportunities for self-regulation require students to make some learning decisions for themselves (with the proviso that teacher support is available as needed).

Carol Dweck (1999) found that students who view learning ability as a fixed entity that cannot be changed are more likely to be discouraged when they strike challenges in their learning than those who think they can surmount challenges with more effort. If you think you can't learn because you are "not bright" it is very easy for that to become a self-fulfilling belief. Ecclestone and Pryor (2003) built on Dweck's work to develop the metaphor of a "career" to describe how a sense of oneself as a learner changes over time. They said that as students move through school (and in later tertiary studies) they build an "assessment career" within their overall "learning career". Students who are worried about failure may develop an assessment career that minimises the risk of this happening—sometimes by opting out of learning altogether.

Students caught up in unhelpful views of their own learning potential need what Perkins calls "depatterning". That is, they must learn to recognise and change aspects of their learning and assessment careers. While an assessment system that reports actual achievement rather than broad age-related grades can help (at any level), the intellectual work of recognising and changing their own thinking patterns must be done by the student. This is metacognitive work.

Guy Claxton (2000) discusses the importance of helping students recognise and actively manage the *emotions* that are engendered during their learning. Learning should challenge and extend *all* students and the myth that it is harder for students who are "not bright" is unhelpful in two ways. The first is that repeated experience of negative emotions can lead to the building of a learning career characterised by avoidance of risk and minimal compliance. Claxton notes that students may use any of:

- not trying;
- ignoring the problem;

- attempting to suppress the physical responses associated with the negative feelings (which in turn leads to increased stress); and
- adopting a position of ironic detachment.

All are clearly counterproductive to learning. The second unhelpful aspect concerns students who are accustomed to learning easily. When they first encounter obstacles they may not have strategies to persist and overcome these, instead attributing the need for increased effort to some failure in their overall ability. Claxton uses these examples to encourage teachers to build students' *resilience* by:

- allowing them to make mistakes and supporting them through these (rather than excusing them away);
- encouraging students to accept that it is okay to feel confused while searching for a better understanding;
- supporting students to take risks by acting out of character; and
- helping them recognise and manage the feelings of learning.

While students need support to manage negative emotions, Claxton also addressed the aim of developing a lifelong disposition to learn by providing opportunities for students to experience the absorption that comes with deeply engaging learning. Liston (2004) calls this the "lure" of learning and compares the powerful emotions generated to being "in love". Others have also noted the potential for better student engagement that comes with "the idea that intellectual pursuits can be enthralling and that there is joy simply in learning something new" (Schallert, Reed, and Turner, 2004, p.1725). While such experiences may be solitary or shared, learning often takes place in social contexts, both within and beyond school.

Key Competency: Relating to others

Relating to others is about interacting effectively with a diverse range of people in a variety of contexts. The competency includes the ability to listen actively, recognise different points of view, negotiate, and share ideas.

Students who relate well to others are open to new learning and able to take different roles in different situations. They are aware of how their words and actions affect others. They know when it is appropriate to compete and when it is appropriate to co-operate. By working effectively together, they can come up with new approaches, ideas, and ways of thinking.

There are linkages to the "essential skills" groupings in the former curriculum framework. There are some similarities to the "social and co-operative" skills of the former curriculum framework but there is an important shift in emphasis. This key competency is not only about social skills. For example, students learn more about their own and other's ideas when they listen, compare, clarify, and share their thinking—provided, of course, that they are willing to do so and are open to what may unfold as a result.

From the point of view of sociocultural and situated learning theories, interacting with others plays a really important role in cognitive development, because ideas and skills are always embedded in actual contexts that usually involve people and their activities as well as "things".

A note about the theoretical sources

Leading researchers and research projects used to inform this section include:

- Gordon Wells is a much-cited educator who brings a sociocultural perspective to language learning. He is based at the University of California.
- Caroline Gipps has a background as a psychologist and primary school teacher. She is the first female to be appointed Vice Chancellor at the University of Wolverhampton. She has written extensively on assessment issues from a sociocultural perspective.
- Etienne Wenger is an independent research consultant with a background in teaching. With Jean Lave from the University of California he developed the theory of situated learning as “legitimate peripheral participation” that is now central to sociocultural research in education.
- Russell Bishop and Ted Glynn are from the University of Waikato. Their research on Mori in mainstream classrooms has been widely discussed and used as the basis of professional development initiatives.
- Bracha Karmarski is a teacher and researcher at the Bar Ilan University in Israel. She is interested in developing students’ metacognitive skills in the context of mathematics education.

Why focus on relationships?

Wenger (1998) says that *situated cognition* (i.e. learning in a specific meaningful context) has both a social and a cognitive component of engagement. The next table summarises his thinking about how these components can be elaborated.

Table 4 **Components of situated cognition (after Wenger, 1998)**

Type of engagement	Components	Brief description
Social	<ul style="list-style-type: none"> • Community • Identity 	<p>Social contexts that give meaning to actions and competencies</p> <p>How learning changes who we are and how we participate in communities</p>
Cognitive	<ul style="list-style-type: none"> • Meaning • Practice 	<p>Changing ability individually and collectively to experience life as meaningful</p> <p>Shared historical and social resources that enable and sustain action</p>

Sociocultural theory also posits that, in any situation, what is and can be known will be *distributed* among the participants, with certain “ways of knowing”, embedded in the design, and history of use, of the cultural artefacts being deployed. In such situations, different “participants” (including tools) will bring different perspectives to bear and contribute different ideas. To access this potential diversity, students need the skills to interact with and consider different points of view. One benefit of this can be an increase in *creativity*. As Gordon Wells observes “real” problems of the sort students might encounter throughout life are seldom neatly formulated and typically do not have one “right” answer. That being the case:

...’real’ problems are rarely solved by individuals in isolation; on the contrary they are typically addressed by a group that, although sharing a common goal, has varying kinds and degrees of expertise as well as diverse values, motives, interests and preferred strategies for working together. Finally, outside the classroom, whether a solution is acceptable or not is rarely decided by a single powerful arbiter but by consensus amongst participants as to whether the proposed solution allows them to advance towards the goal of the activity in which the problem arose (Wells, 2002, p.199).

Jane Gilbert identifies the creation of ideas and solutions in the “spaces” between people as an important *economic/employment* skill for the 21st century (Gilbert 2005). Wells’ description shows why this sort of interactive creativity can be so powerful. He also mentions in passing here that members of a group may have varying degrees of expertise. This raises the important idea from situated cognition that learning can be seen as a type of “*apprenticeship*” in which the novice learns from observation and emulation of more experienced others. This way of learning is embedded in other key competencies—for example as the means of becoming increasingly skilled in self-regulating learning. At the very least, these considerations have implications for the way the teacher interacts with an individual student. However, the power of encouraging extended interactions between teachers and students, students and students, and out to the wider community, is also implied.

Writing about the development of the key competencies through the arts, O’Conner and Dunmill discuss the importance of developing *empathy*—“the ability to think and feel what it might be like to be other than yourself” (O’Conner & Dunmill, 2005, p. 5). They say this *affective* aspect of relating to others sits “at the centre of morality” (p. 5) and they see this as another essential competency for living in the twenty-first century, where people from different cultures have more contact with each other.

Opportunities to learn relationship competencies

This key competency raises some interesting issues related to opportunities to learn, not just the competency itself, but to learn more generally.

Caught or taught

From the perspective of situated cognition, students can only “come to know” as they *experience* knowledge building. Knowledge cannot be transferred directly into their heads by telling them what someone else has found out (Wells, 2002). Building knowledge of relationship skills requires the scaffolding of practice in actually using them. In this, the teacher has twin roles as planner/enabler and coach/facilitator. Opportunities for students to interact in the ways described above must be planned for.

Wells recommends the creation of “communities of inquiry” where students work on real problems of authentic concern to them, in an environment conducive to sharing and interaction. The teacher plays a very active role, even when students are seen as “co-constructors” of knowledge during the inquiry process. Wells recommends a regular cycling between stages at which students work individually or in small groups on assigned aspects of the inquiry and whole-class sessions at which ideas and progress are freely shared, evaluated, and ongoing directions for action collaboratively decided upon.

Assessment that takes account of relationships and action

In her book on the “knowledge era” Jane Gilbert raises the challenge of finding new ways to assess group performance since this is now so important to economic activity and employment skills (Gilbert, 2005). Caroline Gipps (2002) addresses the same issue from the perspective of sociocultural theory, saying that assessment in this theoretical framework is seen as “integral to the teaching process and embedded in the social and cultural life of the classroom” (p. 83).

Teaching that fosters cognitive and metacognitive gains through learning interactions: a mathematics example

The research outlined here was designed to assess the cognitive gains made by six classes of Grade 8 Israeli students (12-year-olds) when they carried out tasks that required them to share ideas related to graph interpretation in mathematics. The design of the study also

allowed the researchers to test whether the *metacognitive* aspect of interactions made a difference to students' learning gains, when compared with simply working in co-operative groups. Some classes used group tasks that had metacognitive elements built into them, while the others used co-operative learning tasks with no explicit metacognitive guidance (Karmarski, 2004).

Students in the co-operative groups were encouraged to work together to solve the graph problems but were given no more guidance than all the classes had already received in the lessons to that point. Students in the metacognitive groups were given prompts that helped them pose a full range of comprehension questions and were also taught to ask the three types of questions shown in the next table. These were designed to foster the mathematical "discourse" that Gee identified as an important element of gaining subject-specific literacy (see the section on "languages, symbols, and texts").

Table 5 **Examples of questions that foster metacognitive interactions in group tasks**

Type of question	Examples
Strategic (prompt student to consider strategies and reasons for using them)	What strategy/principle/tactic can be used to solve the problem? Why is strategy/principle/tactic the most appropriate for solving the problem? How can the suggested plan be carried out?
Connection (making connections to previous experience/existing knowledge)	What is the same as in previous graph tasks? What is different about this new task?
Reflection (monitoring the solution process)	Is the result reasonable?

The results reported for this study showed that all groups displayed the interactive co-operative learning behaviours encouraged by the materials, and little off-task behaviour was observed. On average students from both types of groups made learning gains. But the group who were supported to both interact *and* reflect metacognitively made greater learning gains.

The researcher concluded that small-group learning tasks need to be carefully structured if the evident benefits of adding a metacognitive dimension to students' interactions are to be achieved (Karmarski, 2004).

Key Competency: Participating and contributing

Participating and contributing is about being actively involved in communities. Communities include family, whanau, and school and those based, for example, on a common interest or culture. They may be drawn together for purposes such as learning, work, celebration, or recreation. They may be local, national, or global. This competency includes a capacity to contribute appropriately as a group member, to make connections with others, and to create opportunities for others in the group.

Students who participate and contribute in communities have a sense of belonging and the confidence to participate within new contexts. They understand the importance of balancing rights, roles, and responsibilities and of contributing to the quality and sustainability of social, cultural, physical, and economic environments.

This competency is about learning that is *authentic* (see below for a discussion of what this term means in this context). Students need to be ready, willing, and able to make the transfer between what they already know and can do, and what they might do next or in the future, and to locate their own actions in personal, local, national, or global contexts, as appropriate.

A note about theoretical sources

Leading researchers and research projects used to inform this section include:

- Lynn Davies has spent many years researching citizenship education in the UK and internationally, as has Ian Davies (who lives in a different city and appears to be no relation).
- Wolff-Michael Roth and Jacques Desautels are Canadian teacher educators with a longstanding interest in making school learning more authentic for the full diversity of students in schools.
- James Beane is an American educator who is well known in New Zealand as an advocate of middle school reform via curriculum integration. He often works and writes with Gordon Vars.
- Ken Tobin is an American teacher educator who has pioneered the active involvement of inner city students in researching their own learning needs as a means of helping their teachers cope with difference and diversity in students cultural backgrounds.
- Sandra Duggan and Richard Gott are UK researchers who investigate relationships between the science that students learn and the science that is actually used in real-life settings. In the project reported here they were joined by Russell Tytler, an Australian science educator.

Why focus on participating and contributing?

A common theme in the above sections is that students need opportunities to actively develop the key competencies. Providing opportunities for activity is not sufficient in and of itself. A complementary key theme in the above sections is that these competencies are taught not caught and that teacher planning, modelling and scaffolding of emergent and developing competencies is critical to success. The key competency “participating and contributing” can be seen as providing a focus for planning for meaningful “action” that brings all the other key competencies together.

What does this competency actually encompass?

The commonly cited characteristic of participatory learning is that it should be authentic. However this begs the question “authentic for whom?”. The most familiar meaning of “authentic” is that the learning is carried out in a way that matches, as much as possible, the way an expert in that discipline area would work. For example, children might be told they are being “real scientists” when they set up simple investigations such as fair tests. This is, however, somewhat misleading. Chinn and Malhotra (2002) identify all the ways that students’ typical science investigations are *not* like the research activities of working scientists. One telling difference is that scientists begin from a position of deep knowledge of the question they are addressing. Their inquiries seek to build new knowledge in an area in which they are usually already immersed. By contrast, students often “research”, or “experiment” to learn about something they did not know before (but other people did). The same critique could be made of other curriculum areas.

This is not to say that students should not get involved in activities where participation leads to the mastery of “big ideas” from our existing knowledge inheritance, when and as appropriate. Tytler and his colleagues pointed out that the key leaders of the community campaign in their case study all had a broad knowledge of science although none were scientists (Tytler et al., 2001). The caution is that activities that meet this knowledge acquisition purpose are not *sufficient* to prepare students for participation as active citizens, or indeed for lifelong learning. So care is needed to ensure that “authentic participation” is not read as simply being “hands-on” learning in traditional knowledge acquisition activities.

Many curriculum theorists define authenticity by saying that learning should be meaningful at both the *personal* and the *societal* level. Roth and Desautels (2004) give the example that students could build on their interest in skateboarding to inquire into safe places for skateboarding and to act on what they find, or to design personal health and fitness goals that relate to their skateboarding activities. In this case a non-traditional context serves learning intentions that have a much broader reach.

More challengingly, Roth and Desautels make the point for not using the reverse situation—that is, engaging students in researching and discussing contexts and issues that are pressing for others, but not yet personally meaningful for the students. An example might be discussing ethical dilemmas faced by parents of a child with a specific genetic condition. While students might well be interested in an academic way, there would likely be little they could personally do to address the relevant ethical issues. Rather than being able to participate in investigations that lead to decision making or action, they are like voyeurs in the dilemmas of others.

Participating and contributing as education for citizenship

The idea of authentic participation is often linked to notions of citizenship education. There are some tensions to be discussed here. During the initial curriculum consultation in New Zealand this key competency was interpreted by some as a call to political activism (and therefore as either impractical or dangerous). While the idea of “participation” obviously does not rule this out, activism on political issues is at one end of a continuum of ways of using new knowledge and skills. The above examples highlight the wide range of other types of possibilities for participating and contributing in authentic ways. Lynn Davies (2006) suggests that community service, provided it helps “create a self-identity as a person who can influence things” (p. 18), can be an effective form of active participation for citizenship education.

Lynn Davies recently reviewed a wide range of curriculum recommendations for citizenship education. Davies states that empathy is not enough and that content-focused learning is not an adequate response to the challenge of preparing students to be active citizens who will be willing and able to take action to address issues of concern to them. She concludes that ongoing practice is needed if the competency is to develop and be sustained, and she emphasises that developing the dispositional aspects is the greatest learning and teaching challenge. (Davies, 2006) This should not be read as saying that discipline-based learning is not needed, only that it is not *sufficient*.

Lynn Davies says there is general agreement between researchers in citizenship education that the best predictors of whether people become active citizens later on (which she defines as either being active in voluntary work, or taking part in activism) are:

- involvement in school democracy; and
- experience of doing some form of community service.

She says they should “experience democracy and human rights in their daily lives at school—and not just be told about it” (p. 16). However she also notes that this can be a vexed issue for schools if it is perceived that there is little room for students to experience autonomy in their learning. The following examples suggest ways such autonomy can be fostered, even within a relatively traditional learning programme.

Opportunities for learning

Caught or taught?

A strong active dimension is implied by the very name of this key competency. However it is also clear that doing things per se will not necessarily help students extend their competency to participate thoughtfully and constructively in the wide range of situations they may encounter. Suggestions of specific knowledge and skills to be developed strongly suggest the necessity for teaching that scaffolds and supports students as they learn.

Davies (2006) lists the following as important learning outcomes (based on the work of the West Midlands Commission on Global Citizenship, of which she is chair). The links to most of the key competencies are striking:

- an understanding of our commonality with people in other places;
- an understanding of interdependence;
- ‘a critical spirit’ ... the ability of young people to think for themselves;
- ‘an inclusive sense of belonging’ and a sense of self esteem;
- an awareness of ‘multiple identities’ [our own and as a community];
- the valuing of diversity; and
- the confidence and skills to respond to change (WMCGC, 2002, cited in Davies, 2006, p. 10).

What will it take to implement the key competencies?

This section poses issues for debate in ongoing professional conversations about the implementation of the key competencies as a central organising feature of New Zealand’s Curriculum Framework.

Locating the key competencies within the wider curriculum

Recently Professor Alan Reid described three ways implementation of the key competencies in a national curriculum might be likely to proceed (Reid, 2006, pp.9-10):

1. **“Name and hope”**: Policy work goes no further than identifying the key competencies for the curriculum framework. Schools and teachers are left to work out how to enact them in practice.
2. **“Raising consciousness”**: Each subject is required to design an approach for inclusion of the key competencies in learning. Reid commented that while this forces teachers to think about them, fundamental relationships between key competencies and traditional *disciplines* remain unaddressed.
3. **“Embedded”**: Curriculum support documents for each learning area are designed to illustrate links to key competencies (for example by specifying which competencies will be addressed in which topics). Reid commented that this model runs the risk of atomising the curriculum and renders the key competencies subservient to the knowledge focus of the learning areas.

All of these models are predicated on a traditional view of curriculum in which knowledge acquisition is the main aim of learning and organisation of curriculum knowledge is the main focus of debate. In place of these three interpretations of the dominant model, Reid proposed an alternative view of curriculum in which knowledge becomes the vehicle through which

teaching for key competencies (which Reid preferred to call capabilities) becomes the main focus of curriculum planning and implementation.

In such a model:

- the key competencies need to be understood and developed holistically;
- they are richly described and not atomised as a set of separate outcomes;
- each key competency is seen as a whole, not just as the sum of its parts;
- planning takes account of the whole, even while focusing on a specific part;
- there are dynamic interactions between the key competencies and curriculum content—there is debate about which key competencies are best developed in conjunction with concepts that are seen as important;
- content knowledge is introduced as a vehicle for the key competencies, as well as being an end in itself; and
- types and forms of assessment reflect this wider focus, and do not only address content acquisition.

Reid suggests that such a focus would alter the nature of curriculum debate. He has speculated about the wider benefits of his proposed implementation model and those ideas are briefly outlined here because they may help inform ongoing debate in the implementation stage for New Zealand's curriculum.

For Reid, the key competencies should not be seen as fixed, but rather should be seen as curriculum *aspirations*, with considerable professional discussion and curriculum development work needed if the potential benefits of the proposed model are to be realised.

Implications arising from three potential implementation issues above are briefly explored at all three systems levels. This type of analysis emphasises the necessity for co-ordination of changes as the curriculum implementation proceeds. It also draws on the idea from complexity theory that rich and diverse systems inputs are the best means of supporting change, which might begin at any one of a number of (essentially unpredictable) potential trigger points (see for example Davis, Sumara, and Luce-Kapler, 2000).

Issue 1: "We already do that": Demonstration of learning as a process of adaptation or reconciliation

Key competencies integrate the former essential skills with knowledge, as well as with attitudes and values. While it is likely that some skills aspects are already specifically taught by many teachers (thinking skills for example), the *holistic* nature of the competency suggests that even these aspects of the current curriculum will need to be extended if the full intent of the key competencies is to be realised. The "we already do that" response will need to be thoughtfully addressed. Both teachers and students need to be able to see how the demands of a specific task potentially match to, then extend, current competencies, so that a process of learning as adaptation for the new task can unfold.

Issue 2: "We haven't got time to do that": Developing dispositions, not just content and skills

For the curriculum change to succeed, key competencies will need to be valued as a *priority* for learning. As long as teachers think they do not have the time, or students and parents perhaps think of authentic tasks as a distraction from "proper" content learning, the change is likely to be resisted:

Issue 3: “If it’s not assessed, we won’t teach it”: Aligning assessment with curriculum, pedagogy, student-centred approaches, and context

The focus of assessment is likely to be the focus of teaching, and the lens through which the wider community judges the “quality” of teachers and schools.

In Conclusion

The analysis presented in *The Nature of the Key Competencies: A Background Paper* by Rosemary Hipkins shows that the key competencies are potentially a richly productive, future-focused curriculum innovation. However, much depends on how they are interpreted and adopted. There are substantial challenges to the realisation of their full potential. Teachers will need carefully considered support and resources, including time for professional conversations and workable curriculum materials and examples. They cannot be expected to change their practice until they understand and “own” the compelling reasons for doing so.

The “message systems” of curriculum, pedagogy, and assessment will need to be realigned, taking account of student-centered learning needs and the wider contexts implicated in learning for the “knowledge society”.

Teachers will need help to see how knowledge fits into the competencies, and will need reassurance that it is still valued, even as they learn to be more critical of the “one size fits all” model of traditional curriculum content, and more accepting of diverse ways of knowing. Interested members of the wider community will need to be supported to understand the changes, both in the interests of acceptance and sustainability, and because the current clear boundaries between school and wider community activities will inevitably begin to erode. While the stakes are high, patience, power sharing, and careful planning for implementation seem advisable.

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