INTEGRATED CURRICULUM FOR THE TWENTY-FIRST CENTURY

Susan M. Drake and Joanne L. Reid

We are two Canadian educators with decades of experience in public education. Susan has worked in schools on a variety of integrated projects and has researched curriculum as a teacher educator. Joanne became an advocate of interdisciplinary curriculum (IC) when she was teaching many different subjects at the same time and saw the connections among them. We write this chapter from an Ontario, Canada perspective. But we also present evidence that adoption of IC is a global phenomenon that connects to an international shift of emphasis from achievement accountability measures to a more fulsome view of education and the whole child.

In this chapter, we argue that the time is right for an integrated curriculum (IC) in education. There are many reasons why IC makes sense. One is greater efficiency in curriculum coverage and assessment through reduced duplication. Another is increased relevance for students because IC is often situated in complex, real-world contexts that reflect an organic, interdependent view of knowledge. But the twenty-first century context makes an integrated approach even more appropriate, perhaps even urgently needed.

We can see that IC fits into a holistic perspective (Miller, 2007) when we deconstruct curriculum into component parts—content (Know), skills (Do), and values, attitudes, and ways of being in the world (Be)—while always understanding them as an interconnected holistic system. Although knowledge and skills remain important, they are balanced by the increasing recognition that social, emotional, and spiritual well-being are equally important. Today, there is a renewed appreciation for a holistic approach that addresses the whole child—the head (Know), hands (Do), and heart (Be) (see, for example, The Association for Supervision and Curriculum Development Whole Child Initiative). We will explore the relationship of integration and a holistic approach later in this chapter.

What is Integrated Curriculum (IC)?

For theorists, finding a common definition of IC has been frustrating. Cross-disciplinary, intradisciplinary, fusion, multidisciplinary, interdisciplinary, transdisciplinary, and integrated are all used to describe integrated approaches that vary from one context to another (we use the terms interdisciplinary and integrated interchangeably). Such contexts may also include project-based, problem-based, place-based, and passion-based learning.
The Integrated Curriculum for the 21st Century (IC) has a long history and is connected to the progressive movement that began in the late nineteenth century in the United States. Its tenets, including subject integration, are still in existence. In the 1930s, IC was recommended to improve schools and make learning more relevant (Aikin, 1942). This movement was grounded in constructivism and the ideas of John Dewey (1916/1966, 1938/1969): democracy, learn by doing, experiential learning, and systematic inquiry. Dewey’s ideas continue to influence how and why we integrate curriculum today.

A continuum of increasing degrees of integration (Figure 13.1) is a way to conceptualize integration (see, for example, Daly, Brown, & McGowan, 2012; Fogarty & Pete, 2009; Jacobs, 1989). In a multidisciplinary model, each discipline and its assessment is distinct, but the disciplinary learning activities revolve around a common theme, issue or project (Brough, 2012; Dowden, 2007). In another form of multi-disciplinary curriculum, the activities are developed separately but the culminating activity and its assessment bring all the subjects together. As an example, Susan was involved in a multidisciplinary project involving the arts and language arts. One cohort of Grade 9 students wrote a script, created the sets, and composed the music for a play. These activities were all done in separate classrooms with three different teachers, but subjects were integrated into the culminating activity—the actual drama performance—which was assessed.

In an interdisciplinary model, subject boundaries are present but blurred by a shared focus. In Joanne’s history class, students explored the Know (causes and effects of various wars), the Do (inquiry and research), and the Be (global citizenship). Students read and interpreted poetry and stories, analyzed primary source documents, and explored art related to war. In the end, they put on a multimedia presentation at the school’s Remembrance Day assembly. The common theme for all these activities was “war and peace”. Students reflected on ways to contribute to peace in their homes and community, and in the world (Be).

Transdisciplinarity is the most integrated model and the most transformative. Disciplines, although present if looked for, are seamlessly blended and their particularities are not central to the planning. The Alpha school, a school within a school in Shelburne, Vermont, has operated since 1972. It offers a good example of what a transdisciplinary model can be (Drake & Burns, 2004; Kuntz, 2005). Multi-aged student teams design their own transdisciplinary curriculum using state standards. Students generate three or four major questions a year based on personal or social/world issues. For example, in 2016–2017, one of the inquiry questions was “How does perspective influence the way individuals and groups of people deal with conflict?” Then the students decide on the theme (e.g., Conflict and Change), the standards to meet, methods of instruction, and assessment.
IC and the Holistic Approach

For Miller (2007), the holistic curriculum is connected to the earth, the inner self, body–mind, intuition, and inquiry. He sees curriculum as a continuum of increasing connections. He outlines three different levels to curriculum that roughly parallel the continuum of interdisciplinarity we have presented in Figure 13.1. In the transmission level there are few connections. The teacher is the expert, the student is a passive learner who learns in isolation (traditional method). The transactional level features interaction between teacher and student. Rational problem solving or inquiry is at the heart of this model. The next level is transdisciplinary or holistic, where the student moves beyond the cognitive to connect to others, and to feelings, intuition, and ways of being. In this orientation, the student’s awareness of connections makes learning personally and socially meaningful.

We want to let students see how subjects relate to one another and to the students themselves... We care about the students’ being. We realize that the final contribution that they make to this planet will be from the deepest part of their being, not just from the skills we teach them. (Miller, 2007, pp. 198–199)

An integrated curriculum can find the most comfortable home at the transdisciplinary level.

IC supports an Indigenous way of teaching and learning because of its natural fit with a holistic view of the world. Storytelling and a culturally responsive curriculum are particularly important aspects (Archibald, 2008; Kanu, 2011). For example, the Medicine Wheel is one way to represent the fundamental philosophical principles of this holistic worldview. (We note that non-Indigenous use of the Medicine Wheel without deep grounded knowledge is inappropriate.) While there is similarity among First Nations’ use of the Medicine Wheel, there are some differences in what the four directions can represent. For some, the four directions in the Medicine Wheel represent the self as comprising four interconnected components: spiritual, physical, emotional–mental, and intellectual. The circular shape of the Medicine Wheel represents interconnectedness, equality, balance, continuity, and inclusiveness: a completeness that can be seen in the cycles of life, in the changing seasons, in the migrations of animals, and in the movement of the sun and stars. As Cajete (1996) wrote, “the active focus on maintaining and/or striving for a harmony between one’s self and one’s natural environment was the most essential principle for applying knowledge” (p. 138). An integrated curriculum also complements the values common to many Indigenous societies such as the Ojibwe Good Life Teachings (also known as the Seven Grandfather/Grandmother Teachings): respect, love, bravery, wisdom, humility, honesty, and truth (Battiste, 2002; Toulouse, 2008).

In response to the Truth and Reconciliation Commission of Canada’s Final Report, which calls for a revision of the Canadian educational curriculum to include respectful and accurate representations of Indigenous people and the history of assimilative government policies and laws targeted at Indigenous communities, there is a movement across Canada to revise the K-12 curriculum (See Calls to Action # 62, 63 and 64, Truth and Reconciliation Commission of Canada Calls to Action, 2012, pp. 7–8). Canadian provinces are addressing the lack of recognition of these cultures by integrating Indigenous knowledge and infusing Indigenous perspectives into the curriculum. Indigenous education strategies are suggested in Aboriginal Perspectives: The Teacher’s Toolkit (Ontario Ministry of Education, 2011). This is a collection of specific instructional strategies that connect to existing curriculum and insure representation of Indigenous cultures and pedagogical methods.

Another good example of IC and a holistic curriculum is the the work from the Reggio Emilia community in Italy. The philosophy of the Hundred Languages of Children embodies the multiple ways that children interpret the world and represent their ideas and theories (Thornton & Brunton, 2015). Originally, the Reggio Emilia approach was used in early childhood education but today it is implemented around the world and is expanding into higher grades. A Reggio-inspired (as it is
often referred to) curriculum focuses on exploration and discovery. Using a project approach framework (Moran, 1998), student knowledge is expressed through creating with local or found materials, using the arts, collaborating with others, and reflecting on their learning. Play is the basis of learning: painting, sculpting, and drama are common activities. Consideration of child development includes physical–motor, language, cognitive, social–personal and emotional, sensorial, and creative and aesthetic appreciation development (Mohanty, 2014).

**Designing an Integrated Curriculum**

In this section, we outline the components we have found to be important to designing an integrated curriculum (Drake & Reid, 2010; Drake, Reid, & Kolohon, 2014). We present this process in a linear fashion, but the actual experience is iterative; the designer often goes back and forth among components.

We favour a backwards design approach (Wiggins & McTighe, 2005) because it helps create a curriculum that is accountable to curriculum mandates. In the backwards design approach, teachers plan by first establishing the end goal connecting to the curriculum standards/outcomes of a unit or course. Second, they design a summative task that will assess students’ demonstrated achievement of those standards. Last, they plan instructional activities and formative assessments that scaffold to the summative task. This process ensures that all learning activities and assessments are aligned and cohesive. We have expanded the Wiggins and McTighe model to make it more holistic (see Figure 13.2). We have written this section with the educator in mind, but it is important to remember that students can and should play an active role as co-designers in their own curriculum.

**Know your students.** Who are your students? What experiences are they bringing to a classroom? What is relevant to them? What are their questions? What strategies/methods will be needed to meet their individual interests and needs?

**Know your curriculum.** Given that most jurisdictions have curriculum mandates, curriculum designers need to know them in order to align the curriculum to them. It is easier to integrate across subjects if you look at the standards from a big picture perspective rather than looking at specific standards. We have found that three or four broad-based standards are enough to begin the process. Use students’ questions and interests as a lens to look at the standards and next steps.

**Create a concept map.** After reviewing the standards for a selected grade level, it is a good idea to sketch out a concept map or mind map. This is brainstorming only, meant to give you an idea of where authentic, natural connections can be made. Figure 13.3 is an example for a Grade 5 unit. The teacher is looking for ways to integrate disciplinary knowledge, interdisciplinary skills, and the Be. The question marks show that the concept map is a work in progress.

![Figure 13.2 Designing a holistic integrated curriculum](Figure 13.2)
The textile industry & me? Or should it be any industry? Maybe join the iEARN “Don’t waste-Create” project?

Sew what?

The textile industry & me? Or should it be any industry? Maybe join the iEARN “Don’t waste-Create” project?

Arts
- design thinking
- create a 3-D product by repurposing cotton textiles

Social studies
- research textile industry
- map producing & consuming nations
- analyse economic & environmental effects of textile industry

Math
- solve 3-D measurement problems
- analyze statistics
- graphing (sales/profits?)

Communication
- create media product to share research with a target audience
- present new product (maker fair?)

Technology
- create digital archive
- take photographs
- use sewing machine/stapler?

SEL
- empathy
- goal-setting
- visualization
- problem solving

Construct the Know-Do-Be (KDB) organizer. The overarching KDB umbrella shown in Figure 13.4 is created when looking at the curricula through the widest lens to discover what is most important for students to know, do, and be across the disciplines. The Know involves content and concepts that are cross-disciplinary when defined as Big Ideas or Enduring Understandings. Examples of Big Ideas are sustainability, conflict, patterns, and systems. These concepts apply to more than one subject area and act as a connecting bridge. An Enduring Understanding is also universal and interdisciplinary. An example is “Individual consumer choices affect people everywhere, and the global environment”.

The Do refers to competencies that are described above. The Asia Society (2013) defines competencies in three broad categories:

- Cognitive: Academic mastery, critical thinking, creativity.
- Interpersonal Competencies: Communication and collaboration, leadership, global awareness.
- Intrapersonal Competencies: Growth mindset, learning how to learn, intrinsic motivation, grit.

The Be refers to attributes that contribute to inner personal development (connection to inner self, well-being, mental health, socio-emotional learning, metacognition, self-actualization, and ethical behaviour) and learning how to be in community (collaboration, inclusiveness, respect for our planet).
The Know, Do, and Be are interconnected. The twenty-first century competencies are a Do, but often involve the Know and Be as well. To be able to do inquiry, the student must know the procedural steps of inquiry. Once inquiry has become a way of thinking/acting, the student has become an inquirer.

**Determine the essential question(s).** A powerful question can insure inquiry and can shape the unit planning (Wiggins & McTighe, 2013). These questions are sometimes called driving questions. They are usually interdisciplinary in nature, and are generated from the Know in the KDB Umbrella. Here are two examples: What is love? How does art affect culture and culture affect art?

**Create a rich performance assessment task (RPAT).** You will need to design a performance task that allows students to demonstrate that they have acquired the knowledge, skills, and personal attributes of your designed curriculum. The RPAT is a summative assessment that is extremely important to creating a rich and coherent integrated unit. Designing the RPAT is done after you have decided the KDB and before you determine daily activities. Including students as designers of the RPAT is an excellent opportunity for them to exercise voice and choice. Certainly, flexibility and choice are important ingredients of any RPAT.

This is the stage where the RPAT’s assessment tool(s), such as a rubric, should be designed and given to the students so that expectations are transparent. An example of the RPAT could be outlined like this through creating a maker faire.

You will choose a common object (e.g., blue jeans, chocolate bar). You will research and evaluate the social, environmental, and economic effects of the process to manufacture that object. You will keep an ongoing journal that records your personal thoughts and actions in response to

---

**Figure 13.4** The KDB umbrella for a unit
your research. You will create a new product using design thinking to repurpose a discarded or no longer useful object. Throughout the process you will digitally archive how you made your new product and why. You will participate in a Maker Faire (perhaps a charity fundraising?) where the community is invited. At the faire, you will do two things:

- Share your research through a communication/media product (brochure, public service video, poster) to be displayed at the Maker Faire.
- Present your repurposed product. Be prepared to answer questions on the design thinking procedure you used, and how your product fits into an interdependent world where there is greater equality and respect for the environment.

**Determine the daily instructional activities/ embedded assessments.** From the holistic perspective, it is important that curriculum, instructional strategies, and assessment are seamlessly interwoven. This is done last so that all instruction will align with both the KDB on the umbrella and the requirements of the RPAT. Assessment of daily activities is largely formative, with the teacher and/or peers giving constructive feedback, and also with student self-reflection. For example, students could annotate a template that outlines the steps of design thinking by adding notes about their own actions. Thus, the teacher and/or student can see how well the student understands the design thinking process while it is under way.

**Factors that Facilitate and Challenge Implementation**

We hope the steps outlined above will support your move towards implementation of IC. Those who have implemented IC say they would never go back to a traditional subject-based curriculum despite the big investment of time and energy (Clark, 2011). Their experiences light the way for your own positive implementation (Adler & Flihan, 1997; Applebee, Adler, & Flihan, 2007; Fenwick, Minty, & Priestley, 2013; Virtue, Wilson, & Ingram, 2009).

While not all IC programs involve teaching partnerships, diversity of content expertise and perspective can enrich the experience. However, team teaching requires interpersonal skills, and a willingness to collaborate, compromise, take risks, and learn. Teacher attributes are important. Teachers need to be deeply committed to student learning in an interdisciplinary context. Their passion needs to override the additional demands of time for meeting with others. Leadership and administrative support are needed to provide professional development, to fund time and resources, to schedule appropriately, and to maintain staff continuity.

Despite our enthusiasm for IC, we are not naive. There are challenges to implementing IC. According to the literature, these challenges include scheduling, protectiveness of disciplinary terrain, interpersonal conflict with collaborators, lack of confidence when teaching outside one’s comfort zone, among other obstacles (Brand & Triplett, 2012; Hargreaves & Moore, 2000; James, Lamb, Householder, & Bailey, 2000; Lam, Alviar-Martin, Adler, & Sim, 2013; Venville, Sheffield, Rennie, & Wallace, 2008; Weinberg & Sample McMeeking, 2017). However, the effort is worthwhile (Fenwick et al., 2013; Russell & Burton, 2000), especially in the twenty-first century.

**IC and the Twenty-first Century Context**

The traditional model of education is out of step with the twenty-first century context (Brooks & Holmes, 2014; Fullan, 2013; Huber & Hutchings, 2004). The longer students remain in school, the more engagement declines, according to American, Australian, and Canadian studies (Gallup, 2014; Jasperson, 2014; Willms, Friesen, & Milton, 2009). Students find IC more appealing than the traditional model that is based on isolated subjects (Hinde, 2005; McNaughton, 2014; Russell & Burton, 2000; Venville et al., 2008). Research shows that student engagement links to academic
achievement and a host of factors related to healthy youth development (Finn, 1991; Fredericks, Blumenfeld, & Paris, 2004; Lee, 2014; Li & Lerner, 2011; Li et al., 2014). Stronger motivation, better attendance, and fewer dropouts are some of the positive factors associated with IC (McNaughton, 2014; Pushpanadham, 2013; Sill, 2001; Smithrín & Utpitis, 2005; Vega, 2012). To increase student engagement is one reason, among many, why educators should consider an integrated approach. As well, integrated curriculum is engaging for teachers, especially those inclined to “child-centered”, “problem-centered”, constructivist, and holistic views of learning (Drake et al., 2014; Lieberman & Hoody, 1998). Academically, students in interdisciplinary programs do as well as, or better than, their counterparts in traditional classrooms (see, for example, Aikin, 1942; Drake, Savage, Reid, Bernard, & Beres, 2015; Vars & Beane, 2001).

The twenty-first century student is likely comfortable with technology, having had access to it from a young age. Ubiquitous technology can present both positive and negative opportunities. On the one hand, students can be distracted by constant and superficial interruptions, and fall victim to unkind (e.g., bullying) and unreliable uses (e.g., fake news). On the other hand, researching with the internet can break down disciplinary and cultural/geographic boundaries. Students can see for themselves that knowledge does not have disciplinary boundaries.

The twenty-first century classroom is connected to the world; students can share their work and connect with resources including experts anywhere. With global outreach comes an awareness of, and responsibility for, global issues. Students discover a sense of social justice and how to be local, national, and global citizens. This goes far beyond disciplinary thinking, and taps into the democratic philosophy that can ground IC (Beane, 1997; Dewey, 1916/1966). iEARN$^2$ is a non-profit organization that connects teachers and students with global counterparts for work in disciplinary and integrated projects. iEARN is an impressive organization involving 140 countries, 30 languages, 50,000 educators and two million youths. In the “One day in the life” project (iEARN, n.d.), students from 66 countries have so far recorded and shared videos of their everyday activities. Another project tracks garbage around the world. Students become activists in sharing ideas for reduction, reuse, and recycling.

Although literacy and numeracy are still at the core of education, and traditional subjects persist, new literacies are claiming space in the twenty-first century learning landscape (Lankshear & Knobel, 2011; Rowsell, 2013). Curriculum documents in Ontario and elsewhere call for technological, critical, financial, media, spatial, visual, scientific, and movement literacies. These literacies are interdisciplinary. For example, environmental literacy is infused into every subject (Ontario Ministry of Education, 2017a,b).

Significantly different countries have revised their policies to include such IC approaches (Drake & Savage, 2016). South Korea and Quebec, Canada favour an integrated approach and Finland has shifted from subject-based to phenomenon-based education. These policy shifts are a response to twenty-first century life. Today, we inhabit a world of “wicked problems” (Camillus, 2008, p. 1), problems so global and complex that they are rarely solvable within a single discipline. Some wicked problems of our times are environmental destruction, widespread poverty, and the migration of people. Tackling these wicked problems requires diverse perspectives and the interdisciplinary skills that educational experts are calling for (Lederman, 2008). These skills are referred to variously as the twenty-first century skills/competencies/capacities. Some examples are multi-modal communication, inquiry and research, creative and critical thinking, collaboration, global awareness and citizenship, and learning how to learn (Ontario Ministry of Education, 2016).

As well, a twenty-first century vision of education explicitly articulates the values and personal character traits that education should foster, such as empathy, character, citizenship, respect, responsibility, resilience, social awareness, and relationship management. Since these competencies are applicable in many subjects, and are more like life skills, it seems efficient to teach and assess them in a holistic, interdisciplinary curriculum (Rennie, Venville, & Wallace, 2012). Singapore (for example, see Singteach, 2012) is focusing on values as well as knowledge and skills in a student-centered,
values-driven curriculum; character comes first and this focus will help shape students into holistic individuals who will contribute to society.

As a holistic educator, you will want to keep the Be at the forefront. How can this be done, given the sometimes excessive emphasis on test scores of content knowledge? Consider the International Baccalaureate (IB) program with over a million students. The IB curriculum is integrated, particularly up to Grade 5. An umbrella over its entire curriculum is the Learner Profile (International Baccalaureate Learner Profile) which describes what students are expected to be: knowledgeable, thinkers, inquirers, principled, open-minded, caring, balanced, risk-takers, communicators, and reflective.

## Considering the Future

Now is the right time for IC. It will require a shift in thinking about students and their world, and about teacher identity and role. Perhaps, in the twenty-first century context, we should reconsider the way we organize curriculum content. Rather than by subjects, we could organize curriculum according to themes or big questions/wicked problems. We could create teaching teams in which teacher identity is not determined by subject or even by grade, but rather by theme, problem, or topic. Personal goal setting and formative assessment (assessment for learning) would be organizing principles to facilitate self-regulation or self-directed learning and intrinsic motivation. The twenty-first century competencies would be explicitly taught and consistently assessed as well as content. There would be a focus on a deep understanding of concepts. But most importantly, the Be would be highlighted throughout the day and recognized as central to the education of the whole human being.

## Notes

1. See The Association for Supervision & Culture’s (ASCD) website for further information about the Whole Child Approach (www.ascd.org).
2. See the iEARN website for further information on the One Day in a Life Project (https://iearn.org/cc/space-2/group-6).

## References


Susan M. Drake and Joanne L. Reid


