



### **NMSSA Key Competencies 2017 – Report Series**

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- Introduction: The NMSSA approach to assessment of key competencies
- Report 1: Developing a theoretical framework for a retrospective analysis of achievement in the key competencies
- Report 2: Disciplinary meaning making in science
- Report 3: Disciplinary meaning making of static visual images in English
- Report 4: Disciplinary meaning making in mathematics and statistics
- Report 5: Disciplinary meaning-making: Synthesis of findings from a retrospective analysis



#### **Key Competencies 2017: Introduction – The NMSSA approach to assessment of key competencies**

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#### **National Monitoring Study of Student Achievement**

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## INTRODUCTION TO THE NMSSA KEY COMPETENCIES REPORT SERIES: The NMSSA approach to assessment of key competencies

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## The NMSSA reports on key competencies

The approach to looking at the key competencies outlined in this document has been used to write a series of reports focussed mainly on disciplinary meaning-making. The reports can be found on the NMSSA website at <http://nmssa.otago.ac.nz/>.

- Report 1: Developing a theoretical framework for a retrospective analysis of achievement in the key competencies
- Report 2: Disciplinary meaning making in science
- Report 3: Disciplinary meaning making of static visual images in English
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- Report 5: Disciplinary meaning-making: Synthesis of findings from a retrospective analysis

## The NMSSA approach to assessment of key competencies

### Introduction

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From its inception, NMSSA has intended to provide information about the progress students are making in developing the key competencies. Designing an approach for assessment of key competencies, however, is challenging. This document explains the challenges that can be predicted from research. It then outlines our solution for addressing these challenges in the National Monitoring Study of Student Achievement (NMSSA).

This document is designed to accompany the series of reports written by the NMSSA project team to provide information about the progress students are making in developing the key competencies. It provides a useful introduction to the analysis approach adopted in these reports. The reports themselves provide a retrospective analysis of students' opportunities to demonstrate aspects of their key competencies in action drawing on data collected during the first five-year cycle of NMSSA.

### Challenges for assessment of key competencies

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Research tells us that there are a lot of challenges to think about when deciding on assessment approaches for key competencies. Here are five ways that these challenges can impact on the validity, reliability, and usefulness of our assessment judgements.

1. Each key competency has got many different facets. Are we really assessing what we think we are? We need to think carefully about which facets of a key competency matter most in a specific context—the facets we can see most easily are likely to be most superficial (e.g., good behaviour is only one part of managing self. In a context that involves exploring a complex issue, being open-minded is likely to be a different important facet of this key competency).
2. Key competencies work together. How do we know the facet we are focusing on for assessment is not being blocked by a facet from another key competency? For example writing a text for a specific audience (using language, symbols and texts) works together with being able to imagine yourself as a member of that audience (relating to others) and then having the self-control to write what you think will be useful to them (managing self). If students can't do this sort of writing, how do we know which of these different facets, from which key competency, is holding them back?
3. Key competencies and knowledge also work together. Which are we assessing in any given task? Can we even tell them apart? In a written response task, for example, it could be that a student knows what they would like to say to an audience and can explain verbally how and why the message is appropriate. But if they don't have the knowledge and competencies to express those thoughts on paper—and that is all we assess—we might never know their thinking.

4. Contexts also enable or constrain what students can show us. It could be that the writing is about an unfamiliar topic, so that a student just doesn't know where to start. One way to think about "progression" is that students show they can do the same thing in harder contexts.
5. Sometimes students can show their competencies more easily when they are interacting with others. This is a problem for traditional pencil and paper assessments, but the NMSSA programme includes group tasks. The tricky judgement here is to work out if group dynamics supported students to show their key competencies, or held them back.

### Our assessment solution

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The NMSSA team's solution assumes that we won't be able to reliably untangle all the different pieces outlined above. Instead we have designed a "weaving" approach that takes this complexity into account. If we are clear about what is being woven together in a rich assessment task, and students show us they can do that task, then we can assume they can also do all of the woven components.

The logic of the NMSSA weaving solution goes like this:

The New Zealand Curriculum (NZC) describes the key competencies as "capabilities for living and lifelong learning" (p.12). This tells us that we should be thinking about what students can do with the concepts and skills that they learn, from across all the learning areas (i.e. what we want them to be capable of).

If we want to see what students can do, then we have to think about meaningful purposes for learning. The essence of each learning area (NZC, p.17) is a succinct statement to guide thinking about purposes for learning. In turn, a clear sense of purpose should influence the way key competencies are woven together with curriculum content.

The design of rich assessment tasks allows the weaving to occur. These tasks should bring together: concepts or big ideas from the focus learning area; appropriate aspects of all the key competencies, including the specific language, symbols and texts of the learning area; and a context that will be meaningful and engaging for students.

This in-principle solution still leaves us with an important problem. If each key competency has many different facets, then in theory there are endless possible ways to remix them. Add the content of all the different learning areas, along with endless possible contexts, and it is hard to see how comparisons might be made across the curriculum. Yet in an overall assessment programme such as NMSSA it is important that the assessment team can make some carefully selected comparisons. That meant that the team had to find a way to focus what we would look for. The next three bullet points explain our solution to this focus dilemma:

Key competencies are defined as "capabilities for living and lifelong learning" (NZC, p.12). We can think about specific "capabilities" as things that remix specific facets of key competencies and weave them together with important knowledge and skills in a rich context.

A 'capability' needs to be demonstrated in action. It is what the student shows they can do – and is willing to do – as a result of their learning.

Our aim is for learners to become capable in many different areas of their lives and their learning. There are so many important capabilities that we could never name and explicitly develop them all. But if we can name and describe a small number of really important capabilities we could just focus our assessment programme on those. They won't be the only ones we want students to have, but they must be a set we can justify for practical assessment purposes. We have to assume that if students can do these things, they are likely to be capable of using other important aspects of their key competencies as well. (Of course this won't be universally true. We all have our personal weak spots. This small set of capabilities is a proxy for the much more complex whole.)

## How we chose the focus capabilities

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We began with a set of principles to make sure that we could justify our choices. It was important that any capability we chose would:

- be needed to complete rich tasks in all the learning areas
- require students to draw on clearly identifiable facets of at least two or three key competencies
- bring the intent or purpose of the learning area to life by focusing on important learning area outcomes
- be something all students could build and strengthen with active teaching and practice.

The design team then looked across the range of NMSSA tasks from the first 5-6 years of the programme. We looked for common elements in what students needed to show they could do (i.e. their capabilities) in different learning areas. Then we checked to make sure these capabilities did remix different facets of the key competencies (we needed to catch a variety of aspects, not the same things each time).

We also thought about how these capabilities might help teachers to focus on students' dispositions to act in ways that allow them achieve success in their learning, and that might support students to be critical, informed and responsible citizens. In other words, we also had the vision, values and principles, and essence statements of NZC in mind, as well as the key competencies.

Using the process just outlined, we identified three focus capabilities for NMSSA assessment attention.

## A brief outline of the three focus capabilities

### Critical inquiry

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The sorts of things students might do to show this capability include: gathering and interpreting data; using evidence to support ideas; and critiquing evidence. These were the titles given to the first three of a small set of ‘science capabilities’ that provided a prototype for the whole-curriculum weaving model.<sup>1</sup> Critical inquiry helps build students’ awareness of how new knowledge claims are made and justified. Different discipline areas have their own specific inquiry practices so it is important that students experience critical inquiry in all the learning areas.

Critical inquiry demands both critical and creative thinking so weaving in the key competency of thinking is easy to see. But what about managing self? The weaving is not quite as obvious but the following explanation illustrates how we thought about this. The research literature suggests that critiquing evidence is the hardest aspect of critical inquiry to develop. With practice and support, students learn need to keep an open mind as they set aside their own ideas to consider other possible explanations. This requires self-discipline and self-awareness which are both facets of managing self. In learning areas like health and PE, and social studies critique could involve students in identifying their own assumptions and values, and then comparing them with those of others (relating to others). Sometimes the ‘evidence’ to be critiqued is the student’s own work. This is centrally important the production of original work in the arts for example but is an important part of self-assessment in any subject. Again this sort of critique demands self-awareness and self-discipline.

### Perspective-taking

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This capability could be about seeing an idea, action or challenge from the perspective of one or more other people. It links most directly to the key competency of relating to others. However it also has strong links to critical thinking and critical literacy. Perspective-taking is an important social capability and brings an emotional dimension to learning. But students also need to be capable of taking different perspectives when they: write for a specific audience and/or purpose; explore an author’s ideas and agenda in a literary text; appreciate differences in how people understand the world; employ design processes to achieve a product or technological solution that meets a specific user’s need; understand why people might hold different points of view; consider what has been included and what has been overlooked when an inquiry was designed (for example a social inquiry, or a statistical inquiry); and so on.

### Disciplinary meaning-making

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This type of capability is most closely related to the key competency of using languages, symbols and texts. Students also need to use their thinking to make meaning of the various texts of a specific discipline area. This type of capability is essential for accessing the ideas of others, as well as expressing understanding and ideas, and creating ideas. There is much more to disciplinary meaning-making than the words used or the way they are assembled, i.e. the grammar of the written texts of a discipline. All of the following can have discipline-specific differences: conventions for organising data (as graphs, tables etc.); how ‘models’ of reality are created and used as thinking supports (actual models, diagrams, maps, plans, metaphors etc.); what symbols convey and how their meanings have been agreed as conventions; how visual images are constructed – e.g. how colour, perspective and symbolism are used to convey meaning in literary texts; and how movements are used symbolically in the arts and in PE.

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<sup>1</sup> <http://scienceonline.tki.org.nz/Science-capabilities-for-citizenship>