



the
education
hub



An introduction to curriculum integration

School resources

Bringing various subjects together for learning is known by a variety of names such as interdisciplinarity, cross-disciplinarity, cross curricular learning, and curriculum integration, and has a long history reaching back to the American educational philosopher John Dewey (1859-1952). There are reports of interdisciplinary approaches in New Zealand secondary schools as far back as the 1940s¹ and, in primary schools internationally, thematic approaches which bring subjects together were particularly popular in the 1970s and 1980s². In the 1970s, two prominent and influential English educators Paul Hirst and Basil Bernstein both wrote about curriculum integration, with Bernstein suggesting an integrated approach that involved 'the subordination of previously insulated subjects or courses to some relational idea'³. It was thought that linking subjects through a relational idea could be more engaging for students and provide a 'real-world' stimulus for learning. Different subjects might offer different interpretations of a particular topic or problem. More recently, the idea of curriculum integration has re-emerged as one of the key themes of twenty-first century learning. In this context, curriculum integration is most often linked with inquiry learning. The logic here is that, in an authentic inquiry context, students need to draw on more than one subject to fully investigate a problem or a topic.

The term curriculum integration (CI) refers to combining two or more subjects when teaching a topic. CI involves integrating the subject concepts, subject content (the facts or substantive knowledge), and subject competencies (or skills) developed in a topic. For example, the topic Polynesian migration to Aotearoa New Zealand could draw on **subject concepts** such as exploration, migration, navigation, settlement, and place from Geography, significance and whakapapa from History, and narrative and creative writing from English. The **subject content** is likely to be about specific Polynesian explorers and voyages, and the **subject competencies** might include map reading from Geography and narrative writing from English. The goal is to provide an opportunity for deep learning - a wider and deeper understanding of the topic as whole and, more importantly, an understanding of the subject concepts within that topic. This understanding of underlying subject concepts enables learners to think abstractly and critically. This can change the way they think about or understand a topic⁴.

It is important to note that, for CI to be effective, the subject concepts and content from the different subjects should be complementary so that their integration has the potential to enrich student understanding. If the subjects do not have sufficient conceptual connection under the umbrella topic, the CI can be awkward, artificial, and even detrimental to the learning process. As an example of effective CI, consider a unit on the Otago gold rush of the 1860s. This topic can draw on historical content about New Zealand society at that time, concepts from sociology about class structure and immigration, scientific content from geology, and even the theory of economics.

It is also important to note that CI is different from a **thematic approach** to curriculum design, quite commonly used in primary schools, where a theme is considered from the perspective of many or all curriculum areas. For example, teachers might be asked to apply the theme of 'our community' to all subjects over a term. However, without developing a **conceptual basis** to underpin a thematic approach, the learning is likely to lack depth or may even detract from providing an impetus for deep learning where teachers feel pressured to apply it. CI is different from this thematic approach in that it tends to draw on a more limited number of subjects to connect to a theme or inquiry problem. Moreover, well-designed

CI draws on the specialised concepts from carefully chosen contributing subjects. For example, for the topic 'our community' the subject concepts are likely to come primarily from social studies, and could include citizenship, government, and cultural diversity. Connections can then be made to other subjects where there are strong links, for example to history in considering how principles of citizenship have been developed over time and provide individuals with civil, political, and social rights. Connections concerning community could also be made with the arts in considering how music, drama, dance, and visual arts create a sense of community through the diverse representation of people, places, and culture. However, **specialised concepts** need be utilised to deepen the learning. For example, from music the subject concept of style would need to be explored to develop students' competency in being able to identify and describe the characteristics of music from different communities and cultures.

In the most recent promotion of CI it is strongly linked to inquiry learning, where students follow their own interests to investigate a topic or problem. We know that unguided inquiry is not an effective learning approach where students do not have sufficient topic knowledge to know where to start their investigation⁵ and this challenge can be exacerbated where the inquiry demands knowledge of several subjects. Teacher guidance in relation to the **concepts and content** is therefore just as important, if not more important, than teacher guidance of the **inquiry process** itself. Without subject concepts, the CI and the inquiry process are 'empty'. For example, students in a 'real world' project⁶ made eco-bags and eco-treats for an ecotourism conference in their art and technology classes (fabric and food technology). Interviews with the students revealed that, while they found the context for the learning motivating and they gained some insight into being an artist, chef, or designer, there was little connection to the thematic issue driving the project or its underlying subject concepts, and few students appeared to have a strong conceptual grasp of ecotourism and its significance in terms of ideas such as the impact on local and global economies, sustainability, and fair trade⁷. This is an example of a big idea, theme, issue, or topic not being sufficiently underpinned by subject concepts to give it meaning beyond an everyday understanding.

The reasoning and purpose underpinning curriculum integration

Four interrelated arguments are generally used in support of CI:

- Traditional subject boundaries are not an accurate reflection of the way the world really is, and therefore are artificial and not conducive to the learning required in the 21st century. Learning through CI is therefore considered by many commentators as more 'authentic' than single subject learning.
- CI is more motivating for students, especially when coupled with personalised inquiry learning.
- Because CI draws on more than one subject, it will lead to deeper learning.
- CI aligns with the current trend of teachers working cooperatively in shared innovative learning spaces with large groups of students working independently⁸.

Despite these arguments in its favour, CI of itself will not automatically lead to any of these positive outcomes unless it is designed well at the level of subject concepts. If learning is to move beyond everyday understandings, mapping out the subject concepts contained in the topic and making visible the possible connections between subject concepts in the various subjects is the fundamental first step. Where the integration of subjects is done well - at the level of subject concepts - it has the potential to widen and deepen students' learning experiences.

What is the evidence base to support using curriculum integration?

Clear evidence for the positive effects of CI on student learning outcomes is hard to find. There is some evidence that integrated/interdisciplinary programmes result in students performing as well as or better than students taught through separate subjects⁹. Going back 90 years, there is evidence from a study carried out in the USA in the 1930s¹⁰ that indicates CI can help students improve their academic results (a small improvement was noted) and that there are definite rewards for students in creating a more positive learning environment, perhaps related as much to inquiry as CI. Recent research in New Zealand also points more to improvements in students' feelings about learning rather than academic outcomes. For example, in a secondary school context, teachers 'felt that positive relationships gained through the use of integration were potentially a greater benefit than the curriculum integration itself'¹¹.

Research in cognitive science suggests that there is a likely relationship between knowledge that is conceptually structured (in other words, as a subject with interrelated concepts, ideas, and theories) and the development of human cognition¹². This supports the idea that CI needs to embed subject concepts into its design to retain the essence of the subject's conceptual structure, so that learning goes beyond everyday knowledge to deep learning. Cognitive science tells us that it is the power of subject concepts that develops a student's ability to think abstractly and to learn to generalise – one of the key dimensions of logical thought¹³. These understandings from cognitive science need to be taken over into curriculum design and planning in a CI context.

Key steps to follow when designing a topic using CI

1. Create a **concept map** for the separate subjects in relation to the topic and see if there are areas of overlap or enrichment possible by asking what are **the key subject concepts and subject competencies** that you want students to learn in the topic? Don't focus on key competencies here but on subject concepts. For example, the topic of Polynesian migration to Aotearoa New Zealand in Social Studies described above could draw on concepts such as exploration, migration, navigation, settlement, location, and place from Geography, significance and whakapapa from History, and narrative and creative writing from English. Each of these key subject concepts will have related 'subordinate' subject concepts such as settlement, which infers maunga, awa, urupa, and marae to establish a sense of place.
2. Identify any **subject competencies** associated with the key subject concepts. For example, the Social Studies topic of early Polynesian migration to Aotearoa New Zealand could include map reading from Geography and story-telling from English. Each of these subject competencies will have related 'subordinate' competencies such as interpreting contour lines or the use of imagery in story writing.
3. Consider the **key content** through which the students will learn about the subject concepts and develop subject competencies. For example, the Social Studies topic of early Polynesian migration to Aotearoa New Zealand is likely to contain content about specific Polynesian explorers and voyages: who they were, why they travelled, where they travelled, how they travelled and navigated their way across the ocean, and what kinds of communities they established upon arrival.
4. Consider the order in which the content will be shared with students, how the students will be provided with access to the knowledge identified in points 1 to 3 above, how the key subject concepts relate to each piece of content, and the types of learning activities you will use to explore the subject concepts and content, such as reading, direct instruction, and guided inquiry.
5. Consider how you will **assess the topic** to identify how bringing together the subjects has deepened the learning or provided a cognitive advantage. For example, ask students to retell in oral or written

form a migration story passed down from Māori ancestors (using English writing concepts and competencies such as narrative structure) that also reveals their understanding of the Social Studies concepts of settlement, place, and identity. Depending on the year level, students might also be asked to explain the connections between migration waka and contemporary iwi and tribal areas. If deep learning has occurred, students will be able to explain the reasons for early Polynesian exploration and migration to Aotearoa New Zealand and why contemporary Māori maintain connections between migration waka, rohe, and iwi groups.

Summary principles

The following principles should be considered when undertaking a curriculum integration approach:

- Consider what is it that the students will learn that they would not otherwise learn by bringing two or more subjects together. If you are not clear on this point then don't bring the subjects together. Only bring subjects together where there are **clear areas of subject conceptual overlap** so links for deep learning can be made.
- Only use CI in selected parts of the curriculum and **carefully assess its effectiveness**.
- **Plan for CI at the subject concept level once a topic has been chosen**. This ensures learning aims go beyond everyday, common-sense knowledge or key competencies to subject concepts and competencies.
- Use CI to **deepen learning that has already occurred** in a single subject setting.
- **Introduce subject concepts in a planned, sequential, and logical way** and revisit them in a spiral fashion. Critical thinking emerges when students knowingly use subject concepts to think with.
- Ensure that **sufficient time and subject expertise** are available when planning for CI.

Acknowledgement: Thanks to Dr. Alexis Siteine for the identification of subject concepts and content in the Migration in Aotearoa unit.

Endnotes

¹ McKinnon, D., Nolan, P., Openshaw, R., & Soler, J. (1991). New Zealand curriculum innovation in historical and political context: The Freyberg integrated studies project and parallel projects of the 1940s. *Journal of Curriculum Studies*, 23(2), 155–175.

² Barnes, J. (2015). *Cross-curricular learning 3–14*. London: Sage; Hammond, D. J. (2017). *An investigation into the impact of an integrated curriculum on learning in the primary school* (Doctoral thesis). Durham University. Retrieved from <http://etheses.dur.ac.uk/12025/>

³ Bernstein, B. (1971). *Class, codes and control: Studies towards a sociology of language* (Vol.1). London: Routledge, p.209.

⁴ McPhail, G. (2020). 21st Century Learning and the case for more knowledge about knowledge. *The New Zealand Journal of Educational Studies* <https://doi.org/10.1007/s40841-020-00172-2>

⁵ De Bruychere, P., Kirschner, P., & Hulshof, C. (2015). Urban myths about learning and education. Elsevier; Kirschner, P., Sweller, J. & Clark, R. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching, *Educational Psychologist*, 41(2), 75–86.

⁶ Bolstad, R. (2011). Taking a “future focus” in education—What does it mean? Wellington: NZCER.

⁷ Bolstad (2011, p. 16).

⁸ McPhail, G. (2019). Curriculum integration in flexible learning environments, challenges for teachers, and teacher education. In M. Peters (Ed.), *Encyclopaedia of Teacher Education*. Springer, Singapore. https://doi.org/10.1007/978-981-13-1179-6_369-1

⁹ Vars, G. (1991). Integrating curriculum in historical perspective. *Educational Leadership*, 49(2), 14–15.

¹⁰ Drake, S. (1998). *Creating integrated curriculum: Proven ways to increase student learning*. Thousand Oaks, CA: Corwin Press.

¹¹ Arrowsmith, S., & Wood, B. (2015). Curriculum integration in New Zealand secondary schools. *SET: Research Information for Teachers*, 1, 58–66.

¹² Geary, D., & Berch, D. (2016). Evolution and children’s cognitive and academic development. In D. C. Geary & D. B. Berch (Eds.), *Evolutionary perspectives on child development and education, evolutionary psychology* (pp. 217–249). Switzerland: Springer International Publishing.

¹³ Erickson, H. L., & Lanning, L. A. (2014). *Transitioning to concept-based curriculum and instruction: How to bring content and process together*. Thousand Oaks: Corwin Sage; Vygotsky, L. (1986). *Thought and language*. Cambridge, MA, The MIT Press. (original work published 1934).

PREPARED FOR THE EDUCATION HUB BY



Dr Graham McPhail

Dr Graham McPhail is a senior lecturer in the Faculty of Education and Social Work at the University of Auckland. He took up this position in 2015 after twenty years of work in the secondary education sector. His research is centred on the role of knowledge in the curriculum, in particular within C21 schooling and music education contexts. He was lead editor for New Zealand’s first volume on secondary school music education *Educational Change and the Secondary School Music Curriculum in Aotearoa New Zealand* published by Routledge in 2018. Graham has published widely, with over 50 outputs in a wide range of journals, books, and CDS both in New Zealand and internationally.