Enacting Australian Curriculum
Making connections for quality learning

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Introduction

The purpose of this paper is to explore what is referred to here as 'purposefully connected curriculum' — a possible approach to complement a 'single curriculum' planning approach within whole-school planning to enact the Australian Curriculum. Purposefully connected curriculum involves planning for teaching and learning that draws on two or three subjects within a learning area, or two or three learning areas or subjects. The paper explores possibilities, raises questions and will stimulate professional conversations and actions in relation to how schools can best support learning and achievement for the diverse range of learners in Queensland classrooms. It is hoped that teachers and other curriculum leaders might consider purposefully connected curriculum as a planning option alongside the single curriculum approach (planning a teaching/learning unit which draws on one learning area or subject). Throughout this paper the term, 'curricular area', is used to describe either a learning area or a subject — unless the latter terms are specifically required.

It is feasible to assume that the extent to which they use a connected curriculum approach within their overall planning might be a consideration for schools. Further, while exploring the Australian Curriculum policy context, quality planning and relevant research, this paper also explores practical ideas that might guide the creation of connected curriculum within the context of school-based whole-school, year-level and unit planning.

The key audiences for this paper are generalist teachers and curriculum leaders, especially those working in the primary years of schooling, as they are involved in planning or teaching a considerable range of learning areas and subjects. The ideas and issues explored in this paper are relevant across the span from the Preparatory Year (known as Foundation in the Australian Curriculum) to Year 10.

Two conditions are essential for purposefully connected curriculum. First, a clear conceptual link/s is needed among the curricular area content descriptions connected in planning for teaching and learning. Second, the integrity of the curricular areas must be maintained: the key purpose of the curricular area must not be 'watered down' or lost as teaching and learning draws on more than one curricular area. To ensure this, schools need to gather assessment data that indicates what students know and can do in specific curricular areas.

It is proposed here that purposefully connected curriculum is a possible approach within high quality curriculum design. Such design takes as its platform the Australian Curriculum, along with the policies and priorities of the particular state/territory and of the relevant sector. Noting the place of state/territory and sector policies or priorities does not suggest modifications to the Australian Curriculum, but rather attention, for example, to specific areas that might be identified through data as deserving emphasis in a particular state, territory or sector. Additionally, states/territories or sectors might offer particular scaffolding for curriculum design, enactment and review, such as the provision of design templates or mechanisms for aligning assessment with curriculum.

Purposefully connected curriculum is explored within the context of a set of 'Principles for effective planning' (QSA, 2011a). These principles, 'validated by teachers and curriculum leaders from the three [Queensland] schooling sectors during the P–10 exemplar project for English, Mathematics and Science [from] June to December 2010,' (p. 3), provide a basis for ensuring that the purposefully connected curriculum proposed here is in line with expectations of the Queensland schooling community for quality planning. These principles relate to:

1. high expectations for all students
2. alignment of teaching and learning, and assessment and reporting
3. standards- and school-based assessment for learning
4. balance of informed prescription and teacher professional judgment.

Within this broad context of principles for effective planning, a more specific set of design principles is proposed to guide school planning as to whether to incorporate purposefully connected curriculum into planning and, if so, the extent to which it is used alongside a single curriculum approach. Purposefully connected curriculum is used when it:

1. maintains the integrity of the curricular area/s connected in a teaching/learning unit
2. aligns teaching and learning across two or three curricular areas with assessment tasks, and enables reporting along curricular area lines
3. supports sound educational philosophy, such as teaching and learning for deep knowledge and understandings, and when it builds connectedness to students' lives and the world through engaging and meaningful learning contexts
4. provides practical solutions to programing the range of learning areas and subjects that comprise the Australian Curriculum.

Figure 1, below, summarises the key points of the introduction and shows the way in which the specific design principles used to formulate the purposefully connected curriculum outlined in this paper align with the principles for effective planning QSA (2011a). It also provides further relevant details in relation to the QSA principles.

Figure 1: Purposefully connected curriculum design overview

Queensland teachers planning within the context of the Australian Curriculum
with its goal of supporting young Australians to become
successful learners, confident and creative individuals, and active and informed citizens
through the provision of the
student learning entitlement
regarding the curriculum context from learning areas, general capabilities and cross-curriculum priorities

with attention to any
state/territory or sector priorities and policies

planning curriculum at the school level
through:
whole-school, year-level and unit planning
incorporating a single curriculum approach and
a purposefully connected curriculum approach, where a clear purpose exists
in line with principles related to:

QSA (2011a) Principles for effective planning:		Specific design principles related to purposefully connected curriculum:
1. high expectations for all students (extracts from the QSA *Equity Statement* (2006) included in italics below) *— identifying and minimising structural barriers to access and participation* *— acknowledging the diversity of students and each individual's life circumstances, and the need for particular strategies which can enhance engagement and equitable outcomes among all students* *— acknowledging the relationship between the valued knowledge and the participation of students in society* (quoted in 2011a, p. 3)	⇔	1. sound educational philosophy such as: — teaching and learning for deep knowledge and understandings — building connectedness to students' lives and the world through engaging and meaningful learning contexts (applicable also to Principle for effective planning #4)
2. alignment of teaching and learning, and assessment and reporting	⇔	2. alignment of teaching and learning across two or three curricular areas with assessment tasks, as well as practice that enables reporting of student achievement along curricular area lines
3. standards- and school-based assessment for learning	⇔	3. maintaining the integrity of each curricular area connected in teaching/learning unit
4. balance of informed prescription and teacher professional judgment.	⇔	4. practical solutions to the programming of the range of curricular areas that comprise the Australian Curriculum.

Given that purposefully connected curriculum must serve the requirements of the national curriculum, a snapshot of the Australian Curriculum is provided next. Attention is given to aspects of the Australian Curriculum that are especially relevant to the possibilities and issues raised here. The research base that has informed the conceptualisation of the purposefully connected curriculum is then considered. In the pivotal section of this paper, the key components of the purposefully connected curriculum are explored, as well as the ways in which it complements the single curriculum approach. Importantly, the paper attempts to demonstrate the way in which the balancing of both single and connected curriculum approaches can be carried out successfully in the light of the planning principles listed above. The very nature of the term, purposeful curriculum

design, suggests that connections should be made within or across learning areas when a clear purpose exists.

In the next section, the scope of the Australian Curriculum is considered and the challenges schools might face as they undertake whole-school, year-level and teaching/learning unit planning.

Current Australian curriculum and assessment context

The Australian Curriculum, Assessment and Reporting Authority (ACARA) is responsible for the development of a 'national curriculum from Foundation[1] to Year 12 in specified learning areas' (ACARA, 2012, p. 4). The full suite of learning areas for which Australian Curriculum will be developed includes:

- English
- Mathematics
- Science
- Humanities and Social Science (comprising the subjects History, Geography, Civics and Citizenship, and Economics and Business)
- The Arts (comprising the subjects Dance, Drama, Media Arts, Music, and Visual Arts)
- Languages
- Health and Physical Education
- Technologies (comprising the subjects Digital Technologies, and Design and Technologies) (ACARA, 2012, p. 15).

According to *The Shape of the Australian Curriculum*, '[t]he Australian Curriculum has a three–dimensional design — discipline-based learning areas, general capabilities as essential 21st century skills and contemporary cross-curriculum priorities' (ACARA, 2012, p. 15). In the following discussion of purposefully connected curriculum, reference is made to the year-level content descriptions within the curriculum areas, as they are the fundamental building blocks for planning and to the alignment of the curriculum with the year-level achievement standards. The general capabilities and cross-curriculum priorities are embedded in the content descriptions and are not treated separately. In the remainder of this section, several issues related to the Australian Curriculum context, as they apply to the proposed connected curriculum approach, are taken up.

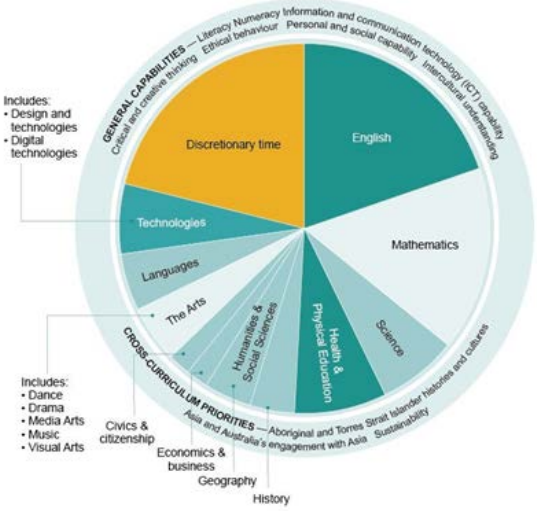
Scope of the Australian Curriculum

The number of curricular areas in the Australian curriculum is salient to any discussion of single curriculum and connected curriculum approaches in planning. Currently, Australian states and territories are implementing, at differing rates, curricular materials from the range available (see ACARA, n.d.). Queensland schools in 2014, for example, are required to plan, teach, assess and report using the Foundation (Preparatory Year) to Year 10 Australian Curriculum for English, Mathematics, Science and History, and will commence the implementation of the Geography curriculum.

When the Australian Curriculum is fully implemented, teachers in Years 3–4 will be required to plan learning in relation to 15 curricular areas, and teachers in Years 5–6 in relation to 16 curricular areas. Indicative time allocations for the learning areas/subjects range from as little as 18 hours a year to as much as 250 hours per year in Preparatory to Year 2, and from 18 hours to 185 hours in Years 5–6, based on a 37–week year (QSA, 2011b). The number of curricular areas, along with the relative emphasis of each at Years 5 and 6 is indicated in Figure 2.

[1] Following QSA practice, further references to 'Foundation' include reference to the Queensland terminology, Preparatory Year, that is, the year before Year 1.

Figure 2: Time allocations and entitlement at Years 5 and 6



Even a cursory glance at the pie graph showing the number of curricular areas, as well as the relative percentage allocation of each for Years 5 and 6, raises questions among teachers and curriculum leaders as to how this challenge could be met most productively. For many, the practical issue of planning learning across 16 curricular areas might be significant. If educational practitioners, along with parents and carers, are concerned about the depth of understandings and skills that children and young people could develop within this context, then interest in how connections might be made across the curriculum is a logical response. These possible issues of depth of understandings and skills, and the possibility of connections across the curriculum, are related both to philosophical assumptions about schooling and to practical matters.

These concerns appear reasonable given feedback provided by the Australian Primary Principals Association (APPA) to ACARA's predecessor, the National Curriculum Board, in relation to the development of Australian Curriculum materials:

> One issue prompting many comments was the document's focus on uncrowding the curriculum. There was a clear consensus that the national curriculum should assist in sharpening the focus on literacy and numeracy and reducing the wide range of curricular and extra-curricular matters for which primary schools are asked to take responsibility. One respondent spoke for many: "It is vital that the primary curriculum is reduced and focuses on depth and rich knowledge." (APPA, 2008)

More recently, APPA reiterated its concerns regarding a crowded curriculum. APPA President, Norm Hart said about the review of the Australian Curriculum:

> This is a question of quality over quantity. Australian primary school principals have been concerned for some time now that the Australian Curriculum has not addressed an increasingly overcrowded primary school curriculum, particularly in relation to assessment requirements. We believe this review must address the amount of content currently set to be covered in the primary school years. (APPA, 2014)

Consideration of what is happening in other parts of the world sheds light on the Australian context. Writing in the United States, Brand and Triplett (2012) cite details of an extensive range of studies to support their claim that:

> Recent studies investigating the consequences of high-stakes testing revealed that teachers are abandoning student-centred strategies including hands-on, inquiry-based, collaborative, and cross-curricular connections in favor of rote, discrete, individual practices. (Brand & Triplett, 2012, p. 381)

In the preceding paragraphs the scope of the Australian Curriculum was explored. The prospect was raised that the suite of curricular areas, for which there is an expectation that Australian students should have opportunities to engage, might present challenges. Additionally, reference has been made to issues confronting systems in other parts of the world. Writing in relation to the Australian context, Ewing (2012) claims that 'what is being termed a "national curriculum" in Australia is more accurately described as a "national syllabus" or "intended curriculum"' (p. 100). The fact that there is no 'one-size-fits-all' approach that can be used by every school in

Queensland or in Australia to program the Australian Curriculum is backed up by Ewing when she goes on to say:

> While planned, intended or official curriculum documents become the public representation of what is considered mandatory learning and will, therefore, be used to allocate government funding and resources, they cannot predict how content will be translated in local contexts in schools and classrooms. Given the huge differences in the contexts in which learning happens across Australia, the unique interactions between teachers and learners, variations in education systems and sectors and the broad range of teacher beliefs about pedagogies and practices, implementation of any mandated content will vary markedly across the country. (p. 100)

Ewing's commentary reminds us that planning is necessary at the whole-school, year level and unit level to 'enact' rather than 'implement' the Australian Curriculum. Another way of saying this is that ACARA has provided the curricular materials which teachers and schools or schooling sectors can arrange to best suit their contexts in order to support their students to become 'successful learners, confident and creative individuals, and active and informed citizens' (MCEETYA, 2008).

Not only educational commentators acknowledge the importance of schools enacting the Australian Curriculum in meaningful ways in their own contexts. ACARA itself proposes in its key document, *The Shape of the Australian Curriculum* (2012) that '[s]chools are able to decide how best to deliver the curriculum, drawing on integrated approaches where appropriate…' (p. 13).

Importantly, the fact that the Australian Curriculum is organised and is being developed in distinct learning areas and subjects does not mean that it should be enacted in schools only through units of study that draw on single curricular areas:

> The learning areas and the disciplines from which they are drawn provide a foundation of learning in schools because they reflect the way in which knowledge has, and will continue to be, developed and codified. However, 21st century learning does not fit neatly into a curriculum solely organised by learning areas or subjects that reflect the disciplines. Increasingly, in a world where knowledge itself is constantly growing and evolving, students need to develop a set of knowledge, skills, behaviours and dispositions, or general capabilities that apply across subject-based content and equip them to be lifelong learners able to operate with confidence in a complex, information-rich, globalised world. (ACARA, 2012, p. 15)

The potential for connections within the enactment of the Australian Curriculum is suggested again in the following statement: by ACARA (2012):

> Rather than being self-contained or fixed, disciplines are interconnected, dynamic and growing. A discipline-based curriculum should allow for cross-disciplinary learning that broadens and enriches each student's learning. (ACARA, 2012, p. 22)

Key consideration
The fact that the Australian Curriculum is being developed within distinct curricular areas does not mean that schools must enact it only along strict curricular area boundaries.
Later in this paper, details are provided of the ways in which content descriptions from up to three curricular areas can contribute to a conceptual link or links that can form the basis of meaningful student learning.

Assessment requirements of the Australian Curriculum

Not only are Australian schools required to provide their students with opportunities to learn the knowledge, understandings and skills that comprise the Australian Curriculum, they also must fulfil specific reporting requirements.

> The *National Education Agreement* (effective 25 July 2012) and the *Schools Assistance Regulation 2009 (*October 2013*)* require schools to provide parents/carers with plain-language reports twice a year that:
>
> - are readily understandable to those responsible for the student and give an accurate and objective assessment of the student's progress and achievement
> - include an assessment of the student's achievement against any available national standards
> - *include, for subjects studied, an assessment of the student's achievement:*

- *reported as A, B, C, D and E (or an equivalent five-point scale), clearly defined against specific learning standards.*[2]
- relative to the performance of the student's peer group.

(QSA, 2012, p. 1, *emphasis* added)

Apart from the Australian Government requirement that such data is collected, assessment data is part of the learning cycle at the school level. Assessment *for* learning provides essential information for planning future learning. Assessment *as* learning supports students to monitor their own progress. Assessment *of* learning provides information on student achievement in relation to the achievement standards of the Australian Curriculum. Any purposefully connected curriculum planning must clearly identify for what portion of the relevant achievement standards — or more precisely the valued feature[3] or criteria of those achievement standards — assessment data is being collected.

Key consideration
The requirement that schools must assess and report on student achievement in relation to curricular areas does not mean that schools must plan exclusively single curriculum units with assessment tasks that gather student achievement data on a single curricular area.
Later in this paper, details of authentic assessment tasks in which teachers gather specific assessment data on up to three curricular areas are provided.

The next section explores what might be considered by some to be the usual or 'taken-for-granted' approach to enacting the Australian Curriculum — the single curriculum approach.

Single curriculum approach

There is no data to indicate the extent to which teachers and curriculum leaders are enacting the Australian Curriculum via a single curriculum approach. Anecdotal evidence suggests that Queensland teachers continue to make connections across the curriculum as they have done in the past within other curricular frameworks. As noted earlier, the full suite of curricular areas is not yet available and, as a result, the ease or otherwise of making significant connections within the Australian Curriculum remains untested. It could also be added that the ease or otherwise of programing the full range of Australian Curriculum curricular areas is also untested.

There are strengths associated with maintaining a single focus on one particular curricular area through a specific teaching/learning unit, such as potentially more clarity for students about what constitutes the learning area or subject. Each curricular area has its own concepts — manifested through its knowledge and understandings — as well as skills that contribute to the distinctness of the curriculum area.

The single curriculum teaching/learning unit is not, of course, a hermetically sealed entity. In the planned curriculum, there is provision to explore with students how some areas or topics connect with past, current or future learning in other curricular areas. Planning can also ensure that teaching/learning units coordinate or synchronise engagement with particular concepts from other curricular areas. Teachers might plan, for example, so that a particular mathematical skill might be taught prior to engagement with a science topic in order to enhance student understanding. More specifically, in Year 3, teaching data representation and interpretation in mathematics needs to precede science experiments associated with analysing data and information. These examples of what could be called 'linked' and 'coordinated' approaches — within the singe curriculum approach — highlight the importance of year level and whole-school planning.

With reference again to Figure 2, which indicates the time allocations for all the curricular areas for Years 5 and 6, some schools might not consider it to be satisfactory to plan all of the Australian

[2] A modification to the *National Education Agreement* exists for reporting in the Prep Year. This allows for reporting twice-yearly using a five-point scale aligned to the *EYCG* phases of learning: Applying, Making connections, Working with, Exploring and Becoming aware (QSA, 2013a, p. 26).
[3] The term 'valued feature' is used by QSA to indicate the specific elements of the subject drawn from the curriculum on which to focus.

Curriculum using exclusively a single curriculum approach. To have all teaching/learning units drawing on content descriptions from a single curricular area would reduce the 'teaching pie' to very small segments of time. Additionally, some schools might strive for greater depth of learning, along with increased capacity to make explicit for students the way in which knowledge and skills across curricular areas work together to make events, issues, phenomena and so on more understandable. There has been interest in making connections across the curriculum for both practical and philosophical reasons for more than a century (Wallace, Sheffield, Rennie & Venville, 2007).

In the next section, attention is turned to the research base from which purposefully connected curriculum is conceptualised.

Research base for connected curriculum

> Research has consistently shown that students in integrated programs demonstrate academic performance equal to, or better than, students in discipline-based programs. In addition, students are more engaged in school, and less prone to attendance and behaviour problems. (Drake & Reid, 2010, p. 1)

The focus of this paper, of course, is an exploration of purposefully connected curriculum as a potentially valuable approach. The dominant term in the literature for the broad family of practices that resonates with purposefully connected curriculum is 'curriculum integration'. However, currently and historically, there has been a degree of nervousness associated with the idea of *integrating* curriculum. Most definitions of 'integration', in a general sense, focus on bringing together particular parts of some elements to create another entity that, in some ways, constitutes a whole.

Before exploring literature that examines 'curriculum integration', it is useful to point out that the conceptualisation of purposefully connected curriculum in this paper uses concepts from two or three curricular areas in pursuit of shaping a significant learning focus for young people. Even though something is created from the connected concepts, the curricular areas remain entities in themselves. To reiterate key points made at the outset: conceptual links must exist *and* the integrity of the curricular areas must remain strong. A multitude of researchers and practitioners in Australia and elsewhere has advocated for and explicated forms of curriculum integration (Wilson & Murdoch, n.d.; Murdoch & Hornsby, 1997; Murdoch & Wilson, 2008; Jacobs, 1997; Drake, 2012; Beane, 1995, 1997; Dowden, 2007, 2011, 2012).

Whatever the terminology, interest in building connections across areas of the curriculum is not a new phenomenon. Campbell and Henning suggest that the 'popularity of interdisciplinary and integrated curriculum has ebbed and flowed for more than 100 years' (2012 p. 179). Dowden concurs when he says that the 'concept of curriculum integration has long held appeal as a way to both unite knowledge and meet the educational needs of young people' (2011 p. 47). He goes on to acknowledge the confusion surrounding the term, quoting Fraser: 'curriculum integration is one of the most confused topics in education [with] many teachers and researchers us[ing] the term to mean a raft of things, some of which have nothing to do with curriculum integration at all' (in Dowden, 2011, p. 48). Such a claim reminds us all to examine carefully the possibilities for enhancing student learning within the context of the Australian Curriculum, rather than applying any preconceived ideas about what 'integration' might constitute.

Dowden provides a useful lens with which to consider salient ideas related to this topic when he proposes that '…both contemporary and historical examples [of curriculum integration] can be categorised into either student-centred or subject-centred traditions' (2007, p. 53). Each of these traditions is considered in the following section. It is important to note that Dowden's work is concerned especially with meeting the needs of 'early adolescents'.

Student-centred integrated curriculum

The work of James Beane in the United States has influenced many teachers in the way they integrate or connect curricular areas and it has shaped the conceptualisation of purposefully

connected curriculum described in this paper. Beane's work emphasises students' pursuit of issues of personal significance to themselves, as well as those issues important to society (1995, 1997). In the view of Dowden, Beane's 'integrative model' is predominantly a student-centred approach. In Beane's own words:

> Curriculum integration begins with the idea that sources of curriculum ought to be problems, issues, and concerns posed by life itself ... [with these concerns falling into two areas]:
>
> 1. self- or personal concerns and
> 2. issues and problems posed by the larger world.
>
> Taking this one step further, we might say that the central focus of curriculum integration is the search for self- and social meaning. (1995, p. 616)

Dowden (2007) writes that the theoretical basis for Beane's 'integrative model' rests with the work of John Dewey, the American philosopher, psychologist and educational reformer. Though he did not use the term, 'integration', Dowden claims that 'Dewey's understanding of integration is captured best by the use of his trademark term "organic education" in which he imbued a sense of biological symbiosis between the student and their social environment' (p. 57). As a 'progressive', Dewey's line, 'I believe that education, therefore, is a process of living and not a preparation for future living' (1982, p. 541) is suggestive of the importance Dewey placed on the student and their relationship with the community in which they live as opposed to subject areas being the focus of the educational process. Dewey's legacy in education is worthy of greater attention than is possible here. Suffice to say, his ideas informed the work of many (see Dowden, 2007) with Dowden claiming that:

> … Beane's integrative model (1990, 1993) combined almost forgotten progressive ideas with the imperative to meet the educational and developmental needs of early adolescents to create a fresh student-centred curriculum design. (p. 57)

The student-focused approach here is about responding to the individual needs of students. Importantly, student needs also relate to the particular groups to which they belong. Group memberships that position students favourably or unfavourably in relation to aspects of the curriculum include gender, race, class, indigeneity, rurality and so on. Responsiveness to student background and interests, as well as knowledge, is essential to promote equity in learning outcomes. The Queensland School Reform Longitudinal Study (Queensland Department of Education, 2001), for example, included the 'knowledge integration item … [given] the sociological arguments which suggest that integrated knowledges are related to specific cultural codes associated with specific sociological groups' (p. 9). For example, the researchers cited McConaghy's 1998 work to suggest the resonance of integrated knowledge with Indigenous cultures.

Brand and Triplett's (2012) work draws on constructivist theories of learning and provides further support for student-centred learning that requires deep conceptual knowledge. They cite the importance of 'problem-solving strategies and the need for students to be leaders in their search for answers, conclusions, or solutions' (p. 383). Drawing on the literature related to expert/novice research, they propose that '[i]nterdisciplinary teaching has the potential to promote learning beyond mere recall of facts by developing the relationships that foster expert thinking and learning' (p. 383). While deep conceptual learning occurs within single curriculum approaches, connected curriculum has the potential to support student engagement in more complex concepts from several curricular areas about phenomena which resonate strongly with student interests and real-world contexts.

The strengths of the 'integrative model', such as tapping into students' interests, are foregrounded by Dowden (2007). While much can be learnt from the integrative model, the Australian Curriculum emphasises learning areas and subjects. Beane (1997) outlined integrative curriculum model in the following way:

> A curriculum design theory that is concerned with enhancing the possibilities for personal and social integration through the organization of curriculum around significant problems and issues, collaboratively identified by educators and young people, *without regard for subject area lines*. (in Dowden, 2007, p. 55, emphasis added)

Purposefully connected curriculum takes the 'subject area lines' of the Australian Curriculum seriously. This point highlights the need for teachers and curriculum leaders to learn from the research, while remaining aware of the current contexts in which curriculum needs to be enacted.

While Beane (1995, 1997) and Dowden (2007) start with the student in terms of curricular planning, another tradition emphasises the subject focus and the way in which the range of subjects might be managed best.

Subject-centred integrated curriculum

Drawing on the 1995 work of Kliebard, Dowden (2007) writes that the Herbartians in the nineteenth century 'questioned the logic of the traditional single subject curriculum and started to consider how disparate subjects might be "correlated" with each other in ways that might benefit students' (p. 57). Further, Dowden claims that:

> … a long line of educators concerned with social efficiency — including Bobbitt in the 1910s, Caswell in the 1930s and Jacobs in the 1990s — coopted the term of 'correlation' to describe the efficient distribution of subject matter within their multidisciplinary curriculum designs. (p. 57)

Jacobs is internationally known for her work on curriculum mapping. This involves teachers collaborating to map, often for a period of a year, what they are teaching within the context of the required curriculum, in order to determine the best arrangement of subjects and topics to maximise student learning (2004). Jacobs proposes that the "curriculum maps", that are integral to the process, 'have the potential to become the hub for making decisions about teaching and learning' (2004, p. 126). According to Jacobs (1997), '[w]hen appropriate, merging concepts from two or more disciplines can make for a powerful and lasting learning experience' (p. 20). (See also Jacobs & Johnson, 2009.)

Dowden (2007) critiques what he considers to be subject-centred approaches, such as that advocated by Jacobs. He claims that subject-centred approaches represent 'the top-down design of the multidisciplinary model' (p. 62) with the power resting with the teacher. Noting again that Dowden's focus is particularly on the needs of 'early adolescents', there is much of relevance in Jacob's work to shape the conceptualisation of purposefully connected curriculum. Teachers and schools using purposefully connected curriculum approaches could take up this mapping strategy to find the most effective ways to draw on two or three curricular areas in individual units of study as they create their year level plans. Such an approach is designed to avoid overlaps in the curriculum. Wilson and Murdoch (n.d.) capture this common tension for teachers between attending to the requirements of the curriculum and simultaneously responding to student needs when they provide the following advice:

> *Shouldn't I find out what students know before planning the unit?*
>
> Ideally the unit will be planned in its entirety after the results of the student's prior knowledge have been considered, but practically this is not always possible. The unit needs to be flexible enough to adjust to the needs of the students and yet prescriptive enough so that you can cover the curriculum requirements associated with the topic.

Purposefully connected curriculum: From research to practice

At the outset of this paper, purposefully connected curriculum was defined as one that draws on two or three curricular areas of the Australian Curriculum for significant teaching and learning within a unit of study. Given the research explored above, that definition can now be expanded. The purposefully connected curriculum approach explored in this paper builds on the research labelled by Dowden (2007) as 'student-centred' as well as that which he labels 'subject-centred'.[4] An issue of great importance here is to play down the dichotomy of student-centred curriculum

[4] It is salient to note that Dowden (2007) champions the student-centred approach or 'integrative model' — over the subject-centred approach, as an approach for the middle years of schooling. Curriculum integration as a strategy to engage middle years learners has long been advocated in Australia and elsewhere. Given the complexity of factors that apply to discussion around the middle years, it is not within the scope of this paper. However, as indicated at the outset of this paper, the ideas and issues explored in this paper also relate to the middle years of schooling.

versus subject-centred curriculum. Indeed, it might be more useful to replace Dowden's (2007) terms, 'student-centred' and 'subject-centred', with 'student-focused' and 'subject-focused'.

The practical context in which Queensland teachers plan, teach, assess and report involves a suite of Australian Curriculum curricular areas. (Teachers will be in a much better position to consider the connected curriculum approach when the full suite is available.) To that end, teachers planning quality curriculum need to be 'subject-focused'. This supports design principle 4, outlined at the outset of this paper: *Purposefully connected curriculum is used when it provides practical solutions to programing the range of learning areas and subjects that comprise the Australian Curriculum.* Such curricular areas are constituted through year level content descriptions and achievement standards. A focus on curricular areas would appear to be pivotal.

Further, teachers' philosophical beliefs about what it means to be a teacher and what constitutes quality teaching and learning inevitably — and appropriately — situate student needs, interests and aspirations at the centre of their teaching practice. As a result, the selection of contexts for learning as teachers plan, teach, assess and report within the context of the Australian Curriculum suggests the desirability of a student-focused disposition as well. This focus supports design principle 3: *Purposefully connected curriculum is used when it supports sound educational philosophy, such as teaching and learning for deep knowledge and understandings, and when it builds connectedness to students' lives and the world through engaging and meaningful learning contexts.*

In summary, the argument here is that the connected curriculum approach is built within the requirement of student entitlement to learning opportunities from the suite of Australian Curriculum curricular areas, while at the same time responding to the particular students whose needs it must serve. This claim is made on the basis of the research that explores how these two focal areas — subject-focused and student-focused — are served well by curriculum that is connected beyond curricular area boundaries. The purposefully connected curriculum then is informed by both a student-focused approach and a subject-focused approach (through school and teacher planning within the subject-focused context of the Australian Curriculum) and a student-centred focus (through the development of learning contexts that serve student needs within the local context). A common element of both perspectives is an inquiry approach to learning.

Inquiry-based learning within purposefully integrated curriculum

According to Murdoch and Hornsby 'effective integrated curriculum' is:

- …inquiry based and should be structured according to the principles of inquiry teaching and learning
- …'understanding driven' — the ultimate goal of teaching and learning becomes one of enhancing students' understanding of the way the world works. (1997, p. 1)

There are many labels used to describe what is termed here 'inquiry-based learning' (IBL). Darling-Hammond et al. in their book, *Powerful learning: What we know about teaching for understanding* (2008), include 'project-based learning', 'design-based learning' and 'problem-based learning'. This nomenclature resonates with the focus of integrated or connected curriculum. There is a symbiotic relationship between integrated curriculum and inquiry-based learning. Learning explorations beyond a single curriculum area often raise essential or universal questions: in turn, such questions often spark interest in developing understandings and skills in more than one curriculum area.

In an IBL approach, students are guided to pose and respond to questions related to real-life contexts while attending to the required curriculum. Drake, whose third edition of *Creating standards-based integrated curriculum* features 'enduring understandings', 'rich culminating assessment tasks' and 'essential questions' proposes that:

> Essential Questions cut across the disciplines and relate to the real world. Because they are open-ended, they require an interdisciplinary approach to answer them. They lead to other questions and are engaging to students. Like Enduring Understandings, Essential Questions are timeless, cross-cultural, universal and written at the conceptual level. (2012, p. 99)

Murdoch and Wilson propose the use of ‘generative’ questions (2008, p. 111) or a ‘key question, or set of key questions’ as an ‘overarching focus of an integrative unit’ (p109). As learners pose and respond to questions, they are constructing knowledge for themselves rather than being the passive recipients of someone else’s knowledge. The questions that drive the proposed connected curriculum teaching/learning units following are referred to as ‘overarching questions’.

Other key elements of IBL include the use of inquiry models to scope and sequence the investigation[5], explicit use of thinking skills and questioning frameworks for sub- or focus questions, as well as an emphasis on higher-order concepts. An exhaustive overview of IBL is not offered here, but rather exploration of some key elements that will feature in the next section. It should also be noted that, while an inquiry-based learning approach is possible and appropriate within a single curriculum approach, the possibilities for real-world connections are increased when two or three curricular areas can be drawn upon in one unit of study. (See Darling-Hammond et al. (2008) for a synthesis of current research in relation to the efficacy of inquiry-based learning approaches, and Darling-Hammond (n.d.) for advocacy of such approaches for success on international student assessments.)

IBL is not a new approach for Queensland teachers, especially those teaching in the early years, middle primary and the middle phase of schooling. There is still an important role for direct teaching, that is, an approach in which the teacher instructs students explicitly in order to build and reinforce understandings and skills. While direct teaching must remain an element in contemporary education, it needs to be part of a repertoire of teaching strategies in the same way that a purposefully connected curriculum is used for particular instances in planning.

Purposefully connected curriculum in practice

The practical nature of purposefully integrated curriculum is explored in this section. As indicated earlier, purposefully integrated curriculum relies on the existence of conceptual links between two or three curricular areas.

The term ‘conceptual link’ refers to an explicit statement describing the nature of the linkage or connection, in the identified curriculum (content descriptions and achievement standards) across learning areas or subjects within learning areas. (See Nayler, 2011 for a discussion of conceptual threads or linkages *across year levels in the same learning area or subject* in the context of multiple year level classrooms.)

In the Australian Curriculum, content descriptions and achievement standards are the building blocks of curricular planning and, this is where the conceptual links are most productively found. Conceptual links identified on the basis of the content descriptions and the achievement standards preserve the integrity of each learning area or subject. Conceptual links might occur among subjects within one learning area, constituting intra-connected curriculum. Alternatively, the links might involve two or three different learning areas, or subjects from different learning areas, with this form referred to here as ‘interconnected curriculum’.

Two types of conceptual links form the basis of purposefully connected curriculum. These result from:

- common or overlapping concepts among learning areas or subjects
- the linking of concepts from two or three learning areas or subjects that are complementary in serving the needs of the specific learning context adopted in a unit.

Teaching/learning units created from either of the above types of conceptual links are driven by overarching questions. Through an inquiry approach, students can engage with real-life issues, problems and dilemmas. Such real-life contexts often require knowledge, understandings and skills that are not bound by curricular area boundaries. Single curriculum teaching/learning units can

[5] Inquiry models include:
- TELSTAR in which the learners ‘tune in’, ‘explore’, ‘look’, ‘sort’, ‘test’, ‘act’ and ‘reflect’ (Queensland Department of Education (1994) & Victorian Ministry of Education (1987))
- 5Es in which learners ‘engage’, ‘explore’, ‘explain’, ‘elaborate’ and ‘evaluate’ (PrimaryConnections, 2006).

also be driven by overarching questions but the proposition here is that purposefully connected curriculum draws on a significant body of research that is aligned with inquiry approaches to teaching and learning.

A note about what constitutes a 'teaching/learning unit' is warranted here. It is tempting to consider that the main attributes of a 'unit' are related the content descriptions that will be 'covered' and the the time it takes to 'do' this. While thoughtful, logical and efficient sequencing of content descriptions, with due focus on general capabilities and cross-curriculum priorities, is essential, in the context of purposeful connection, Murdoch and Hornsby provide clarity when they suggest:

> A unit of work constitutes a *sustained sequence* of activities across curriculum areas. It is primarily designed to develop students' understandings about a significant and worthwhile topic. (1997, p. 48, emphasis in original)

Examples of how the two types of conceptual links could be used are explored in the next section.

Purposefully connected curriculum drawn from common or overlapping concepts

Possible processes for planning a purposefully connected teaching/learning unit drawn from common or overlapping concepts are described below. The key element in the processes is the conceptual link. Ideas for a possible Year 5 unit are provided as examples of the processes.

Example: Year 5 Geography and Year 5 Science

<table>
<tr><th>Processes</th><th colspan="3">Example</th></tr>
<tr><td>1. Become familiar with the key concepts of the curricular areas in the particular year level.</td><td colspan="3">In the Year 5 curriculum, the concept of people influencing their environment from Geography shares common ground with the Science concept of living things having structural features and adaptations for survival.</td></tr>
<tr><td>2. Consider:
• school and community context and demographics
• whole school focus based on systemic and school data, as well as systemic priorities
• assessment for learning
• data in relation to individual students, where possible.</td><td colspan="3"></td></tr>
<tr><td rowspan="3">3. Identify common or overlapping concepts or big ideas from content descriptions from two or three curricular areas.[6]</td><td>Learning area/ subject</td><td>Concepts/big ideas</td><td>Content descriptions</td></tr>
<tr><td>Science</td><td>Living things have structural features and adaptations for survival</td><td>Science understanding (ACSSU043)
Living things have structural features and adaptations that help them to survive in their environment</td></tr>
<tr><td>Geography</td><td>People influence their environments</td><td>Geographical knowledge and understanding (ACHGK027)
The influence of people, including Aboriginal and Torres Strait Islander Peoples, on the environmental characteristics of Australian places</td></tr>
<tr><td>4. Develop a conceptual link that builds on the curricular area concepts or big ideas.</td><td colspan="3">Conceptual link between Science and Geography concepts: People, including Aboriginal and Torres Strait Islander peoples, have adapted to their environments</td></tr>
<tr><td>5. Develop an overarching question to provide a learning context to support</td><td colspan="3">Overarching question: What does it take to survive?
Sub-questions
a. In what sorts of environments do Aboriginal and Torres Strait Islander peoples</td></tr>
</table>

[6] This approach assumes school-based decision-making to locate linkages across the Australian Curriculum. Schools might have varying degrees of autonomy to alter the scope and sequence of the content descriptions as they are used in planning across the year levels. If the scope and sequence of content descriptions is 'a given', curriculum leaders would look for linkages within the 'allocated' content descriptions for a particular period of time.

meaningful and real-world learning and sub-questions or focus questions that will maintain the integrity of the curricular areas.	live traditionally? (Geography) b. What sorts of adaptations have Aboriginal and Torres Strait Islander peoples made to their natural environments to survive? (Science) c. How have Aboriginal and Torres Strait Islander communities altered the environment through their methods of land and resource management? (Geography) d. What can we learn from Aboriginal and Torres Strait Islander ways of engaging with the environment? (Geography and Science)	
6. Identify other content descriptions that will support deep learning.	*Learning area/ subject*	*Content descriptions*
	Science	Science as human endeavour: ACSHE217 Scientific inquiry skills: ACSIS231; ACSIS086; ACSIS087; ACSIS090; ACSIS218; ACSIS091; ACSIS093
	Geography	Geographical inquiry skills: ACHGS033; ACHGS034; ACHGS035; ACHGS036; ACHGS037; ACHGS038; ACHGS039
7. Complete unit planning using a template, such as that provided by QSA (2011c) with its 'five elements of effective unit planning'.	• identify curriculum (a major portion of this completed in above processes) • develop assessment authentic to both curricular areas (see the QSA standard elaborations for Geography and Science to determine the valued features on which to focus) • sequence teaching and learning • use feedback (commenced in #2 above, for example looking at assessment data) • make judgments	

Purposefully connected curriculum drawn from complementary concepts

Possible processes for planning a purposefully connected teaching/learning unit that draws on complementary concepts are described below. The key element in the processes is the conceptual link. Ideas for a possible Year 6 unit are provided as examples of the processes. In the Year 6 curriculum, the distinctive understandings and skills of English and Science are brought together to explore a relevant, real-world phenomenon: the impact of drought. Unlike the example above, the concepts from the contributing curricular areas are not common or overlapping. The learning context, that of students exploring the impact of drought — a pervasive and significant condition in Australian life — means that Science and English concepts can be brought together in a unit in meaningful and useful ways because they are complementary in this learning context.

Example: Year 6 English and Year 6 Science

Processes	**Example**		
1. Become familiar with the key concepts of the curricular areas in the particular year level.	In the Year 6 curriculum, the concept of differences and similarities in texts from English can be brought together in meaningful and useful ways with the Science concept of the effects of extreme weather conditions.		
2. Consider: • school and community context and demographics • whole school focus based on systemic and school data, as well as systemic priorities • assessment for learning data in relation to individual students, where possible.			
3. Identify concepts or big ideas from content descriptions from a curricular area that would work in complementary ways with a concept from	*Learning area/subject*	*Concepts/big ideas*	*Content descriptions*
	Science	Effect of geological changes on Earth's surface	Science understanding Sudden geological changes or extreme weather conditions can affect Earth's surface (ACSSU096)

one or two other curricular areas.[7]	English	Differences and similarities in various texts related to drought	Literature Analyse and evaluate similarities and differences in texts on similar topics, themes or plots (ACELT1614)
4. Develop a conceptual link that builds on the curricular area concepts or big ideas.	Conceptual link between Science and English concepts: Drought is a phenomenon that impacts on people and other living things in various places.		
5. Develop an overarching question to provide a learning context to support meaningful and real-world learning and sub- or focus questions that will maintain the integrity of the learning areas.	Overarching question: *What is the impact of drought?* Sub-questions a. What can scientists tell us about drought in Australia? (Science) b. What can we learn from literature about the impact of drought in Australia? (English)		
6. Identify other content descriptions that will support deep learning.	*Learning area/subject*	*Content descriptions*	
	Science	Science as a human endeavour: ACSHE098; ACSHE220 Science inquiry skills: ACSIS232; ACSIS103; ACSIS104; ACSIS107; ACSIS221; ACSIS108; ACSIS110	
	English	Language: ACELA1515; ACELA1517; ACELA1520; ACELA1521; ACELA1525; ACELA1526 Literacy: ACELY1709; ACELY1711; ACELY1712; ACELY1713; ACELY1714; ACELY1715; ACELY1717	
7. Complete unit planning using a template that incorporates the QSA (2011c) 'five elements of effective unit planning'.	• identify curriculum (a major portion of this completed in above processes) • develop assessment authentic to both curricular areas (see the QSA standard elaborations for English and Science to determine the valued features on which to focus) • sequence teaching and learning • use feedback (commenced in #2 above, for example looking at assessment data) • make judgments		

Connections within and across learning areas

The preceding examples are instances of inter-connected curriculum, that is, they draw on curriculum from different learning areas. For example:

- *What does it take to survive?* (Year 5) connects content descriptions from Science and Geography
- *What is the impact of drought*? (Year 6) connects content descriptions from Science and English.

Purposefully connected curriculum also relates to teaching/learning units that draw on subjects within a particular learning area. Purposefully connected curriculum within the Humanities and Social Science learning area would include content descriptions — where conceptual links exist — from two or three of the following subjects: History; Geography; Civics and Citizenship; and Economics and Business.[8] Similarly, connected curriculum units from The Arts would involve drawing on two or three or the following subjects: Dance, Drama, Media Arts, Music, and Visual Arts. Connected curriculum in Technologies would be based on a conceptual link between content descriptions from Digital Technologies, and Design and Technologies.

Maintaining the integrity of curricular areas within purposefully integrated curriculum

Ensuring a clear focus on each of the contributing curricular areas is one way to maintain the integrity of the curricular areas. The sub- or focus questions in the possible Year 6 unit, for

[7] As for footnote 6.

[8] QSA is currently preparing advice for schools in relation to the various configurations of the subjects within the Humanities and Social Science learning area that might be possible.

example, contribute to maintaining the integrity of the curricular areas. These questions set up a unit of study in which students pursue the overarching question through contemporary and historical literary texts that explore how Australians have and do experience drought. The Science focus is also clear-cut: learners would examine what constitutes drought, and the impacts of drought on living and non-living things.

Following the QSA's *Principles for effective planning* and (2011a, 2011c) *Unit overview planning: Australian Curriculum P–10*, after identifying curriculum, teachers would develop assessment before sequencing teaching and learning.

Sample assessment task planning for *What is the impact of drought?* (Year 6)

Students investigate the impact that drought has on their local community. There are two main parts to their investigation:

1. Students gather a range of literary texts (such as poems and short stories) from a teacher selection that helps them to understand how drought affects their community. Students share their texts with people in their local community to find out which of the texts capture how people in the community feel about drought.
   This supports teachers to assess for the English learning area, specifically, on students' understanding and skills in relation to:
   - ideas and information in texts
   - text structures
   - language features.[9]
2. Students complete the class activities that help them to understand how drought affects living and non-living aspects of the environment.
   This supports teachers to assess the Science learning area, specifically, students':
   - understanding of how living and non-living beings are affected by drought (Science understanding)
   - understanding of how people from Indigenous and non-Indigenous cultures have contributed to the development of our understandings of the impact of drought (Science as human endeavour)
   - skills in processing and analysing data related to the impact of drought (Science inquiry skills)[10]
3. Students share their findings at a community event to which parents/carers and other members of the community are invited in response to the following questions:
   - How can literature help us understand how drought affects us?
   - What can science tell us about how drought affects us?

In this way, they demonstrate how they can communicate, via a multi-modal presentation:

- findings in relation to impact of drought on people, other living and non-living aspects of the environment (Science inquiry skills)
- what they have discovered in relation to the way in which particular literary texts capture people's experiences and attitudes to drought.[11]

There are opportunities associated with the community event to gather further assessment of learning data in relation to Science and English.

In keeping with the commitment to quality planning, the valued features identified above could be incorporated into an assessment rubric using a format such as that provided by the QSA, that is, the Task-specific standard matrices for English and for Science.[12]

Purposefully connected curriculum for students with diverse needs: Personalised learning

The paper, *Student Diversity and the Australian Curriculum: Advice to principals, schools and teachers* (ACARA, 2013), clearly states that "[a]ll students are entitled to rigorous, relevant and engaging learning programs drawn from a challenging curriculum that addresses their individual learning needs" (p. 4). ACARA identifies 'students with disability', 'gifted and talented students'[13]

[9] These are 'valued features' identified in the QSA (2013b) *Year 6 standard elaborations – Australian Curriculum: English* (revised draft).
[10] These draw on 'valued features' identified in the QSA (2013c) *Year 6 standard elaborations – Australian Curriculum: Science* (revised draft).
[11] This draws on a 'valued feature' identified in the QSA (2013b) *Year 6 standard elaborations – Australian Curriculum: English* (revised draft).
[12] Templates to create Task-specific standards matrices are located in the learning area hubs on the QSA site at <www.qsa.qld.edu.au>.
[13] While it is important to adopt the terminology used by ACARA, Tomlinson's (2001) term, 'advanced learners' is worthy of consideration in place of 'gifted and talented'. Tomlinson's rationale is that this provides flexibility to identify students

and ‘students for whom English is an additional language or dialect’ (EALD) as specific groups with diverse learning needs (p. 6).

ACARA proposes that personalised learning be developed for specific individuals as a result of their diverse needs. This means that content descriptions and achievement standards would be drawn upon to create individual learning programs for students. Just as the purposefully connected curriculum conceptualised in this paper is informed by both student-focused and subject-focused perspectives, so these perspectives needs to be balanced in the creation of individual learning plans. In contrast to mainstream schooling, student-centred perspectives might influence the creation of individual learning plans to a greater extent than would subject-focused perspectives. However, the latter is still highly significant given ACARA’s commitment to rigorous, relevant and engaging programs for all students.

While readers should consult the above paper for further details, ACARA proposes that content of the F–10 Australian Curriculum is aligned to the student’s chronological age in the first instance, followed by adjustments in relation to curriculum level, instruction or the environment. In some cases, this will mean that the focus in a particular curricular area will be adjusted by drawing on one or more of the general capabilities or the cross-curriculum priorities.

It is worth noting here that the purposefully connected curriculum conceptualised in this paper does not advocate drawing on general capabilities with content descriptions from a curricular area to constitute a connected curriculum approach. This is because the general capabilities are embedded throughout the content descriptions and a focus on the selected general capabilities is an aspect of quality curriculum planning. However, for students operating well below their year-level curriculum, drawing on content descriptions from one or more curricular areas and an emphasis on the general capabilities, literacy, numeracy, and personal and social capability would constitute an appropriate form of purposefully connected curriculum.

Practices to avoid in creating purposefully connected curriculum

In the next section, two practices to avoid when creating purposefully connected curriculum are explained. It is hoped that this will elaborate further what constitutes quality planning for purposefully connected curriculum. These practices include:

- grouping content descriptions from two or more curricular areas to pursue a common *theme* rather than a focused inquiry
- treating some curricular areas as providing the communication (or other) skills for another curricular area which has its own ways of communicating (or other skills)

Incorporating content descriptions from a range of learning areas or subjects to create a theme does not result in purposefully integrated curriculum.

As an early career teacher, this paper’s author planned and implemented more than one unit which would be categorised here as ‘thematic’. As an English teacher, one particular junior secondary unit was entitled ‘The sea’ and it involved students engaging with short stories, poems and other literary and non-literary texts that were related to the sea. No overarching questions related to a contemporary issue, problem or dilemma associated with the sea framed the teaching/learning unit. This was a thematic study within a subject area. Dowden refers to the ‘…thematic unit [as] a close cousin of the traditional single-subject curriculum…’ (2012, p. 27).

A thematic study beyond the boundaries of one curricular area involves the study of a topic from a range of learning areas or subjects. For example, more than one curricular area could be drawn upon to pursue the topic of global warming. Specifically, the content descriptions related to that topic from Science and Geography, for example, could be included in one unit. How this approach differences from Examples A and B presented earlier is that the study is not driven by a conceptual link which, in turn, becomes meaningful for students via an overarching question.

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who are ahead of where they need to be in terms of the curriculum. There are obvious benefits to Tomlinson’s term as it allows greater fluidity for student movement into a category associated with further support.

Purposefully connected curriculum is not about using the skills from a curricular area in place of skills that belong to the original learning area or subject.

Hudson proposes that '…Science is a [learning area] that provides content, which can be analysed, synthesised and evaluated through other [learning areas/subjects] such as English, Mathematics, and The Arts' (2012, p. 44). Science, the discipline, and its representation in the *Australian Curriculum: Science*, have specific skills that support disciplinary-specific analysis, evaluation and communication. The purposefully connected approaches advocated here involve the use of skills related to the specific curricular area, such as Science, rather than drawing on English content descriptions. The Science curriculum has its own ways of communicating scientific understandings and skills, as do other curricular areas. This is not to say, of course, that other curricular areas cannot be integrated in authentic ways with science, while maintaining their integrity.

Having briefly considered some practices to avoid, the following section proposes some qualities of successful planning purposefully connected curriculum.

Successful planning within a connected curriculum approach

Planning in a connected curriculum approach is successful when students:

- have opportunities to learn the knowledge, understanding and skills of the range of Australian Curriculum curricular areas to which they are entitled
- have opportunities to explore issues, problems or phenomena in ways that are meaningful and related to the real-world, with such opportunities drawn from the content descriptions of the contributing curricular areas
- develop understandings, skills and important concepts in units driven by overarching questions that contextualise the relevant content descriptions and achievement standards
- have opportunities to negotiate aspects of curriculum (e.g. specific topic or context) and assessment (e.g. mode to demonstrate understandings and skills) with levels and nature of negotiation varying according to their developmental or contextual needs.[14]

Planning in a connected curriculum approach is successful when teachers:

- identify conceptual links across curricular areas, and use these to create a powerful overall question to drive the learning/teaching unit
- are confident that a sound basis exists for the inclusion in one teaching/learning unit of content descriptions and portions of achievement standards from the contributing curricular areas without the inclusion of what might be described as trivial integration or connection
- gather assessment as learning, and assessment of learning data, related to the valued features of the contributing curricular areas and report the learning for each curricular area
- can be confident that the integrity of the contributing curricular areas is retained and students are prepared for subsequent years with the specific understandings and skills required in each curricular area.

Conclusion

The purpose of this paper was to consider 'purposefully connected curriculum', as a complementary approach to single curriculum planning within the context of the Australian Curriculum. There is no suggestion that all or even most of the Australian Curriculum be connected in this way at any year level. The principle of a 'balance of informed prescription and teacher professional judgment' (QSA, 2011a), which was flagged in the introduction, is pivotal here.

[14] Pedagogy is also recommended as an area of negotiation between teacher and students but is outside the scope of this paper.

School-based planning must ensure that students have the opportunity to access their ‘learning entitlement’ (ACARA, 2012) — this supports informed prescription. The corollary to that principle for quality planning — teacher professional judgment — is also relevant here. Teacher judgment, within the context of whole-school and year-level planning, is important for the enactment of the Australian Curriculum on a whole range of curricular issues, including the appropriateness of connecting some aspects of the curriculum.

School-based planning is not only possible within the context of the Australian Curriculum: it is essential. The call is made in this paper for a connected curriculum approach that complements a single curriculum approach. While the value of teaching/learning units that draw on only one curricular area is acknowledged, an attempt was made to establish the practical and philosophical benefits of connecting two or three curricular areas in one teaching/learning unit.

Key issues that might concern schools have been considered. For example, the fact that the Australian Curriculum is being developed within curricular area boundaries does not mean that enactment of the curriculum at the school level must occur exclusively within these boundaries. Further, the need to assess and report student achievement against achievement standards of specific curricular areas, does not mean that teachers cannot gather this information through tasks that incorporate more than one curricular area. Gathering assessment data in relation to specific criteria or valued features within two or three curricular areas requires schools to adopt whole-school cultures and systems that make this possible. This is a relatively minor matter when consideration is given to the importance of supporting connected, real-world student learning.

Consideration of the research traditions that explore connections in curriculum areas identified approaches that build from a ‘subject-focused’ orientation and those that build from a ‘student-centred’ orientation. The conclusion here is that making connections across the curriculum can address the subject-focused context of the Australian Curriculum, while simultaneously adopting a student-centred focus through the development of learning contexts that serve student needs within the local context.

As indicated at the outset, a key reason for writing this paper was to explore possibilities, raise questions and provoke professional conversations and actions in relation to how schools can best support learning and achievement for the diverse range of learners in Queensland classrooms. The reader is urged to consider what possibilities for curricular planning they might explore further. Similarly, it is worthwhile considering what questions require further exploration. How teachers can be supported to engage in professional conversations regarding these important planning matters warrants attention.

The traditional Chinese saying, *talk does not cook rice*, might also motivate the reader to consider what actions, if any, they need to take in relation to the issues raised here to support students to engage in learning appropriate for the 21st century.

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