Curriculum integration in New Zealand secondary schools

Lessons learned from four "early adopter" schools

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KEY POINTS

- The New Zealand curriculum encourages schools to look for opportunities for curriculum integration, but there is little guidance about how this should be interpreted and implemented.
- While still not common, some secondary schools are looking at ways to integrate across traditional subject divisions.
- Secondary school curriculum integration advocates still largely remain committed to their subject disciplines.
- Factors which enable successful curriculum integration in secondary schools include leadership support, flexible timetabling, allowing time for teachers to develop their understandings, and professional development.

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An integrated curriculum has not been a strong tradition within secondary schools. However, since the promotion of curriculum integration in the 2007 New Zealand curriculum, a growing number of secondary schools have begun to implement programmes to promote curriculum integration. This article outlines key findings from recent research into four "early adopter" secondary schools. This article reports on the multiple ways teachers interpreted and implemented curriculum integration and considers the factors which contributed to the nature and degree of curriculum integration success in programmes in these case-study secondary schools.

Introduction

While curriculum integration has been a sustained feature of learning in primary schools in New Zealand (Dowden, 2012), it has never been a strong tradition within secondary schools, with a handful of exceptions (such as Freyberg High School, Palmerston North). As secondary teachers are educated as subject specialists, they traditionally have tended to be less sympathetic towards the aims of curriculum integration compared to primary or intermediate teachers who are educated as generalists (Dowden, 2012; 2014). However, following the promotion of curriculum integration within *The New Zealand Curriculum* (*NZC*) (Ministry of Education, 2007), there is a growing interest in curriculum integration in secondary schools (Hipkins, Cowie, Boyd & McGee, 2008; Boyd & Hipkins, 2012). Just what does this look like in a secondary context, and how are subject-specialist high school teachers responding to the notion of curriculum integration? This article summarises key findings of research carried out examining the perceptions and practices of New Zealand teachers (n = 26) from four curriculum integration "early adopter" secondary schools (Arrowsmith, 2013). Early adopter schools in this context have chosen to implement curriculum integration before many others and therefore can be regarded as pioneers from whom many important lessons can be learned.

The article begins with an examination of the multiple ways curriculum integration is defined and why it has emerged as a significant approach in the 21st century. The perceptions and practices of curriculum integration implemented in four New Zealand secondary schools are then analysed. The findings show a persistence of secondary schools in reverting to subject specialist areas in the higher end of the secondary schools, despite a commitment to curriculum integration at the junior end. The article concludes with a description of factors which enabled successful implementation of curriculum integration in New Zealand high schools.

What is curriculum integration?

Curriculum integration is an approach that aims to integrate teaching across traditional subject or disciplinary boundaries and/or use multiple disciplinary perspectives with the purpose of helping students to create and enhance knowledge and understanding (Dowden, 2014, p. 18). However, there are significant differences in how curriculum integration can be approached, which in turn influence the nature and structure of integration programmes. A description of the three main types of curriculum integration, referred to as *transdisciplinary*, *multidisciplinary*, and *interdisciplinary*, is provided in Table 1. Commenting on these different approaches, Drake (2007) notes that "one position is not superior to another; rather different approaches are more appropriate than others according to the context in which they are developed" (p. 19). This highlights the necessity for a clear understanding of curriculum integration to ensure that teachers select the most appropriate form for their students.

Why curriculum integration?

A number of authors advocate for curriculum integration as a significant approach in the 21st century (Gilbert, 2005; Kress, 2007; OECD, 2005). Such authors argue that the bounded nature of disciplinary structures is no longer adequate to address the complex

and rapidly changing nature of society. Instead, more holistic and joined-up ways of thinking are required in the 21st century, necessitating different ways of thinking about and doing education (Gilbert, 2005). Alongside curriculum integration, such approaches also tend to promote experiential and student-centred learning, engagement in "real-world" problems and an attempt to move beyond the rigid positions of disciplines in shaping learning (Boyd & Hipkins, 2013; Boyd, 2013; Drake, 1998). Such approaches are associated with a "progressive" turn in education and are informed by Dewey, among others (see Dowden, 2012, for further details).

A further impetus for curriculum integration in New Zealand has been its endorsement in *NZC*, which refers to and encourages curriculum integration, proposing that schools "may decide to organise their curriculum around central themes, integrating ... across a number of learning areas ... [and] wherever possible, schools should aim to design their curriculum so that learning crosses apparent boundaries" (pp. 37–38). This definition fits well with a multidisciplinary approach (see Table 1). However, very little guidance is offered to schools in *NZC* about how to implement a curriculum design to support integration—especially for secondary schools where the timetable and programme is based around subject specialists and curriculum areas. Building upon recent articles which have explored the concept of curriculum integration (Boyd & Hipkins, 2012, Boyd, 2013; Dowden, 2012), the goal of this research was to explore more deeply the experiences of secondary schools which have chosen to implement curriculum integration approaches.

Method

Four secondary schools with curriculum integration programmes were invited to participate in the study. One of these schools (Awa High School)[1] had a curriculum integration programme running since 2000, but the others had initiated their programmes more recently, by and large coinciding with the arrival of *NZC* (see Table 2). All four schools had curriculum integration programmes across the learning areas of English, Maths, Science, and Social Studies at Years 9 and 10, with specialist opt-in classes for this in Pakirehua College, and whole-school approaches in Awa High School, Rua High School, and Niu College. In each school, the principals were interviewed and teachers involved in the curriculum integration programme took part in a focus-

Form of curriculum integration	Definition
Transdisciplinary	Where courses or research questions cross disciplines to extend beyond the scope of a single discipline or area of instruction. In the course of this approach, subject boundaries are often collapsed or merged. A primary focus is on student-centred inquiry and on learning through real-life contexts (Beane, 1997).
Interdisciplinary	Disciplinary boundaries still remain, but the disciplines are connected more explicitly than in multidisciplinary learning through a focus on skills such as critical thinking or communication skills, which are emphasised across learning areas rather than within them.
Multidisciplinary	An approach to integration whereby a number of disciplines may be used to address a topic or focus. In this process a discipline is not changed or influenced by another. For example, a central concept or theme is examined with each subject area addressing the theme through their lens during the same time frame.

TABLE 1. DESCRIPTIONS OF DIFFERENT FORMS OF CURRICULUM INTEGRATION

School	Awa High School	Pakirehua College	Rua High School	Niu College
Decile	8	6	9	5
Authority	State	State	State	State
Nature	Co-educational	Single sex	Co-educational	Co-educational
Type (Years)	Secondary (Years 9–13)	Secondary (Years 9–13)	Secondary (Years 9–13)	Intermediate & Secondary (Years 7–13)
Founded	1920s	1950s	1880s	2010s
Curriculum integration founded	2000	2007	2008	2011
Curriculum integration programme	Initially two specialist curriculum integration classes—students opt in. Grew to 8 curriculum integration classes, 4 at each of Years 9 and 10. Students opt in.	Two specialist curriculum integration classes—students opt in. (Inquiry learning a key approach.)	Compulsory curriculum integration programme for all Years 9 and 10 after 1-year trial in 2008.	Compulsory curriculum integration programme for all Years 7 and 8 (problem-based learning). Year 9 and 10 curriculum integration through integrated themes.
Participants	Principal 6 teachers	Deputy Principal 2 teachers	Principal 8 teachers	Principal 8 teachers

TABLE 2. COMPARISON OF CASE STUDY SCHOOLS

group interview. Lesson observations and a review of curriculum-planning documents were also conducted in each school. This provided rich, qualitative data about teachers' perceptions and practices. Data were analysed through inductive and deductive analysis to identify key themes (Stake, 2006). Ethical permission was given by the Victoria University of Wellington Human Ethics Committee.

How are secondary schools interpreting and implementing curriculum integration?

The teachers and principals interviewed for this study had interpreted and implemented curriculum integration in many different ways, in keeping with literature in this area which suggests that definitions of curriculum integration are rather broad and, at times, ambiguous (Beane, 1997; Dowden, 2007, 2014; Fraser, 2000). The historical origins of the curriculum integration programmes were a key factor in the nature and implementation of curriculum integration in each school. In Awa High School, Pakirehua College, and Rua High School, the curriculum integration programmes had started as a trial in Years 9 and 10 and had either remained so (Pakirehua College), had included the whole school after one year (Rua High School), or had grown gradually to a whole-school approach (Awa High School). At Niu College, curriculum integration was a founding philosophy of the school from its inception in the 2010s. In fact, during the staff recruitment process, prospective teachers at Niu College were required to show an understanding of curriculum integration, and a willingness to teach integrated classes. No schools had curriculum integration programmes beyond Years 9 and 10—although Awa High School intended to trial this in 2014 at Level 1 of the National Certificate of Educational Achievement (NCEA).

Of the four schools in this study, only one, Pakirehua College, employed a transdisciplinary approach to curriculum integration. The college did this within a Years 9 and 10 inquiry programme which integrated English, maths, social studies and science by posing a problem that needed addressing and allowing students to generate solutions to this, culminating in the choice of one response which students carried out. All others still embraced multi- or interdisciplinary perceptions and practices which meant that subject areas largely remained intact. For example, in Niu College, students used multidisciplinary approaches throughout their student-led inquiries which were supported by subject-specialists at Years 9 and 10. In Awa High School, two integrated classes used inter-disciplinary approaches which focused on aspects such as co-operative learning and critical thinking. These classes were highly engaged and had higher academic attainment than mainstream classes. However, when this initiative was rolled out across the whole school, lack of knowledge and some resistance meant that the integration became more tokenistic and less authentic as the programme grew over time. Similarly for Rua College, where teachers who initially adopted transdisciplinary approaches were more committed than those who were expected to teach in an integrated way once the programme became compulsory. Figure 1 gives a diagrammatic representation of how these four schools perceived and practised different forms of curriculum integration.

Reasons for embracing curriculum integration

The most commonly cited reasons stated by teachers and principals for curriculum integration implementation across the study's schools were: *relevance*; *relationships, knowledge and understanding*; and, *NZC*. Many teachers felt that moving beyond single-subject boundaries was fundamental to the students gaining a deeper understanding of knowledge and the "real" world. Several of their comments reflected this, such as:

> All the great discoveries and progress are made in the interstices between the blocks of knowledge… [If] knowledge is compartmentalised, that's kind of artificial in the way that it's acquired. (Rua High School)

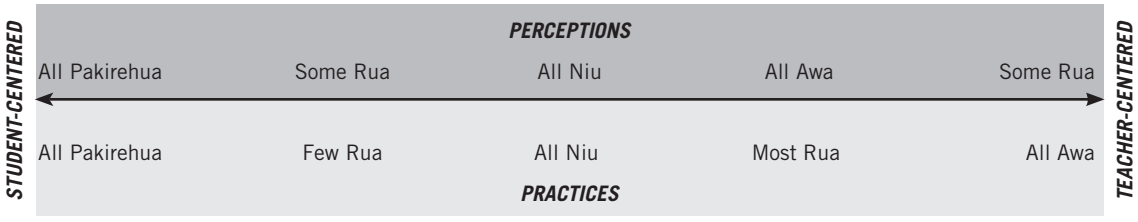

FIGURE 1. COMPARISON OF SCHOOLS' PERCEPTIONS AND PRACTICES OF STUDENT-CENTERED CURRICULUM INTEGRATION

> [We should] try to get away a little bit from the idea of subjects as stand-alone entities … it's a shame to lose the bubbling enthusiasm of students on entry by compressing them into boxes—we don't need to, why would we? (Awa High School)
>
> It's the real world that we're talking about [with] curriculum integration. (Rua High School)

Forming positive relationships was a key reason for adopting integrated approaches for Awa and Rua high schools in particular. At these schools, several teachers felt that the positive relationships gained through the use of integration were potentially a greater benefit than the curriculum integration itself. This was a belief noted in Wallace, Sheffield, Rennie, and Venville's (2007) review of curriculum integration in Australia. They found that the teachers had assumed a more pastoral focus than they had before using curriculum integration.

While most teachers in this study were keen about the opportunities presented by curriculum integration, very few had read widely about curriculum integration theory or research, or were familiar with the vocabulary. Generally, only one person in each school held a strong theoretical understanding of curriculum integration. This is a common finding in curriculum integration research—a number of other studies show that teachers are often unfamiliar with curriculum integration models and the theory in which it is grounded (Beane, 1997; Dowden, 2012; Fraser, 2000; Shriner, Schlee, & Libler, 2010). At Rua High School, one teacher referred to "theories that are in a PowerPoint, but I don't think it's been shared with the rest of the staff", and another that "it's in the manual but I can't remember them". A similar comment was made at Niu College: "Certainly there's a lot of research underpinning what we do . . . but I don't know who the theorists are." Teachers, however, did recognise the importance of shared agreement about the theories upon which an integrated programme is embedded, otherwise, in the words of a teacher at Rua High School, the intention "can be lost if the way that a school or community defines curriculum integration is 'fluffy', or there's no real consensus or ongoing questioning or readings about what it means."

The lack of theoretical knowledge about curriculum integration is not surprising given the lack of guidance in *NZC*, the few resources available, the lack of professional development (discussed later in this article), and the widespread confusion about curriculum integration definitions (Dowden, 2014). However, this did mean that schools were implementing curriculum integration through pragmatic principles rather than through research-based or theoretical ones. For example, Awa High School's principal shared that "my sense is that it is rather more based on a philosophy, pulling in elements of different theories wherever they seem to fit". Schools relied on accessible, contemporary advocates of progressive education (such as de Bono, Gardner and Claxton) (see Table 3). This confirms Boyd and Hipkins' (2012) proposition that integration approaches in New Zealand schools are often closely associated with inquiry and student-centred learning. While a pragmatic approach to curriculum integration is not unique to New Zealand schools (see Dowden, 2014 for Australian examples), Fraser (1999) does caution that it is necessary to "focus on both product and process in curriculum integration—the product can lose all meaning if teachers do not understand the complexity of the processes involved" (p. 1).

Theory/ Approach Cited	Theorist/ Author	Awa High School	Pakirehua College	Rua High School	Niu College
Integrative model	Beane		✓	✓	✓
Inquiry learning	Harpers & Lepstein		✓		✓
Drama inquiry 'Mantle of the expert'	Heathcote			✓	
Inquiry learning	Murdoch			✓	
Cooperative learning	Brown & Thompson	✓			
Cooperative learning	Kagan or no author	✓			✓
Building Learning Power	Claxton			✓	
Thinking Hats	De Bono	✓			
Social constructivism	Dewey			✓	✓
Multiple Intelligences	Gardner	✓			

TABLE 3. SUMMARY OF THEORISTS AND AUTHORS REFERRED TO BY PARTICIPANTS IN REFERENCE TO CURRICULUM INTEGRATION

Subject specialism endures beyond integration

While the four schools had been chosen for their commitment to curriculum integration, one quite unanticipated finding was that nearly all of the participants at each of the secondary schools still placed great value on the separate subjects when discussing curriculum integration. This supports Begg's (2008) suggestion that despite the vision, values, and principles, that are outlined in the front end of *NZC*, there is still a large weighting towards the learning areas and their

subject-specific achievement objectives. The nature of this endorsement differed between schools. The teachers at Awa High School and Pakirehua College felt that access to specialist subject knowledge was required, but that the content did not necessarily need to be taught in subject compartments by subject specialists. Teachers at Rua High School and Niu College had trialled teaching across multiple subjects, but had concluded that at Years 9 and 10 it was necessary to deliver content through subject specialists. The value placed on subject specialism could be attributed to a number of reasons, including high-stakes testing, subject status, and teacher identity—all of which are examined in the following section.

High-stakes testing

Participants at each school, and principals in particular, drew a strong link between the need for subject specialism and NCEA assessment. Strong academic results are a marker by which secondary schools are (increasingly) judged, and curriculum integration is often perceived as a threat to such results, despite evidence to the contrary (Beane, 1997). The restriction imposed on teachers by assessments in general is also an important consideration in secondary schools, which has a trickle-down effect on the junior school, and may explain why curriculum integration is not commonly practised in secondary schools beyond Years 9 and 10. This certainly was the case for Niu College who reverted from an initial desire to hire generalists at Years 9 and 10, to subject specialists when setting up this new school.

This finding is sobering, given that high-stakes testing internationally is increasingly compelling the educational process to be driven by predetermined objectives to the point that not even the subjects are the central focus of the curriculum (Au, 2011). Au asserts that teachers have been disempowered as a result and are adopting more teacher-centered pedagogies to meet the demands of testing, which is at odds with constructivist, student-centered practices such as curriculum integration. A focus on standardised testing also removes the need for skills such as "curriculum deliberation and planning, designing teaching and curricular strategies for specific groups and individuals based on intimate knowledge of these people" (Apple, 1995, p. 132), which are all features of curriculum integration.

Subject status and teacher identities

While advocates of curriculum integration such as Brough (2008) argue that integration need not change teacher identities or undermine knowledge, others, such as Young (1999), believe that any attempt to integrate subjects will naturally reduce the status of such subjects, therefore gaining little favour amongst subject specialists. Both positions were seen in this study. Many teachers showed a willingness to learn what was necessary to integrate across learning areas as the need arose, whereas some teachers were more reluctant to integrate learning across subject boundaries, especially once the programme was made compulsory. For example, while all teachers at Rua High School shared a belief in student-centred learning, a small number described how hard it was to plan for curriculum integration as they felt they needed to preserve the specialist knowledge of their own learning area for future subject specialisations. A smaller number of teachers across all schools described their lack of knowledge in the areas they were supposed to integrate with, and were concerned that the integrating links could therefore become tokenistic.

These findings highlight an ongoing challenge for curriculum integration in New Zealand high schools which are still largely are organised around discrete subject areas, often with closely associated teacher identities (see also Beane, 1995; Dowden, 2012). As Heidi Hayes-Jacobs (in Brandt, 1991) describes: "in secondary schools ... teachers become identified with their subject to such a degree that it's hard for them to look over the fence" (p. 24).

What leads to effective implementation of curriculum integration?

This study identified a number of factors which were crucial to the success of curriculum integration, including the significance of school senior leadership and support, flexible timetabling and space, professional development, and understanding teachers' beliefs.

Senior leadership and support

Although curriculum integration is often promoted as a "bottom-up" model of curriculum innovation, it has far more success when supported by senior leadership (Fraser, 1999; Inman, 2011; Wallace et al., 2007). This was true for all four schools, where support from senior and middle management, other colleagues, and community members were integral to the success of the curriculum integration programmes.

A lack of support from both senior management and heads of department was alluded to at Awa and Rua high schools which had contributed to the challenges they faced in facilitating curriculum integration. Other studies have found that the absence of senior management support can lead to increased workload while setting up programmes, increased demands on lead teachers,

isolation from other colleagues, a constant need to justify the programme's merits, and subsequent burnout (Sharpe & Breunig, 2009). These were issues raised by participants of the study, in Awa and Rua high schools in particular, and were reflected in the perceived success of their programmes.

Parental and community support was also perceived to be critical to the success of curriculum integration programmes. A teacher at Niu College described that "if the majority of teachers find [integration] too foreign to touch, then you can expect parents that went through a completely different school and models are sometimes just as unsure". This highlights an ongoing tension underpinning curriculum reform that can be unsupported by entrenched beliefs of parents about education, which exposes the subject-centered schooling that they themselves experienced (Beane, 1993; Dowden, 2007).

Flexible timetabling and spaces

The programmes that felt supported in terms of flexibility within timetable and classroom structure experienced a much smoother process of curriculum integration across the four schools. At Pakirehua College, Rua High School, and Niu College, classes were set up to have some double periods of time to allow deeper learning to occur within the curriculum integration programme. The issue of flexibility, including timing, classroom layout, traditional systems and the like, is linked to support from senior management (Wallace et al. 2007). At Rua High School, the deputy principal had fought to provide an extra hour in the timetable for teachers to plan together, which formed a way "to talk and collaborate ... [and] with that came more confidence". Additionally, at Rua High School one lesson a week was timetabled so all four teachers could work with their class at the same time. At Niu College, the use of "commons", or open spaces that can accommodate up to 100 students at a time, was also seen to support integration as four teachers could use the space at one time. This college also employed three 100-minute blocks to support inquiry learning. To approve modification of the traditional timetabling structure and lesson duration shows a high level of support towards integration and consequently is an enabling factor.

Professional development and teachers' beliefs

Teachers' professional development for curriculum integration is crucial for successful implementation (Dowden, 2012; Fraser, 1999). Professional development for curriculum integration had been offered in some form at all schools, which teachers all felt was crucial. However, the direction of these sessions was largely initiated by the schools alone as there was very little formal professional development support for curriculum integration available. All participants agreed that stand-alone or one-off curriculum integration courses tended to have less impact on changing teacher practice than ongoing professional learning. The teachers at Niu College were especially positive about their ongoing professional development which was planned around their individual needs, with many sessions being opt-in, rather than compulsory, which was the case at the other schools.

The teachers' philosophies and beliefs towards curriculum integration were an important part of the programmes' success, as was the way curriculum integration programmes had been implemented. As Timperley, Wilson, Barrar, and Fung (2007) note, acknowledging a teacher's *theories of practice* (their particular beliefs and values, and the knowledge, skills, and practices that follow from them) is integral to the success of a new practice. At Awa High School, Pakirehua College, and Niu College, teachers had chosen to be part of the curriculum integration programmes. Their beliefs in the value of integration were aligned (see Figure 1). At the newest school, Niu College, comprehensive research around integration was conducted preceding the launch of their whole-school integration programme, with ongoing reflection and review since. The programme was well received and implemented by the staff, taking into consideration the individual needs of staff and students. Similarly, the gradual move towards whole-school curriculum integration at Awa High School, where the teachers were able to identify their own theories of practice and why they may need to change, contributed to more widespread support of the curriculum integration programme.

However, when teachers' beliefs around curriculum integration were not adequately addressed, or teachers were compelled into the programme, enthusiasm for curriculum integration was less and the programmes did not expand as rapidly or effectively. For example, at Rua High School, where curriculum integration was made compulsory across the whole of the junior school after 1 year's trial, teachers' theories of practice or prior beliefs were not considered, nor were teachers given the time to understand curriculum integration in order to willingly and genuinely change their practice. A teacher at Rua High School, who clearly did not embrace the concept of curriculum integration, stated that it was "important that the philosophical approach of all members is in rough alignment. Unless you nurture something in a school it falls between the cracks." The failure to acknowledge the beliefs of teachers at Rua High School led to a diluted, less effective form of curriculum integration.

Conclusion—lessons learned

In sum, a number of lessons can be learned from the experience of these early adopter schools:

- Schools and their leaders should not underestimate the importance of addressing teachers' beliefs about curriculum integration, as well as allowing teachers time to confront the necessity for change.
- Slow, considered change leads to more effective and successful curriculum integration.
- Timely and relevant professional learning is vital to allow teachers to gain firm theoretical understandings in order to support curriculum integration.
- Individual teachers interested in embracing curriculum integration should ensure that they are adequately supported by senior and middle leaders, as well as colleagues and caregivers. The decision to employ curriculum integration should be grounded in a real need, which is student-driven.
- Resources are needed to equip school leadership, and provide a greater research base to support schools to develop sophisticated approaches to curriculum integration (Dowden, 2012).

Reflection questions

- Why do you want to incorporate curriculum integration into your school—is your decision grounded in data?
- What are the beliefs of your teachers about curriculum integration?
- What support do you have for curriculum integration at your school?
- Should secondary teacher training institutions be investing more time in teaching curriculum integration?

Useful resources

Fraser, D., Aitken, V., & Whyte, B. (2013). *Connecting curriculum, linking learning*. Wellington: NZCER Press. http://www.nzcer.org.nz/nzcerpress/connecting-curriculum-linking-learning

Crossing curriculums: Two secondary schools' cross-curricular inquiry learning. http://www.edgazette.govt.nz/Articles/Article.aspx?ArticleId=7661

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Note

1 Teachers' names are concealed to protect their identity, and schools have been given pseudonyms.

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