Student inquiry and curriculum integration

Shared origins and points of difference (Part A)

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KEY POINTS

- *The New Zealand Curriculum* (*NZC*) states that students need to learn through addressing real-life issues that cross learning area boundaries

- Schools are using a wide range of different approaches to inquiry and integrated-inquiry. One reason for this recent growth is a belief that these approaches are well aligned with *NZC*.

- Some approaches have more in common with traditional views of students as 'learners in preparation' than with views of students as active 'learners in action'.

- 'Learners in action' approaches are more aligned with the messages in *NZC*.

This is the first of two articles about student inquiry and curriculum integration. These articles aim to help educators to consider the ideas about learning that underpin different integrated and inquiry approaches and their fit with ideas in *The New Zealand Curriculum.* This first article (Part A) defines student inquiry and curriculum integration and then explores the characteristics and origins of five different integrated and inquiry approaches that are used in schools.

Introduction

This is the first of two articles about student inquiry and curriculum integration. The main aim of these articles is to support teachers and school leaders to reflect on the inquiry and integrated approaches in use at their school and consider their fit with *The New Zealand Curriculum* (*NZC*) (Ministry of Education, 2007) and the ideas about 21st century learning that underpin *NZC*.

Student inquiry and curriculum integration are becoming increasingly popular in New Zealand schools and are often—but not always—combined (in this article we have called this 'integrated inquiry'). In an attempt to gain a better understanding of the differences and connections between inquiry and integrated approaches, this first article differentiates between five main approaches and explores their origins.

We draw on a number of studies conducted between 2005 and 2010 which explored the implementation of *NZC* across the primary and secondary sector. These studies included the Curriculum Implementation Exploratory Studies (CIES) (Cowie et al., 2009; Hipkins, Cowie, Boyd, Keown, & McGee, 2011; Hipkins, Cowie, Boyd, & McGee, 2008) and Shifting the Frame (Boyd & Watson, 2006). Through these studies we observed that in many primary schools inquiry and approaches that blend curriculum integration and inquiry (integrated-inquiry) are now the main vehicle for students to access the learning areas previously combined in topic studies (typically science, health and social sciences). We also noticed a trend for secondary schools to be developing some integrated curriculum components for Year 9/10 students (Cowie et al., 2009).

In these studies we saw a number of different inquiry and integrated-inquiry approaches in use. Some schools had adopted an approach developed by an educational provider. At other schools staff had worked together to develop their own model. We heard stories about how staff had trialled one approach and were disheartened because it didn't seem to 'work', usually because students were not 'ready' for the independent work that was perceived as a core component. Like the school-based educators, this experience left us with many questions about inquiry and integrated-inquiry approaches. Some of these questions are explored in this article, including:
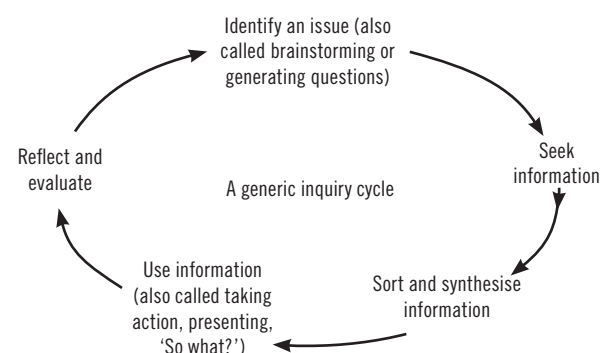
- Where have different approaches come from and what ideas about learning are they based on?
- How aligned are these different approaches with ideas in *NZC*?

Defining the scope of student inquiry and curriculum integration

What is student inquiry?

Student inquiry is a teacher-supported process that provides a structure for students to learn through the process of inquiring into questions they develop themselves about a topic or concept. There are many different inquiry approaches. What most have in common is that learning is viewed as a process with different stages or steps that students are guided through. Some are presented as a circular process that tends to be used once (and therefore is essentially linear). Others have stages that can happen at any time or be repeated during the process. Figure 1 shows a generic approach with different options for the names of some stages.

FIGURE 1. A GENERIC INQUIRY CYCLE

Identify an issue (also called brainstorming or generating questions)

Seek information

Sort and synthesise information

Use information (also called taking action, presenting, 'So what?')

Reflect and evaluate

A generic inquiry cycle

Underpinning inquiry approaches is the idea that using an explicit process will enhance students' understanding of how learning occurs and support them to develop critical thinking, information literacy, learning to learn, and reflection skills. Thus student inquiry is a way of *structuring the learning process.* Inquiry approaches can be used to support learning within a single subject or learning area, or they can be combined with integrated approaches to the curriculum.

What is curriculum integration?

Curriculum integration is an alternative to a single-subject approach to organising the curriculum. Curriculum integration refers to any approach that combines two or more subjects or learning areas to produce a course of study that draws on the content and processes of both learning areas. It is underpinned by the idea that learning is more relevant and meaningful if it is organised around concepts that are relevant to students. In real life, these concepts are rarely contained within the bounds of one learning area.

Thus curriculum integration is essentially a way of thinking about how the curriculum is best structured to support learning; it is *not* a way of structuring the learning process. For this reason it can be used in combination with student inquiry.

The fit between *NZC* and integrated and inquiry approaches

The current growth in integrated and inquiry approaches in New Zealand appears to have a range of drivers, which are both practical and philosophical (Boyd & Watson, 2006). One reason for the growing popularity of inquiry and integrated approaches is that they are viewed by educators as well aligned with the intent of *NZC*.

So what does *NZC* say about these approaches? *NZC* offers suggestions about curriculum planning and pedagogy, but as shown by the quotes in the text box, it does not prescribe approaches. Instead, *NZC* gives schools the mandate to focus on both content and approaches that are relevant to their community.

In terms of curriculum integration, the statements in italics imply that to best support learning, schools will need to consider integrating across at least some of the learning areas.

There are no statements about generic student inquiry approaches in *NZC*. There is, however, reference to a social science inquiry approach. Initially staff at a number of the schools in the CIES project interpreted the teaching as inquiry model on page 35 as being student inquiry (Cowie, et al., 2009). This misconception had

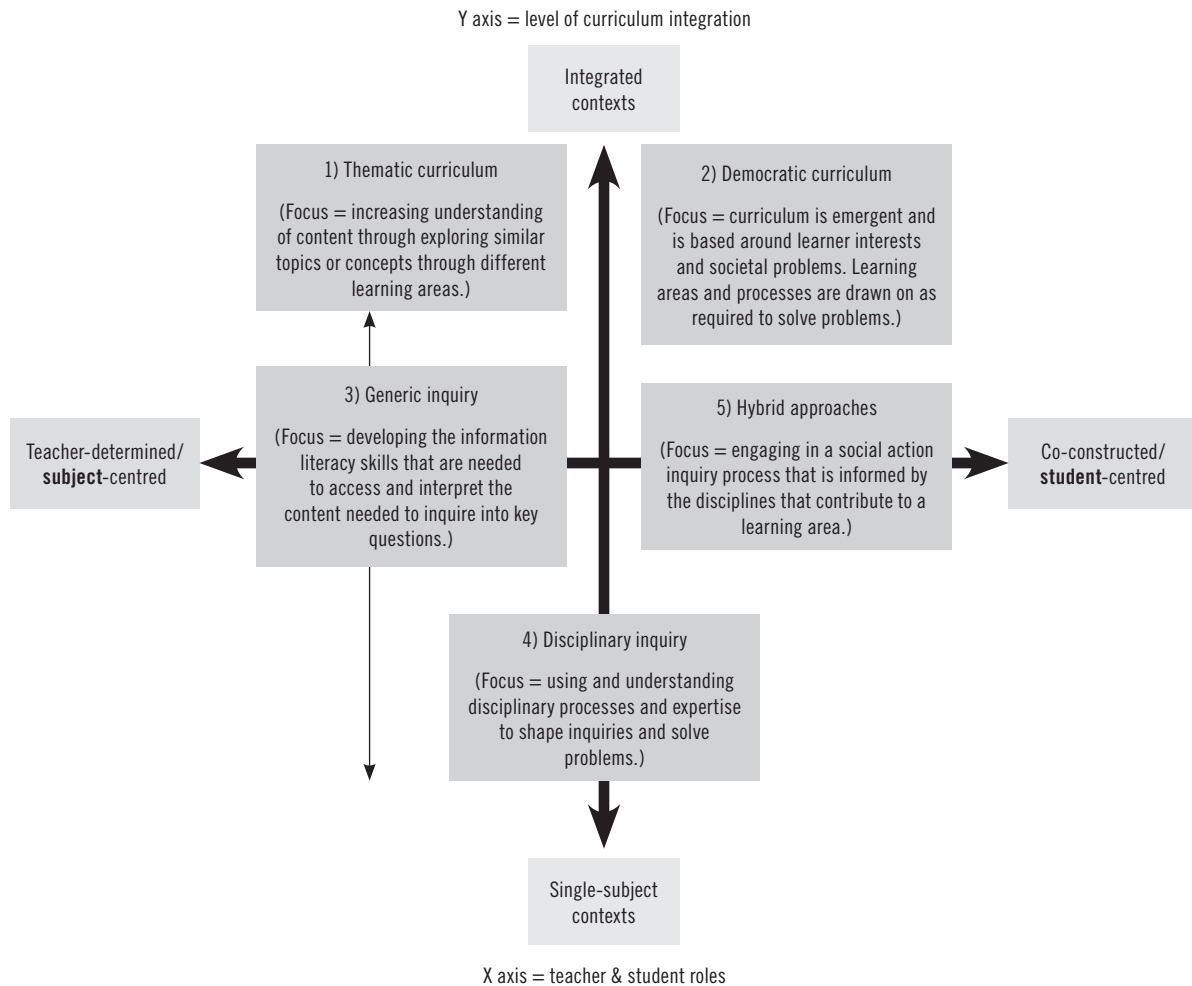largely been corrected by the second round of CIES field work (Hipkins et al., 2011).

What inquiry and integrated approaches are used in schools?

As we visited schools we observed a range of inquiry or integrated-inquiry processes in use, some of which were developed by education providers. We also saw how teachers used and interpreted these approaches in different ways. Some interpreted inquiry as being completely student directed; at other schools, directions and topics were mostly set by teachers. We also noted that in many primary schools inquiry and integrated approaches were blended together. Some schools appeared to be using information literacy approaches that had been renamed as student inquiry. To enable us to make sense of the variety of interpretations, we looked to the literature to name and categorise the approaches we saw and to explore their origins.

Figure 2 locates the various approaches we identified on a diagram which shows their main focus. The diagram is structured around two axes. The x axis represents teacher and student roles, which vary from being mostly teacher-determined to co-constructed. The y axis shows the variation from a single subject to an integrated approach to the curriculum. We found it challenging to position some approaches because they had the potential to be interpreted in different ways, so each is placed where it currently predominantly appeared to us to sit. The diagram is best viewed as a starting point for further discussion rather than a definitive analysis.

FIGURE 2. ONE VIEW OF THE INTERSECTION BETWEEN INTEGRATED AND INQUIRY APPROACHES

Y axis = level of curriculum integration

Integrated contexts

1) Thematic curriculum

(Focus = increasing understanding of content through exploring similar topics or concepts through different learning areas.)

2) Democratic curriculum

(Focus = curriculum is emergent and is based around learner interests and societal problems. Learning areas and processes are drawn on as required to solve problems.)

3) Generic inquiry

(Focus = developing the information literacy skills that are needed to access and interpret the content needed to inquire into key questions.)

5) Hybrid approaches

(Focus = engaging in a social action inquiry process that is informed by the disciplines that contribute to a learning area.)

Teacher-determined/ **subject**-centred

Co-constructed/ **student**-centred

4) Disciplinary inquiry

(Focus = using and understanding disciplinary processes and expertise to shape inquiries and solve problems.)

Single-subject contexts

X axis = teacher & student roles

Where did the different approaches come from?

The origins of both inquiry and integrated learning can be traced to the American progressive education movement of the late 19th century. John Dewey was one of the key founders of this movement, and most, if not all, of the developers of inquiry and integrated approaches refer to Dewey's ideas in their background information (e.g., see Beane, 1997; Kuhlthau, Maniotes, & Caspari, 2007; Martinello & Cook, 2000; Murdoch, 2004). In the early 20th century the progressive education movement split into three factions: social efficiency, democratic/ social reconstructionist and child-centred/developmental (Dowden & Nolan, 2007). The educationalists and theorists associated with each faction have influenced the different inquiry and integrated approaches we see in use today, and the different approaches we identified can be linked to these different factions and ideas.

Two approaches to curriculum integration

Australasian researchers consider there to be little consensus in the education sector in relation to the meaning of the term 'curriculum integration' (Brough, 2008; Dowden, 2007; Dowden & Nolan, 2007; Fraser, 2000). One main source of confusion is that there are a number of different approaches to integration, which owe their origins to different factions of the progressive education movement. In Figure 2 we have called the two main approaches to curriculum integration we encountered *thematic* and *democratic*. An example of each approach, its key characteristics and the views about learning that underpin it are described next.

The thematic approach

A current example of a thematic approach

As we visited schools we heard examples of a thematic approach, which teachers typically called curriculum

integration. Common examples included studies centred around concepts such as sustainability or topics such as dinosaurs. For example, students might explore the concept of sustainability through a range of learning experiences, each connected to a different learning area. This could include growing vegetables (health), studying climate change (science) or writing articles about living sustainably (English).

The learning in the different areas is connected by an overall theme, but activities in each area tend not to be directly related. The planning of the units is mostly done in advance by teachers and there is limited opportunity for student input. The thematic approach can be combined with student inquiry, which commonly takes the form of students undertaking individual projects to explore a question they develop about the theme.

Where does the thematic approach come from?

The thematic approach can be traced in part to the social efficiency faction of the progressive education movement (Dowden, 2007). Proponents of social efficiency encourage teachers to design multidisciplinary units with a theme that spans at least two subjects in ways that identify and eliminate overlaps. Because subject content is the starting point for planning, the thematic approach is described as subject-centred.

Teachers identify the curriculum content focus and plan how connections will be made. The approach appears to be aligned with more traditional ideas about learning and is done in order to prioritise content acquisition. The thematic approach has been criticised by Dewey, Beane (no date) and Dowden (2007) for attempting to force connections rather than allowing meaningful linkages to emerge. These approaches may not help students to deepen their understanding of the interconnections between how concepts play out in different learning areas.

The democratic approach

A current example of a democratic approach

In the opposite quadrant from the thematic approach in Figure 2 is the co-constructed democratic approach to curriculum integration. The best-known model was developed by James Beane in the US (Apple & Beane, 2007; Beane, 1997). Beane defines curriculum integration as:

> a curriculum design that promotes personal and social integration through the organization of curriculum around significant problems and issues, collaboratively identified by educators and young people, without regard for subject area lines. (Beane, no date, p. 1)

Beane (1997) considers that students need to learn about how to be citizens in a democratic society. For this

to occur, he suggests the curriculum needs to be co-constructed and integrated. Units are not planned in advance by teachers. Rather, they emerge through the shared work of teachers and students. To develop themes, Beane (2002) suggests inquiry (called integrated inquiry) that teachers ask students two main questions: "What questions or concerns do you have about yourself?" and "What questions or concerns do you have about the world?" These concerns about self and society are then woven together in themes such as living in the future or conflict. Curriculum areas are drawn on as they become useful for a study.

The democratic approach can involve students as activists for change as they explore the concerns of their community. As students are applying their knowledge through social action or problem-solving, Beane (1997) notes they are "performing knowledge". Overall, Beane (no date) sees his approach to curriculum integration as a fundamental shift away from organising the curriculum around subject-specific lines.

In some of the schools we visited as they explored *NZC* we heard examples of combined integrated-inquiry approaches which seemed to have connections to democratic approaches. These included:

- a group of Year 7/8 students who undertook a project to explore new options for their overcrowded school bus service, and who then worked with the local council to develop solutions
- a class of junior primary students who developed a project about the features of local playgrounds that were effective for their age group, and who then presented a submission on possible improvements to the local council (Boyd & Watson, 2006).

Another example is described in Fraser and Deane's (2010) article about a primary class that engaged in an integrated inquiry to organise support for a Samoan school destroyed by a tsunami.

Where does the democratic approach come from?

Dewey is considered to be a key founder of the democratic approach to curriculum integration (Beane, 1997; Dowden & Nolan, 2007). Dewey thought that learning comes only through experience, and that children are active learners who make sense of their environment by integrating new knowledge and experiences with existing knowledge in a "continuous spiral" (Dewey, 1916). Dewey did not see subject matter as fixed "content", but as new understanding mediated through the child's experience.

Dewey was concerned with the process of learning as well as content. In the 1930s he and others set up the Chicago Experimental School to trial their ideas (Tanner & Tanner, 2007). Because Dewey was a strong advocate

of active learning by doing, the school curriculum was organised around content relevant to the child. Dewey considered that if young people were able to take part in generating learning themes, this would help them to develop the skills they needed to participate in society. To enable integration at a social level, classes were developed as "miniature democratic communities", within which learners were encouraged to solve real-life problems. Thus, Dewey is considered to be a founder of the democratic approach for his view that curriculum content should be co-constructed and meaningful to both students and society, and that learning needs to cross subject boundaries to enable students to engage in acts of problem-solving.

Three approaches to student inquiry

In Figure 2 we distinguished three *inquiry* approaches: *generic inquiry*, *disciplinary inquiry* and *hybrid* approaches.

Generic inquiry

A current example of generic inquiry approaches

The most common form of inquiry we saw in schools we have called *generic inquiry*. The essence of this approach is that students are supported to develop skills in seeking, critically reviewing and reporting on information by working through a predetermined process (the steps of a generic inquiry model) to help them to inquire into their own questions. These questions can draw on information from a single subject or can be used in integrated contexts.

These inquiries commonly take the form of students developing personal questions about an overall topic or concept set by their teacher. Examples might be 'Diversity' or 'What makes us healthy?' Each student works through the steps in the school's inquiry process (such as the process shown in Figure 1) as they engage in an individual research project or 'inquiry' to explore their question. They then report their findings to the class, or a parent audience, via a presentation, poster or report.

Where do generic inquiry approaches come from?

Like the proponents of curriculum integration, most of the developers of generic inquiry approaches also trace at least some of the origins of their approach to theorists such as Dewey and Bruner (e.g., Kuhlthau et al., 2007; Martinello & Cook, 2000; Murdoch, 2004).

Generic inquiry approaches appear to draw heavily on information literacy models. One key purpose of generic approaches appears to be for students to learn about content in a way that enables them to develop skills (such as information literacy) and habits of mind (learning-

to-learn skills). One consequence of the use of a generic inquiry model can be that discipline-specific processes (as described below) might not be evident to students.

Most generic inquiry approaches have a step or last stage that requires students to 'take action', which is mostly framed as students 'reporting' or 'presenting' their information to an audience. The information literacy-based inquiry approaches that we saw did not seem to have a strong emphasis on knowledge being valued for its "performativity"; that is, its ability to do something new (Gilbert, 2005).

One of the developers of a New Zealand approach to information literacy, Gwen Gawith (no date), challenges the idea that inquiry can be used as a vehicle for students to learn information literacy skills. However, she notes that inquiry could provide "one context for practising" these skills. Gawith also suggests that inquiry questions need to lead to a "knowledge product", which involves interpretation and application of information, not just reproduction (which, at its worst, could be cutting and pasting information from a website).

Disciplinary inquiry

Most of the learning areas in the curriculum draw upon parent disciplines that have their own specific ways of structuring information and creating new knowledge. As far as is feasible, given the age and experiences of students, discipline-specific inquiry models the types of knowledge-building processes that would be used by professionals in the relevant parent discipline. For example, students might be said to be conducting:

- a science inquiry when they simulate two key roles of actual scientists (constructor of knowledge claims, and critiquer of the knowledge claims of others) and consider the dynamic interplay between the roles of constructor and critic (Hipkins, 2012)
- a historical inquiry when they work with one or more of the specific types of inquiry tools used by historians (for an example, see Harcourt, Fountain, & Sheehan, 2011)
- a statistical inquiry that engages them in gathering and processing richly contextualised data to address a specific question of relevance in students' lives (for several examples, see Neill, 2012).

Students cannot realistically be expected to undertake and learn about discipline-specific ways of inquiring without carefully planned, skilled support from teachers who are knowledgeable about the nature of the relevant subject. However, these inquiries are richest when there is space for their direction to be informed by students' own questions and interests. For these reasons, we have placed disciplinary inquiry nearer the central axis of Figure 2.

Disciplinary inquiry tends to be more common in secondary schools, where teachers are more likely to

have subject-specific expertise. Most of the schools we visited were primary schools, so we tended not to hear examples of disciplinary inquiry processes. We did hear some primary school principals express concerns that the development of disciplinary understanding might be taking a back seat given the widespread use of generic inquiry approaches. This concern has also been expressed in relation to the social science learning area (Taylor, Urry, & Burgess, 2012).

Where does disciplinary inquiry come from?

Disciplinary inquiry was developed from the approaches used to access and structure knowledge in science and social science disciplines. Jerome Bruner (1960) is viewed as one of the founding fathers of disciplinary inquiry. Like Dewey, Bruner considered learners need to learn by doing, and that learning is an active process during which learners construct new ideas based on past experiences and knowledge. Bruner advocated that students learn through inquiry and suggested that teachers provide guidance (which he called "scaffolding") to support students to move through different stages of cognitive development to become independent learners.

However, unlike Dewey, Bruner addressed learning *within individual disciplines.* Bruner considered that, rather than facts, students need to learn the form of different disciplines through "disciplined inquiry". This would support learners to understand "the underlying principles that give structure to that subject" (Tanner & Tanner, 2007, p. 101). Thus, Bruner advocated that students needed to "learn how to learn" (Tanner & Tanner, 2007), which is a key idea underpinning current approaches to student inquiry.

Bruner's work is also linked to the teaching of thinking skills and discovery learning. Critics of the way Bruner's ideas were subsequently developed by others as a curriculum approach argue that students cannot be expected to discover knowledge-building conventions without expert guidance. For example, just doing a science investigation does not, in itself, result in students developing insights into how knowledge-building processes in science actually work. Something more is needed (Hipkins, 2012). Disciplinary knowledge is seen as powerful knowledge, but it is not easily accessible for many students unless they are supported to encounter it at school. Thinking skills expert David Perkins (2009) calls it the "hidden game" of learning—for good reason.

Hybrid approaches

Current examples of hybrid inquiry

Some learning areas have their own form of learning processes that blend aspects of generic inquiry, discipline-specific inquiry, and the democratic approach to curriculum integration discussed above. For this reason we have called them hybrid approaches. We saw a few examples of these approaches being used in schools. One example is the social inquiry approach described in social science support materials (Ministry of Education, 2008). This approach is a hybrid of processes used in social science disciplines such as history. The approach has a number of components which users can draw on in a non-linear way to suit their context. A 'Now what?' component is included, which is intended to strengthen the social action component of social sciences teaching (thus aligning social science teaching with the ideas about democratic curriculum discussed earlier). However, Abbiss (2011) suggests that the extent to which the social science learning area, and *NZC* overall, is advocating that students learn through engaging in social action, or through learning about different forms of social action, is "open to interpretation".

The Health and Physical Education learning area also offers a subject-specific process called the "action competence learning process", which is designed to support students to engage in health promotion. Action competence is defined as:

> the development of those competencies (understandings and skills) that enable students to take critical action. (Ministry of Education, 2004, p. 28)

The action competence learning process is an iterative model, which takes students through the steps of: identifying an issue; developing knowledge and insight (critical thinking); developing a vision (creative thinking); understanding (gathering, analysing and evaluating ideas); planning; acting; and reflection and evaluating (Ministry of Education, 2004, p. 28).

This process is founded on the idea that students need to do more than learn about an area by being the recipients of health information. They need to be able to understand and critically evaluate the interconnecting factors that affect health and wellbeing, and be empowered as they learn by doing through taking action on issues of concern to themselves and society (Tasker, 2004).

Where do hybrid approaches come from?

These two hybrid approaches appear to blend aspects of the other integrated and inquiry approaches discussed in this article. They are intended to be used across the different disciplines that make up the related learning area. For example, the social inquiry process is described as an "integrated process for examining social issues, ideas, and themes" (Ministry of Education, 2008, p. 2). The development of this approach was informed by the processes used in the contributing disciplines

such as history, geography and economics (Ministry of Education, 2007), as well as evidence about effective social studies teaching and learning (Ministry of Education, 2008).

The two hybrid approaches have some overlap with the generic inquiry approach in Figure 1. Both encourage students to develop questions and gather and review information. The hybrid approaches are different from generic models in that they appear to have more focus on exploring values and different perspectives. Like Beane's (1997) democratic approach, both hybrid models appear to be underpinned by a performative view of knowledge, in that the processes that are presented encourage students to do something with the information they have gathered.

A note about student-centred approaches

It is important to note that in the literature no inquiry or integrated approaches are purely student directed. None of the educational providers who have developed integrated or inquiry approaches, or the theorists they draw upon, suggest that topics be solely developed around student interests or that the learning process be mostly student directed. However, our studies suggest they are sometimes interpreted like this in schools (Hipkins et al., 2008). Instead, all past and current approaches position teachers as vital guides, who either co-construct or direct the learning experience with students and who provide scaffolding to take students to the next step.

In summary, the approaches sketched in this article seem to have at their heart some fundamentally different views about curriculum, learning, knowledge and young people. Based on the role of the learner, they can be divided into two main ways of thinking, which can be seen as two ends of a continuum.

1) **Learners in action:** These inquiry or integrated-inquiry approaches are underpinned by the idea that young people are *active citizens now*, who learn about participating in the world by actively modelling this in a school setting. Knowledge is seen as performative and young people are supported to engage in projects that require them to use and develop the competencies needed to create new knowledge. (This view of learners and learning is more aligned with the democratic and hybrid approaches described above.)

2) **Learners in preparation:** These inquiry or integrated-inquiry approaches are underpinned by the idea that young people are *being prepared* for a future role as active citizens. To be ready for the future they need to develop the skills that enable them to seek and process knowledge, as well as develop an understanding of how

others use existing information to create new knowledge. However, in order to do this, students do not necessarily have to engage in the actual process of creating new knowledge themselves. (This view of learners and learning tends to be more aligned with the thematic curriculum and generic inquiry approaches described above.)

For some approaches to inquiry and integrated inquiry, the positioning of the role of the learner depends on how this approach is interpreted. For example, learners could be positioned as either nearer the learners-in-action or learners-in-preparation end of the continuum for the disciplinary inquiry or hybrid approaches. For these reasons, we have placed these two approaches nearer the central axis of Figure 2. Depending on how generic inquiry approaches are interpreted, they could also be nearer the learners-in-action end of the continuum. However, we tended to hear examples that had more in common with a learners-in-preparation interpretation.

What next?

Our intent when categorising integrated and inquiry approaches in this article was to help schools to consider the conceptual views of curriculum, learning, knowledge and learners that lie underneath these approaches. Some reflection questions below are offered as suggestions for schools to consider.

Reflection questions

- Using Figure 2, where would we place our school's approaches to student inquiry and curriculum integration?
- What view of learning underpins our approaches to student inquiry and curriculum integration?
- Do we consider students to be learners in action or learners in preparation, or both? Do our views match the student inquiry and curriculum integration approaches we are using?

To continue this exploration of integrated and inquiry approaches, Part B of this article explores what inquiry and integrated inquiry could look like if placed within a 21st century learning frame.

Acknowledgements

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Nicki Dowling
Professional Learning Facilitator
Massey CED
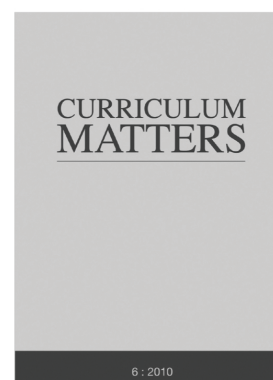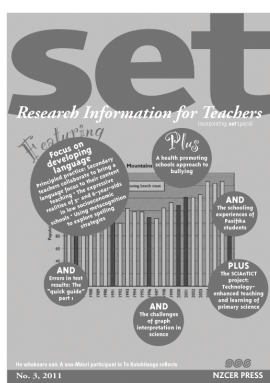
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