Institiúid Oideachais
MARINO
Institute of Education

An Associated College of
Trinity College Dublin, the University of Dublin

2018

Curriculum Integration

MARINO INSTITUTE OF EDUCATION
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How do we coherently express an intention of curriculum integration in a re-devised Primary School Curriculum?

In the consultation on curriculum structure and time conducted by the National Council for Curriculum and Assessment [NCCA] one of five main themes to emerge was that there was broad agreement for using a more integrated curriculum structure for infant classes [NCCA, 2018, 7]. More broadly, the benefits of thematic and integrated approaches were noted and respondents felt… "there was a natural progression from themes to curriculum areas to subjects [NCCA, 2018, 8]. The purpose of this paper is to examine how to coherently express an intention of curriculum integration in a re-devised Primary School Curriculum and in so doing identify the benefits and challenges of such an approach. Specifically the paper focuses on examining the following questions:

- What is an integrated curriculum?
- What does an integrated curriculum look like?
- Where can we find learning presented in an integrated way at the moment?
- What are the possible benefits of presenting curriculum in an integrated way?

What is an integrated curriculum?

Before any consideration of how curriculum integration can be expressed coherently it seems important if not essential to start by asking the question: What is curriculum integration?
The term "integrate" means to render something whole or at least to provide some sort of unity. This second sense is perhaps more appropriate here as there are different ways in which the diverse elements of curriculum can be given unity. For instance, a curriculum could be given unity around a set of outcomes, it could be given unity on the basis of pedagogical approach, it also be given unity in its approach to integration. Curriculum integration is therefore understood and presented by educators in a wide variety of ways and there are even more variations in practice [Hurley, 2001]. Integrated curriculum is also not a new phenomenon. For example, in the 1960s and influenced by the thinking of Dewey [1956], there was a movement of educators in the United States which promoted an integrated curriculum based on the pedagogical and even epistemological principles of constructivism which proposed that learners 'construct' their own knowledge and understanding and can be aided and motivated by teaching approaches that begin with the learners' prior learning.

One clear curriculum expression of this progressive movement was the "project" method, where children completed a project which was experience based, offered learner choice, promoted collaborative work with the understanding that the group took full responsibility for its learning. Later, elements of this method were incorporated into not only project-based unified curricula but also other ways of unifying and integrating curriculum through problem-based, challenge-based and even inquiry-based learning.

Despite there being many ways in which we can demonstrate unity or integration, there is ongoing demand for one general definition of integration. However, it would seem reasonable, in view of the demand that curriculum retains a constant openness to new possibilities and to change, that this tendency is avoided and that there is a continued debate on the advantages or otherwise of different approaches to integration which may be more applicable in different cultures, times and situations. Thus to begin to answer the question posed in the title of this section, it can be said that the expression of an integrated curriculum will have coherence and validity only when it comes about as a result of awareness of time and place and of debate, the kind that is happening at the moment in Ireland supported by the NCCA.

When attempting to define integrated curriculum it is necessary to look at related terms associated with it. There needs to be shared and agreed understanding of terms such as subject or discipline, topic or theme. So I highlight some of these that are then used in the rest of the paper. In distinguishing between a [school] subject and a discipline, I draw on the work of Deng's who defines a subject as "an area of learning within the school curriculum that constitutes an institutionally defined field of knowledge and practice for teaching and learning" He goes on to define a discipline "as a field or branch of learning affiliated with an academic department within a university, formulated for the advancement of research and scholarship and the professional training of researchers, academics, and specialists". He acknowledges that school subjects can be traditional academic subjects such as mathematics, history, and geography that could have direct affiliations with their parent academic disciplines.

Currently, and in the context of a culture that is focused on economic progress but also on the problems faced by post-industrial societies and the planet, integrated approaches to curriculum are often defined around the idea of the integration of knowledge disciplines. As

a result, we have the integrating ideas of multidisciplinarity, interdisciplinarity, intradisciplinarity and transdisciplinary together with ideas about the learner's prior knowledge, working from experience and generating enduring understanding. Some of these and other features of 'constructivist disciplinarity' forms of curriculum integration include the structuring of curriculum around thematic units, place-based learning and project-based learning.

Returning to the question of 'what is curriculum integration?' Curriculum integration is possible on the basis of epistemology, pedagogical approach and/or other over-arching principles. In general it can be said that curriculum integration, whatever its basis, expresses an attempt to structure the forms of human knowledge and understanding with consequent skills and competencies in order to bring about human flourishing in societies, economies and cultures. Practically, curriculum integration occurs when learners confront personally meaningful questions and engage in collaborative experiences that answer those questions [Beane, 1997]. Murdoch suggests that "..an integrated curriculum is more about the organization of learning experiences to ensure valid connection between disciplines" [Murdoch, 2015, p.43]. Taking up the idea of constructive learning and disciplinarily but in somewhat different terms, Rose and Woodhead define cross-curricular integration as "..a mode of curriculum organization, frequently enquiry-based, combining aspects of various subjects under a common theme' [1992, 21]. Pring [1973] distinguishes between interdisciplinary [the use of the methodologies and language of more than one discipline to pursue an inquiry] and integration [the unity between forms of knowledge around problems issues and concerns].

So, a strong argument can be made for basing curriculum integration around the two ideas proposed here, first the idea of bringing traditional knowledge disciplines together in the service of fundamental and important problems and questions and secondly the pedagogical idea of Deweyan constructivism where a learner's prior knowledge is incorporated into new understanding .

Where can we find learning presented in an integrated way at the moment?

Within the Irish context and particularly within the current revision of the Primary School Curriculum it is important to acknowledge that integration is a feature of the curriculum already. Indeed one of the five principles that was incorporated into the 1971 curriculum was based on the integrated nature of the curriculum. It was later subsumed into a wider range of learning principles that help to characterize more fully the learning process that the 1999 curriculum envisaged as seen below;

> "For the young child, the distinctions between subjects are not relevant: what is more important is that he or she experiences a coherent learning process that accommodates a variety of elements. It is important, therefore, to make connections between learning in different subjects. As they mature, integration gives children's learning a broader and richer perspective, emphasises the interconnectedness of knowledge and ideas and reinforces the learning process." [Government of Ireland, 1999 p.16]

Many of the Teacher Guidelines documents go on to give detailed examples or exemplars or what such integration may look like [see for example; one on clothes in the Science Teacher Guidelines [p.47]; one on The Great Famine in the History Teacher Guidelines [p.61]; one on Winter in the Music Teacher Guidelines [p.24].

More recently, within the principles of early learning and development identified in Aistear, The Early Childhood Curriculum Framework, holistic learning and development is emphasized. In particular it acknowledges that "Children learn many different things at the same time. What they learn is connected to where, how and with whom they learn" [NCCA, 2009, p.10]. So it is recognized as valuable but is this integration happening and if so what does it look like?

It may also be worthwhile to look and see what integration looks like in other jurisdictions. Take for example Northern Ireland where a review of the primary curriculum was commissioned in 2007 to address concerns that the curriculum was too prescribed and content heavy [Rose, 2009]. The outcome was to promote a strongly cross-curricular or thematic approach to teaching and learning where the curriculum is not structured in single subjects but in "areas of learning". It is perhaps too soon to say

whether such a change will be the "Holy Grail" that has been eagerly waited for or a "poisoned chalice" [Hayes, 2010].

There are other interesting examples of integrated curricula if we look further afield for example the Montgomery County Public School Elementary Schools Project [MCPS, 2010]; or the New Zealand curriculum which identifies coherence as one of the principles of the curriculum and describes this as a "curriculum [that] offers all students a broad education that makes links within and across learning areas, provides for coherent transitions, and opens up pathways to further learning"[http://nzcurriculum.tki.org.nz]. Another example can be found in the Primary Years Programme of the International Baccalaureate and which we will return to when considering transdisciplinarity.

What is the benefit of presenting curriculum in an integrated way?

Before taking a closer look at what integration looks like it is important to ask what are the benefits [or the possible benefits] of presenting curriculum in an integrated way. A more integrated approach to curriculum suggests that in order to engage children the curriculum needs to be set in the "real" world; a real world which is not separated into disciplines or subjects. A key benefit is that a more integrated approach would eliminate duplication found across subject areas and more importantly encourage meaningful connections. Research seems to suggest that more effective learning takes place when such connections are made [Jensen, 2005]. A more integrated approach also allows for greater teacher creativity and greater agency on the part of both teacher and learner. It allows teachers craft their teaching around the needs and interests of their students but also allows a student to explore and deepen their understanding. The development of a "community of learners" is facilitated and enhanced by such an approach [Meyer Meinbach, A., Rothlein L. and Fredericks A.] Also, at a time when the influence and potential of the Internet is just beginning to be realised, the explosion of information that it offers highlights the futility of trying to teach "everything". What is more important, and provided for within a well integrated curriculum, is the development of the ability to access information, collate it, critique it, and place it all within a context of questioning and understanding, thus constructing knowledge from pure information.

- **What does [can] curriculum integration look like?**

Taking the first integrating principle of disciplinarity, integration can be seen along a continuum moving from a disciplinary approach to more and more connections being made and greater degrees of integration. Moving along this continuum, the traditional subjects can hold their distinct characters, methods and perspectives but the "content and skills from each are correlated to [a] theme" Beane [1997, p.10]. This is the case when the integration is based on inter-, cross and transdisciplinarity. Fogarty [1995] provides examples of how themes can be used and connected in different ways as one moves through each level of curricular integration, allowing teachers to move from teaching single disciplines to multiple disciplines and thus provide children with richer learning experience. Below a description of the ten different ways in which themes can be brought to greater disciplinary integration with each example adopting a viewing-glass analogy:

Several authors have gone beyond a single definition of curriculum integration to a continuum of integration.

Level 1 of integration: Connecting themes within single disciplines:

a. Fragmented [Periscope]: where disciplines are presented as separate and distinct;

b. Connected [Opera Glasses]: where topics within a discipline are presented as connected [for example the concept of fractions is related to decimals, which can be related to money];

c. Nested [3D glasses]: where social, thinking and content skills are targeted within a subject area [for example a teacher might get children to design a board game to consolidate Mathematical content while at the same time focus on idea of turn taking and playing fairly];

Level 2 of integration: Connecting themes across several disciplines:

d. Sequenced [eye glasses]: where similar ideas are taught at the same time although subjects are kept separate [for example the children/teacher may read

the book *The Boy in the Striped Pyjamas* by John Boyne in English while studying World War 2 in History];

e. Shared [binoculars]: where two disciplines are presented together focusing on shared concepts, skills or attitudes [for example Mathematical data collection and analysis skills are used to understand the concept of weather in Geography] ;

f. Webbed [telescope]: where a theme is used connect to curriculum content across different subject areas [for example the theme of spring is webbed to different subject areas]

g. Threaded [magnifying glass]: where thinking skills, social skills and content are threaded throughout all disciplines [for example prediction is used to estimate in Mathematics, forecast in current events, anticipate events in a story, and hypothesize in a science investigation]

h. Integrated [Kaleidoscope]: where topics are arranged around overlapping concepts and emergent patterns [for example a whole language strategy where reading, writing and oral skills spring from a holistic literature based programme]

Level 3 of integration: Connecting themes within the learner:

i. Immersed [Microscope]: where disciplines become part of the learner's lens of experience; the learner filters all content through this lens of interest and experience [we will consider an example of this in the next section]

j. Networked [Prism]: where the curriculum is viewed through a prism, creating multiple perspectives and directions of focus. Learners direct the integration process issue.

[adapted from Fogarty, R., 1991/1995]

I believe we can connect Fogarty's continuum to the idea of integrating curriculum on the basis of disciplinarily by pointing to the way in which he moves from the simple connection

of themes within a single discrete subject at level 1 to a greater integration at level 2 in the movement from multidisciplinarity to interdisciplinarity, culminating in transdisciplinary integration in level 3. A little more can be said about each of these forms of integration.

Multidisciplinary: As its name suggests, this approach draws on a comprehension of many disciplines yet stays within disciplines boundaries. In this approach a central theme is identified [for example pattern] and it is then used to organise and correlate the subjects being integrated. In the example of 'pattern', pattern can be seen as a shared disciplinary concept where children recognize that as a concept pattern can be seen in number in Mathematics, in musical notation and in critiquing the results of a science experiment. The subjects remain clear as is the assessment for each subject area.

Interdisciplinary: In this approach the subjects are still relatively clear in their differences and unique contributions but the organising centre is the interdisciplinary key concepts, skills and actions. Emphasise is on big ideas such as sustainability and systems or on big interdisciplinary skills such as communication and problem solving. Boundaries may be blurred where it may not be immediately obvious which subject is being taught at a particular moment. Ramadier's defines interdisciplinarity and how it contrasts to multidisciplinarity in the following way:

> Interdisciplinarity differs from muiltidisciplinarity in that it constructs a common model for the disciplines involved, based on a process of dialogue between disciplines. [p.433]

Assessment may be disciplinary but at the same time focus is also given to and a grade may be awarded for the interdisciplinary aspect that has been demonstrated. Children demonstrate understanding of a particular topic when they can bring together concepts or forms of communication from two or more subjects or disciplines to explain a phenomenon, solve a problem, create a product or raise new questions that would have been unlikely through the lens of a single subject.

Transdisciplinary: This approach goes beyond the disciplines and as a term is relatively new in the field of education. The organizing centre is the real world context and learners are ex-

pected to explore a problem or an issue. Here the disciplines are valued but transdisciplinarity takes precedence. The disciplines are used to support the understanding of and create a solution to the issue identified. It allows for an emergence of new perspectives while new knowledge gained can transcend existing disciplines. It doing this, it encourages subject boundaries to intersect so that information can be reassembled and then recombined. It encourages learners to generate knowledge that not only addresses societal problem but contributes to an understanding of the actual world [Lawerence & Després, 2004]

Richards [2015], in describing the relationships among disciplines and transdisciplinarity states in personal correspondence with Susan Drake..

> ..transdisciplinarity is much more than going beyond discipline boundaries. Transdisciplinarity is a way of thinking about how to acquire knowledge needed to find answers to questions. Moreover, it does not approach a problem through the lens of different disciplines, or use one discipline to inform another. Rather, it releases students and teachers from the boundary limitations of specific subject areas. Students and their teachers are free to rely on relevant disciplines that genuinely support and enrich their inquiries. [Drake et al, 2015, 23]

An example of this model of curriculum is seen in the International Baccalaureate Primary Years Programme [IB PYP] which is inquiry-based and transdsciplinary 'to convey that learning has relevance across subject areas and more importantly the learning transcends the confines of subject areas to connect us to what is real in the world' [IBO, 2012, 1]. The IB argues that transdisciplinarity education is built around a core that is surrounded by selected knowledge and skills of different subject areas. In relation to assessment in a transdisciplinary approach, the focus is on a big idea and a number of subjects can be used to demonstrate an understanding of this idea and the application of a number of transdisciplinary skills. Interesting to note that the IB requires children in their final year of primary school to carry out an extended, in-depth, collaborative project called the PYP exhibition. This involves them working collaboratively for an extended period of time [typically two to three months] to conduct an in-depth inquiry into real life issues. At the end of which, they share their findings with the whole school community.

All three forms of integration outlined above aim to join disciplines for a more holistic style of learning and promote deeper understanding. To explain the differences and the relationship between the terms, Choi and Pak [2006] state "multidisciplinarity is like a salad bowl, interdisciplinary is like a melting pot, and transdisciplinarity is like a cake, in which the ingredients are no longer distinguishable, and the final product is of a different kind from the initial ingredients" [Choi and Pak, 2006, p.360].

Interesting to note that some research [Rennie et al.,2012] has shown that although teachers, regardless of the type of integration being adopted referred to it using one term only – integrated. Perhaps it is also important to acknowledge at this point that each approach to integration outlined above may be valid and useful, and that it depends on the group of children and the content and concepts being addressed as to which may be the most appropriate at any particular time.

- **What role can conceptual understanding play in curriculum development?**

The second principle of integration that is proposed here concerns the unifying way in which knowledge is constructed in the learner. This principle highlights also the importance of incorporating a greater focus on conceptual learning in curriculum design. Structuring knowledge within a conceptual framework allows learners to develop their own way of viewing the world.

> In an information-based society, there is an endless amount of accessible information. Pupils are faced with the enormous task of making meaning out of a sea of seemingly unrelated facts. They need mechanisms for categorizing and organizing information, connecting ideas and identifying or constructing patterns. [Stoll, Fink and Earl, 2003 p.58]

Concepts allow us to:

- identify, label, classify and relate phenomena
- construct systems of ideas that we can apply to new situations
- ask questions and solve problems

They provide different perspectives on the world and the kinds of questions and solutions we see in any situation depend on the system of concepts we use.

Recent curriculum reform has seen a move away from a focus on content and even skill based to conceptual understanding. The distinguishing element of a concept is their ability to reach out to many disciplines and cross subject boundaries. A concept is a general idea, understanding or thought embodying a set of things that have one or more properties in common. Generally, a concept is expressed in a single word, such as *democracy* or *needs* and the abstractness of concepts can be seen along a continuum [for example from rules to freedom to democracy].

The term conceptual understanding is one that is synonymous with other terms used in the international literature for example, big ideas, generalizations, and principles, enduring understandings, essential understandings and key understandings [Milligan & Wood, 2009]. Milligan and Wood assert that conceptual understandings must be seen as contestable, subject to context, and change through time. They are 'frames of understanding' and are never neutral or objective but they are necessary for understanding. Teachers need to be aware of the particular stance, which underpins conceptual understandings, for example 'Water is a scarce resource'. Conceptual understandings are what learners know and understand about a concept, that is: the generalizations learners can develop about the nature and properties of that concept [for example 'We make rules to have order and fairness' or 'Respecting each other is our class rule']. The first conceptual understanding emphasizes that rules are a collective endeavour and not arbitrary or authoritarian; the second one emphasizes the underlying reason why we have rules and allows for exploration of ways we show respect in our daily living together (listening, taking turns, sharing etc.).

- **Some considerations and questions when introducing a more integrated approach to curriculum**

At this point, we will consider some factors and possible challenges in introducing an integrated approach to curriculum and I present them in the form of questions:

  - Is it possible to have a common definition and shared understanding of an integrated curriculum?

- Can an integrated approach to curriculum be sufficiently rigorous ensuring that children have regular opportunities to gain fundamental skills and concepts in the different subject areas?
- Can curriculum be negotiated where children have real choice in their own learning as suggested by a more integrated view of curriculum?
- Will it be possible to have greater flexibility in scheduling in schools?
- Will CPD be available to introduce such an approach to a more integrated view of curriculum?

Conclusion:

At a time when what is taught and how is it taught in primary schools is changing and is under sharp scrutiny, focusing on a more integrated model of curriculum is timely. However, simply calling a curriculum "integrated" does not make it so. Whichever model[s] of integrated curriculum is chosen it should reflect a coherent philosophical and pedagogical position on "how" as well as the "what" is to be learned. [Ladson-Billings, 1995] The ways to make connections across subject areas are limitless which is both frightening and exciting for teachers. One of the challenges of an integrated approach to curriculum planning is that it cannot be standardised or replicated. On the other hand, one of the greatest appeals of integration is the lack of a standardised definition. An integrated approach requires teachers to have high levels of skill in terms of curriculum subject knowledge and teaching methods [Burgess, 2004] as well as 'curriculum making'. Similarly teachers adopting an integrated view of curriculum need a sophisticated understanding of learning and a wide 'pedagogical repertoire'. This repertoire may include open ended, creative and flexible approaches, using a range of resources. One such approach could be Inquiry Based Learning [IBL]. As Kath Murdoch suggests inquiry can help children think across disciplines [Murdoch,2015] . While each discipline may have a particular approach to inquiry within it there are also some generic ways of inquiring that are shared across disciplines. When the integration of these areas is authentic and deep, powerful learning takes place.

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