BUILDING OUR CURRICULUM SELF-HELP GROUP

INTERDISCIPLINARY LEARNING

Improving Pupils’ Achievements through Curriculum for Excellence

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This material is designed as pragmatic advice for effective interdisciplinary learning in schools. It is developed for the particular context of Curriculum for Excellence in Scotland, but it draws from traditions and practices elsewhere. Where it is important, it references research and theoretical context.

It explores the national expectations, specific challenges and opportunities provided by interdisciplinary learning. It provides some case studies of emerging practice in interdisciplinary learning. However, what is interesting is that in looking across the case studies, some deeper lessons about interdisciplinary learning can be identified.

It is the contention of the producers of these resources that in order for schools to develop successful programmes of interdisciplinary learning, it would be necessary for them to engage with some of these deeper issues.
Introduction: the trouble with interdisciplinary learning

It doesn’t take more than a cursory look at the thirteen schools featured in this document to see why interdisciplinary learning is a good idea. These schools also tell stories that emphasise the difficulties of interdisciplinary learning: risk, public criticism, constrained resources, staff confidence and training, leadership, credibility and more.

What the case studies reveal is the importance of addressing these challenges in order to create powerful learning experiences for young people through interdisciplinary learning. It is a context for learning that, as well as bringing together subject areas, connects theory and knowledge with enterprise, ‘real life’ and work-readiness. It offers ways of addressing many of the demands of national documentation and advice, such as Developing Scotland’s Young Workforce.

Above all, interdisciplinary learning, done well, can be a strategy through which learning becomes more engaging, more challenging and more personalised. This document seeks to explore, through various models from different schools, why IDL is vital, how it can be done, the challenges it presents and the way in which these can be approached.

In examining interdisciplinary learning, context is key. Curriculum for Excellence cannot be a transformational change without there being huge alterations in the manner in which young people learn, schools organise curricula and teachers teach. Interdisciplinary learning is emblematic of this shift. It also unites this change with some important economic and social drivers. This first is the oft-repeated call from employers and tertiary education institutions for school leavers to possess highly developed transferable skills that match their qualifications. Such skills are not taught or acquired in a vacuum - they require a context for learning - but 'traditional' curriculum or subject areas are not always agile enough to respond to this skills agenda.

Interdisciplinary learning, on the other hand, provides schools with a flexible and creative framework for skills development by transcending subject boundaries. It also allows for learning to be built around the learner, rather than simply handed to them in a pre-packaged way. Interdisciplinary learning can generate far more relevant learning than more traditional contexts.

This is perhaps most evident in the national push for STEM learning which is led by both the massive future skills shortage in engineering in the next ten years and a need to make Maths and Science education less abstract and more engaging. Much has been written and said about the need for CfE to develop 21st century skills in our young people, a view that is often supported with the assertion that they live in a more troubled, changing and demanding world than their
forebears. However, we are now fifteen years into this century and still this idea is debated. Where schools or authorities are taking a creative and innovative approach to the curriculum to teach skills they are not doing so at the expense of the traditional curriculum or knowledge, but in a way that enhances subject areas.

In Scotland we talk often of the need to raise attainment to improve life chances and this is happening successfully in many schools. Interdisciplinary learning, however, presents us with an interesting dilemma: what if we are still testing (and therefore valuing) the wrong things? Assessing IDL is hard for a reason: it doesn’t lend itself to straightforward processes. It requires observation, summative assessment, protracted thoughtful reflection and sophisticated assessment instruments. Our new qualifications system has still not come close to providing a national framework for assessing and rewarding the kinds of skills that determine future success, according to some. IDL, on the other hand, affords ways for learners to apply these skills in situations that closely mirror the world outside school.

Perhaps hand-in-hand with our raising attainment agenda should be a campaign to develop nationally recognised approaches to the certification of interdisciplinary learning, drawing on qualifications models from across the globe.

The idea of a classical liberal education (or its variant, a liberal arts education) has its foundation not in a political idea of liberality but in the notion that it formed the capacities of thought and action necessary to thrive in a democracy. In other words it was an education for freedom, for ‘liberty’. It is an approach that still finds favour in some American colleges, in British independent schools and is espoused by some English free schools. It is present in Curriculum for Excellence, particularly the four capacities and one of the contexts for learning: interdisciplinary learning. This nebulous, creative, exciting and, for some frightening, context offers learners the chance to apply their knowledge and skills in new or unfamiliar situations.

Many jobs that have emerged over the last fifty years have called on employees to become ‘superficial specialists’: not experts in one field, but certainly quite focussed on a single task or area. This suited a certain kind of economy, but does not hold now for a society that sees young people ponder multiple, varied careers, a much higher level of self-employment, jobs that are driven by creativity and communications and a global marketplace. It is interesting to note, therefore, that ideas that were once popular in the late 19th century (and before that, the Renaissance) of people having a range of expertise and interest across diverse fields are once again gaining ground. The difference this time however, is that it is not driven by idle interest, hobbies or dilettantism, but by a need to be able to synthesise knowledge and skills from different fields, apply it and create with it.

This can find itself at odds with a strong historic impetus in Scottish education that values academic specialism and mastery. Meanwhile popular culture, public intellectual enquiry and the great problems of our age all require not just a recognition of the interconnectedness of disciplines, but a commitment to connect them and learn afresh. Where some learners are alienated by more traditional curriculum structures, IDL offers a higher level of engagement. Thus interdisciplinary learning is vital for the most able and those who find the curriculum challenging; it is as much about positive destinations and future economic activity as it is about intellectual enquiry and love of learning; and it can certainly contribute to raising attainment whilst simultaneously preparing learners with the skills needed for life, work and further learning.

Scotland, if not quite unique in building IDL into the curriculum as an entitlement and necessity, is one of a handful of education systems that values interdisciplinary learning on a national level. It is interesting to note,
therefore, that in the global case studies in section five, many schools outside Scotland have introduced IDL of their own volition. They have perceived it as having an intrinsic importance that means they are not waiting to be told to do it, they are taking the lead. These schools speak variously of the rationale for IDL being: work readiness, the development of independent learning skills, matching local labour market information to the curriculum and improving learning engagement through relevance and challenge. We must consider, then, why school leaders both in Scotland and abroad, are averse to or struggle with, interdisciplinary learning.

Too often we can view the provision of IDL as a compulsion, an imposed necessity. We are happy to tick it off as having been ‘done’, another external demand met. When (if?) this happens (and if such an approach is licensed by those who judge our work) all we do is show our lack of understanding of the definition, nature and power of IDL. If we truly understood it then we would argue for its place in our curricula with passion and fierce intent because we would know its transformative power. But this is not to criticise, for it should not be a revelation that so many schools feel at sea with IDL. It commands precisely two dedicated paragraphs in the Building the Curriculum documentation and a handful of vague references across the five BtC publications, despite being a cornerstone of the new curriculum. Such official obscurity is hardly the endorsement needed for what is not just a context for learning, but effectively a new, if opaque, dimension in Scottish education. Curricular areas? Tick. Ethos and life of the school? Easy. Personal achievement? Been doing it for years. Interdisciplinary learning? Er... sorry... run that past me again.

It is the only one of the four contexts that would require a teacher, pupil, school leader or parent to engage in some level of enquiry to arrive at a definition. And yet it is the one context that can provide a super-structure for the others. It is, or could be, your curriculum.

Where individual disciplines can struggle to assert their relevance despite centuries of credibility and parental support, IDL can prove revitalising, even profound and yet it is has to fight its corner against accusations that it is frivolous or superficial. Otherwise well-established ‘subjects’, despite poor teaching, unimaginative courses and excessive assessment, progress to the top table unchallenged.

Of course developing IDL requires a level of institutional creativity and commitment to innovation that immediately exposes a school to criticism. The risks can seem great. It is interesting then to contrast the higher education sector with schools. The former can devote huge amounts of capital and private support to setting up institutes and departments that are interdisciplinary. A school devoting even a small number of teaching periods to IDL faces many internal and external challenges, as discussed earlier and expanded upon later in this document.

The potential rewards are great, not just for the learner, but for the professional learning of teachers, the personal and pastoral support of pupils and the attainment and achievement of learners.
I. Summary and Definition

When you are out walking, nature does not confront you for three quarters of an hour only with flowers and in the next only with animals.

Lionel Elvin, The Place of Common Sense in Educational Thought (1977)

What is interdisciplinary learning?
What is its place in the curriculum?
What is the case for IDL?
What is its development context?
What research supports IDL?

a. What is IDL?

Interdisciplinary learning is a central plank of Curriculum for Excellence. What is meant by this and what are the expectations of IDL?

Interdisciplinary learning is one of the four contexts for learning identified within Curriculum for Excellence.

It is defined in a number of different ways:

- Cross curricular learning
- Multi-disciplinary learning
- Project-based learning
- Stand-alone events or ‘collapsed’ curriculum days

An American research paper (Jacobs, 1989) cites four different modes of interdisciplinary learning.

Crossdisciplinary: Viewing one discipline from the perspective of another; for example, the physics of music and the history of math (Meeth 1978).

Multidisciplinary: The juxtaposition of several disciplines focused on one problem with no direct attempt to integrate (Piaget 1972, Meeth 1978).

Pluridisciplinary: The juxtaposition of disciplines assumed to be more or less related; e.g., math and physics, French and Latin (Piaget 1972).

Transdisciplinary: Beyond the scope of the disciplines; that is, to start with a problem and bring to bear knowledge from the disciplines (Meeth 1978).

There has also been a growth in the use of interdisciplinary learning at further and higher education. And some of the most interesting innovative research at a number of top universities in the world has been as a result of collaborative research by academics and by colleagues thinking across traditional subject disciplines.

One other important thing to note is that in the commercial and industrial worlds, innovative business practice often involves creative thinking by people from many disciplines working together. This is highlighted in some of the case study material we provide.

Lastly, a range of academics and thinkers have expressed the opinion that to solve the global challenges humanity currently faces, requires a multidisciplinary approach.
It is in this context that programmes of learning of an interdisciplinary nature in Scottish schools, and in schools throughout the world, need to be seen.

b. What is its place in the curriculum?

If the value of interdisciplinary learning is seen as being of significance beyond schools, a number of questions emerge as a result. Some of these are as follows:

- What is the value and importance of interdisciplinary learning in schools?
- What programmes of learning should we be building?
- How do such programmes relate to the entitlements young people have to support them to gain as much as possible from the curriculum?
- How do such programmes relate to the entitlements young people have in planning positive destinations from school?

Interdisciplinary Learning offers the entitlement to personal support for a number of reasons. When it is done well it offers young people the following:

- Genuinely personalised opportunities for learning which present a challenge and are engaging
- Enhanced opportunities to develop skills for learning, life and work

Of course, for certain learners who do not achieve in particular subjects, the openness and creativity of the possibilities presented by learning in an interdisciplinary fashion can be a real source of motivation. This can be an important mechanism of support.

However, for able pupils interdisciplinary learning can present them with a significant challenge, which can energise their studies and allow them to see the relevance, patterns and connections between these subjects.

So, interdisciplinary learning can be an effective means to provide appropriate support and challenges to young people and can therefore help schools to define the specific ways in which they are planning to meet the needs of all young people.

c. What is the case for IDL?

The statements made in previous sections reinforce the important role in the curriculum that other documents have established. For example, BTC3 establishes that effective curriculum planning and delivery is about “providing space for imaginative teaching that can capitalise on approaches which make learning relevant, lively and motivating.”

Furthermore it establishes that “This planning should demonstrate the principles for curriculum design; challenge and enjoyment; breadth; progression; depth; personalisation and choice; coherence; relevance.”

BTC4 claims that skills for learning, life and work, “should be developed across all areas in interdisciplinary studies, and in all the contexts and settings where young people are learning.”

In BTC5 the following statement is made, which draws a direct relationship between personal achievement and interdisciplinary learning:

“Achievement is defined in Building the Curriculum 5 as relating to progress in all aspects of each child’s or young person’s planned learning. Achievement covers learning within curriculum areas and interdisciplinary learning, including recognition through qualifications, but it is much wider than that. It includes achievement in other areas within the life of the school and outside the school – sometimes referred to as wider achievement.”
There are quite significant challenges in developing approaches to interdisciplinary learning for schools.

**Expectations**
The national advice suggests that this kind of learning should be engaging and stimulating, but this relies on a high level of confidence in teachers, which can be difficult even for very competent teachers to achieve. To facilitate valuable interdisciplinary learning teachers have operated outside traditional subject areas and comfort zones, and perhaps to form a different relationship with the groups of young people they teach. Teachers have to create context in which there are structured activities, which challenge young people but which leave significant space for personal learning, development and achievement. There is therefore a pedagogical challenge for teachers embarking on interdisciplinary learning activities.

**Risk**
There are certain risks associated with IDL. Firstly, there is the risk that young people do not find the activities to be engaging or challenging. They can feel frustrated if the reality of IDL does not match up with the reality that they have been sold. This experience can also affect teacher confidence.

Managing this risk involves investing time in teacher development, facilitating meaningful professional development activities and also building on successful programmes and practices.

The overarching risk is one of credibility. In order for interdisciplinary learning activities to be perceived as credible and valuable, they need to be perceived as having the same kind of educational capital as traditional academic subjects. This can be hard to achieve particularly when interdisciplinary projects tend to be dynamic and are subject to change and revision.

**d. What is its development context?**

The key question for us here is this: why are we bothering to introduce interdisciplinary learning into Scottish schools? The answer is something to do with the need for coherence to address the perceived dissonance between school experience and the application of learning in life beyond school.

The big idea behind IDL is that it builds capacity in young people to develop as learners, building important skills for learning that will sustain them as lifelong learners. It will equip them with the flexibility in their thinking that they need to apply learning successfully in their lives beyond school.

This is part of the process of equipping young people through education to deal with the unprecedented levels of change they will encounter in their lives.

Interdisciplinary learning, for example, creates an opportunity to help young people understand the particular relevance of certain subjects and the connections between subjects. Mathematics and how it applies in other science and social science disciplines, through statistics and the examination of ‘big data’ is perhaps a case in point.

**e. What research supports IDL?**

Internationally, interdisciplinary learning has had a high profile for a long time, but less so in the United Kingdom.

**International Baccalaureate**
The most prominent example would be taken from the International Baccalaureate (Diploma, Middle Years and Primary programmes). There is a requirement in such programmes for young people to assimilate and apply learning from different subjects and apply them within a range of research tasks, projects and in the...
diploma programme there is explicit critical interrogation of the bases of each subject discipline within the Theory of Knowledge programme.

The International Baccalaureate is interesting because it is a qualification which programmes in breadth and depth of learning and requires young people to tackle weaker areas of their learning. It also includes the requirement to study a modern foreign language to age 18.

The last thing to say about these programmes is that they are associated with high attainment and access to university. This in turn emphasises the importance of interdisciplinary learning for able pupils.

Queensland New Basics
In Scotland this programme is possibly the best known programme from another part of the world. This approach advocates a sophisticated form of project-based learning in primary and lower secondary school, which is built on a foundation of redefined skills for learning, life and work.

There are differences of views about the extent to which this programme can be said to have been successful. One viewpoint is that the programme did not lead to sufficient gains in improvement, specifically in literacy and numeracy, which led to the reduction of the programme. Others suggest that the programme needed more time to mature and define itself. Its supporters claim that the programme offered young people an important learning experience.

Royal Society of Arts: Open Minds Curriculum
This programme is deployed in around two hundred schools in England. It is described as “an imaginative, competence-based curriculum which promotes innovative and integrated ways of thinking about the curriculum.”

It is based on five categories of competence:

• Citizenship
• Learning
• Managing Information
• Relating to People
• Managing Situations

There is a website which is devoted to managing this. The RSA sponsors an academy in Tipton in the West Midlands.

Singapore
There has been a considerable effort in a number of high-performing Asian education systems, such as Japan, Malaysia and Singapore in recent times to promote interdisciplinary learning programmes. This has been done with the aim of allowing young people to become creative thinkers. It is related to economic planning in these areas, which depends on creative people driving business solutions.

In such countries, there is a clear correlation between the higher order thinking that interdisciplinary learning can encourage and the economic planning for success on a country-wide scale. When considered this way, it prompts questions around the purpose of education in these particular countries.

Examples of successful innovation in MIT, Oxford, Cambridge and Harvard Universities is also driven by the imperative to create solutions to problems which are best solved by an interdisciplinary approach – and this references two important economic drivers:

• Young people develop more creativity
• Economic benefit from more creative talent being available for business development

Implicit in this last point is that interdisciplinary learning is by its nature entrepreneurial and moves away from traditional modes of curricular delivery and towards models where young people are more activity involved. When IDL is related to young people’s future economic opportunities it seems a fundamental experience rather than a luxury.

Summary
These four examples of interdisciplinary practices from around the world highlight something fundamental about interdisciplinary
learning. This is that schools and education authorities require a clear and well thought out curriculum rationale that takes account of the importance of planning for the economic futures of young people. They also need to plan for the engendering of skills for lifelong learning. This in turn demands a strategy for developing the pedagogy required to ensure that sustainable and effective programmes of interdisciplinary learning are experienced in a meaningful way by all young people.
2. National Context

a. Integrating the four contexts

Curriculum for Excellence describes four contexts for learning that are intended to be integrated in the work and life of the school. These are: Curriculum Areas, Ethos and Life of the School, Interdisciplinary Learning and Personal Achievement. The integration of the four contexts can be a fertile breeding ground for IDL planning and activity. The case studies illustrate how particular schools have broached this strategically and considered the relationship between IDL activity and other aspects related to curriculum, leadership, achievement and ethos.

b. National Advice and support

Education Scotland published a summary briefing paper on Interdisciplinary Learning in September 2012 which gave a number of suggestions as to how IDL should be taken forward in schools.

c. Attainment, achievement & skills

There are number of positive factors for schools in using interdisciplinary approaches to shape their school improvement agenda. For example, it allows a clear educational rationale to be articulated which shows the relationships between skills, knowledge and values.

When it is done well, IDL can provide unique opportunities for young people to see the direct impact of their own particular projects on other people. This can improve levels of pupil engagement in education, which in turn can ensure that young people are motivated to attain.

With new developments in Senior Phase Benchmarking [Insight], school performance will be measured in relation to specific outcomes achieved by young people (attainment, personal achievement, positive destinations from school and levels of literacy and numeracy).

Engaging young people in meaningful discussions about their achievements in schools and profiling any learning related to this is one
of the challenges with which schools in Scotland are currently wrestling.

Some international examples of programmes of learning of an interdisciplinary nature have not necessarily yielded specific gains in literacy and numeracy. Successful planning in schools should reference the lessons to be taken from such programmes. The question to ask might be: what elements of successful planning and delivery of IDL could be learnt from already internationally successful programmes which generate high levels of literacy and numeracy?

It is widely accepted that where education systems focus on the skills of young people they can have a particular success in terms of the outcomes of education. Some programmes, such as Building Learning Power, suggest that improvement in learners’ mindsets is a key to improving academic attainment. Such programmes seek to find a balance between encouraging positive mindsets for learning and technical skills or strategies for success, such as literacy and numeracy.

Taking a skills approach to developing interdisciplinary programmes of learning can help schools to create a meaningful rationale for such programmes and also form coherent plans to raise attainment. There should be a reciprocal relationship (or virtuous circle) in the mutual reinforcement of such skills and confidence. In using the word ‘confidence’, the writers of this resource are drawing on the confidence model articulated by Carol Craig in The Scots’ Crisis of Confidence (2002), which posits that confidence is “self-worth and... self efficacy.”

It will be important for schools to consider the relationship between interdisciplinary learning, skills in literacy and numeracy and a concern of teachers to promote the health and wellbeing of all young people. In addition to this, there needs to be articulation between IDL and partnerships with employers that promote the kind of planning that will create and sustain positive destinations from school.

Thus, effective IDL demands that schools consider carefully the relationship between their planning and the needs of (and potential partnerships present in) their local communities. Meaningful interdisciplinary learning activities probably require schools to make explicit their curriculum planning for the benefit of partners, so that the opportunities for partnership are clearly expressed and opportunities seized.

In schools in areas of high deprivation, where engagement with education has been a challenge, there may be specific benefits from engaging partners (especially employers) in the delivery of IDL. However, even where IDL involves no external partners, there might be particular benefits to young people in building rigorous programmes of interdisciplinary learning, simply due to the potential for engagement of young people that might occur.

d. Transformation or bolt-on?

Whilst many schools, if not all, could look back in their recent past and point to examples of effective work that could be retrospectively termed interdisciplinary learning, IDL as a central plank of the school experience is a very new idea in Scotland. The risk, therefore, of it being a national expectation, managed into existence at local authority and school level is one of misinterpretation. It is possible for schools to identify existing work and label it as IDL to satisfy a context for learning, rather than to explore a potentially transformative new avenue for pupils and generate a highly innovative experience. This is an understandable reaction, particularly given, as identified earlier, the challenges of defining effective IDL and finding credible extant practice on which to build. Thus, schools can be presented with a stark, if accidental choice: fit IDL into the curriculum as an extra to comply with national guidelines or use IDL as the starting point or catalyst for a new approach to the curriculum.
The former approach (bolt-on) is easily managed, but risks compromising the impact, credibility and effectiveness of IDL by reducing it to something that has to be done, rather than something that is compelling, creative and professionally challenging. The latter approach is undoubtedly transformative, but requires much more careful planning and timetabling, a clear strategy, staff development, time for course and learning experience development and resourcing. It is also an overt commitment to the potential outcomes for, and bigger picture of, IDL that have been alluded to earlier in this document.

It requires engagement with the structure of the learning experience, assessment, pupil voice, partnerships with other providers, CLPL and a whole range of other strategic development opportunities that are part of CfE.

The writers of this paper are firmly of the view that schools should adopt an approach to the introduction of IDL that is transformational rather than bolt-on, choosing to see IDL as something that can provide coherence, creativity and greater flexibility.
A survey of approaches to IDL by Scottish secondary schools reveals a range of styles and examples of learning. These can be categorised as follows, although it is inevitable that there is cross-over between these categories in practice.

**a. Transition**

This describes free-standing projects undertaken to facilitate the transition of pupils from primary to secondary school or, in a smaller number of cases, from BGE to Senior Phase. The former is usually enhanced through both collaborative planning and teaching by primary primary and secondary staff. In general such approaches are themed according to a dominant curricular area (that then involves other subjects) or by a particular aspect of local history or current affairs; the Commonwealth Games, for example.

**Benefits and possible advantages of this approach:**
- Cross-sector planning and dialogue
- Parental involvement
- Learning that crosses sectors

**Challenges and possible disadvantages of this approach:**
- Time for teachers to collaborate
- Disparities in teaching and learning approaches
- A lack of a meaningful outcome and follow-up in S1

**b. Stand-alone**

These IDL experiences are usually arranged for short periods of time, perhaps a day, or week, during which normal timetable is suspended and pupils and staff collaborate on a themed project. Sometimes such projects are enhanced or facilitated by external providers. They can also take the form of year group challenges. The focus of such projects is often a theme and work is developed collaboratively by the staff leading the project. It is not unusual for such projects to be linked to charitable work or to have a dimension of social responsibility or enterprise.

**Benefits and possible advantages of this approach:**
- Easily managed within existing timetabling structures
- Intense, high-impact, short-term experience
- Partnerships with external providers
C. Timetabled

A number of schools have designated weekly periods for IDL, particularly in S1 - S3. This can range from a twenty to thirty minute ‘tutor time’ slot to up to four 50 minute periods per week. Such an approach allows for the development of a course and for progression within that course over the year. Schools that have adopted this approach have, for the most part, focussed on the development of skills for learning, life and work, by offering a variety of projects and experiences through which pupils can progress. Timetabled IDL also takes the form of several subject areas simultaneously exploring a similar theme or idea and then collaborating on an outcome.

Benefits and possible advantages of this approach:
- Clear commitment of time and staffing to IDL - potentially transformational
- Allows for development and progression for pupils and staff
- A developed course that offers depth and breadth

Challenges and possible disadvantages of this approach:
- IDL is viewed by some departments as having stolen time from them
- Disparities in quality of learning and teaching can be very detrimental
- Harder to lead and manage over time

D. Integrated subjects

It has been common practice in many schools, prior to CfE, for certain subjects to work in much closer collaboration. This has often been a feature of management structures that are based around faculties and for subject areas that are traditionally linked as academic modes, for example, Sciences or Social Subjects. Such arrangements are used by some schools to facilitate IDL through thematically linked programmes of study or projects, particularly those related to STEM or STEAM (Science, Technology, Engineering, Arts and Maths).

Benefits and possible advantages of this approach:
- Fits with existing course plans
- Sections of the experience are delivered by ‘experts’
- Easy to track and assess

Challenges and possible disadvantages of this approach:
- May involve only lip service to the idea of applying knowledge and skills across disciplines
- Can be limited to being within faculties and therefore may not be true IDL
- Risks being disjointed and compromised by breakdowns in communication

E. Informal or dynamic

Such IDL takes place when individual practitioners recognise a shared learning experience that could be developed and made better through collaboration between teachers and departments. This may mean each subject teaching a different element of a shared theme according to their expertise, or it could involve team-teaching. Such projects tend to be relatively quick in timescale.

Benefits and possible advantages of this approach:
- Spontaneous and creative response to pupils’ learning
- High level of staff ownership and agency
- Straightforward to manage

Challenges and possible disadvantages of this approach:
- Relies heavily on serendipitous events
- Hard to contrive
- May lack an outcome or structure
f. SQA accredited

Both Scottish Studies and the Scottish Baccalaureate Interdisciplinary Project offer frameworks for formal accreditation of IDL. A number of schools are operating these qualifications, which are distinguished from the varieties of IDL above in the way that pupils identify areas of interest across their curriculum and negotiate a topic or project for investigation. There are some N5 investigations and N4 AVUs in other subject areas that, through careful co-ordination, could offer this as well.

Benefits and possible advantages of this approach:
• Clear sense of reward for effort and achievement
• Provides credibility for IDL
• Driven by personal interest and curiosity

Challenges and possible disadvantages of this approach:
• Limited by the availability of awards
• May remove curiosity and creative spark through emphasis on assessment systems
• Inaccessible or elitist for some

h. Informal or dynamic

In S1 - S3 IDL experiences many schools have opted to chose Literacy, Numeracy and Health and Wellbeing as themes, or aspects of these as a focus for projects. This is the case both for free-standing events and for timetabled IDL. It is also often a feature of primary transition IDL.

Benefits and possible advantages of this approach:
• Covers key areas for all young people
• Offers a wide, if not limitless, range of possibilities
• Can be assessed and planned using Es and Os thereby supporting whole school procedures

Challenges and possible disadvantages of this approach:
• Can lack focus
• May not be seen as valuable
• Can lack a clear outcome

Summary

The implementation of any form of IDL which is properly planned around outcomes for pupils offers benefits in the form of engagement, creativity, professional dialogue, higher order thinking skills and school or year group ethos. It is less a case of which form of IDL is selected and more a matter of the motivation for and approach to its implementation.
The experiences of the schools around which this report is based suggest that the following dimensions require attention when planning and teaching effective IDL.

**Pupil Outcomes and purpose**

Effective IDL offers clear outcomes for pupils that are shared widely to ensure that participants, parents and staff view the experience as worthwhile and credible. Furthermore, the process of implementing IDL is better facilitated if there is a clear sense of purpose linked to school ethos, vision and values. Clarity of outcomes could include, for example, explanations of the knowledge and skills from different subject areas that are being applied in a new context.

**Development and planning processes**

As well as planning around experiences and outcomes or, in Senior Phase, qualifications and accreditation, the process of developing the learning experience is crucial. Consideration should be given to the staff who will develop the learning experiences: will this involve all staff or a distinct team of teachers? Alternatively, the development and leadership of IDL could be a focus for particular committees or working groups or could reside with identified departments. Whatever the process adopted there will be a need for some form of consultation with staff, pupils and parents on the nature and structure of IDL. For schools opting to timetable the experience on a weekly basis this is vital as allocating time to IDL necessarily means adjusting the time devoted to other, more established experiences. For this reason it is important that there is a clear rationale for implementing IDL to provide credibility within this process.

**Timetabling**

The decision to facilitate IDL via stand-alone events, days or weeks will entail minimal timetabling implications. However, schools that opt for weekly IDL experiences will have to confront timetabling challenges and tensions, particularly if the planned IDL takes place within the Senior Phase. Of course, where much IDL is occurring in an informal or dynamic way (see above) or where IDL is created by departments simultaneously exploring a common theme, the timetabling challenges are greatly reduced, although the allocation of staff to the leadership and teaching of IDL remains just as crucial.
Assessment, profiling, target-setting, PLP

Whilst it is relatively straightforward to plan and teach an IDL experience, the processes of assessment and profiling are more complex. The aims of the learning experience require clarity, thereby providing success criteria that connect both to subject-specific Es and Os, for example, as well as broader transferable skills or dispositions. Processes of reflection and target-setting by pupils are even more essential for IDL if pupils are to make sense of their learning. Further to that, and especially in the Senior Phase, there is potential for assessment to result in meaningful accreditation through a variety of pathways such as SQA PDAs or, for example, Saltire Awards. A consideration in planning Senior Phase IDL is when, the work is formally accredited, if at all, and whether or not such a process risks compromising the learning experience.

Partnerships

In many schools IDL results in better professional dialogue and improved internal curricular partnerships. It is also greatly enhanced through partnerships with other providers, businesses and agencies including arts organisations and outdoor education professionals. The role of these professionals may provide the overarching interdisciplinary context to which subject departments contribute, alternatively the partners can provide more of a supporting role, offering additional expertise that enriches the experience. Such partnerships underline the importance of communicating a dynamic vision for IDL both within the school and externally. They also point to the extent to which IDL can generate wider benefits for the shape and structure of the curriculum.

Cross-cutting themes

The case studies contain examples of schools embedding literacy, numeracy, health and wellbeing, wider achievement, enrichment, depth and challenge, enterprise, ICT and other themes through IDL. There are examples of some schools outside Scotland that have employed IDL on a large scale to provide coherence to the curriculum. Placed at the centre of learning in a school in this way IDL becomes a very powerful tool for curricular transformation. On a simpler level, most IDL tasks have a focus on the responsibility of all Es and Os or on current trends such as employability or enterprise, thereby ensuring relevance in the tasks. In addition, much of the IDL described in the case studies offers an increased level of challenge, greater depth of study or some sort of enrichment of learning through the application of skills. The development of programmes such as Apps for Good and the growing emphasis on coding and ICT within STEM offers a new approach to the teaching of computing skills and science.

Staff development, management and place within existing management structures

IDL can represent a pedagogical challenge to the staff charged with leading and teaching it. The case studies demonstrate a range of staff development work and CPD including communities of practice, Critical Skills programmes, TLCs, collaborative development work and research. Whatever the chosen processes, what is important here is a recognition that IDL demands a new approach and fresh thinking and can be a conduit for meaningful professional development and collaboration. Consequently, IDL can also have impact on established disciplines when the lessons learned by staff from its unique pedagogy are applied in their departments and classrooms. In addition, this requires management and leadership as well as ownership. Some schools have opted for informal line management of IDL through collaborations or via DHTs overseeing work by other staff. Other schools have chosen to create a dedicated PT post (or unpromoted volunteer) that allows for development work to have a more strategic long term plan to evolve and for staff to gain experience of leadership. Of course, where IDL is being facilitated through informal collaboration between departments there may not be a need for this, instead PTs or DHTs may simply act as co-ordinators.
-growing place of IDL in Scottish education, and its potential for further development, point to the need for schools to consider such flexibility within their management structures, PRD and recruitment processes.

**Role of pupils**

As well as being learners there is a clear role for young people in writing, shaping and leading IDL development. This can be seen in personal or negotiated projects at all levels through which pupils apply their knowledge across disciplines to a topic or theme that they have generated. Pupil evaluation of IDL, along with the relative youth of IDL as a curricular area, means that in many schools the young people can exercise more influence than in other areas over how IDL is delivered. IDL can also offer greater personalisation and choice and, therefore, pupils can exercise more influence over the learning experience they follow.

**Senior Phase IDL.**

IDL in S4 - S6 is at a much earlier stage in most schools than IDL in BGE. As more and more schools experiment with more radical and creative timetabling this picture is changing. However, there can still be a tension between offering IDL and managing expectations around attainment and accreditation. The case studies demonstrate approaches that include rebalancing time across options columns to create interdisciplinary multi-subject and multi-award courses; using enterprise as an IDL organiser and carving out dedicated time in Senior Phase to timetable IDL. Since the Senior Phase brings with it a clear expectation of greater personalisation, there is also the need to consider at what point pupils undertake IDL, and whether it is either necessary or desirable for this to be facilitated on the basis of age and stage, rather than personal need and interest.
What follows here are four case studies that cover thirteen schools.

The first three are from Scotland and describe how schools have developed interdisciplinary learning within the context of Curriculum for Excellence. There are of course many other Scottish schools that have successfully taken this course over the last five years, so what is written here is not definitive guidance, it is a ‘warts-and-all’ examination of school experience from the ground up.

The Scottish case studies all follow roughly the same structure. The writers have described the process of development and the evolution of their models over time, they describe their current position, before concluding with a suggestion of how their schools may develop in the future.

They are three schools of very different sizes serving different communities and this has been taken into account in the way in which their IDL model has grown. They all touch on issues of timetabling, staff development, leadership and assessment, with which many school leaders will identify. The schools also have a clear commitment to interdisciplinary learning as an evolving model that responds to changes in circumstance and to opportunities as they arise.

The ten global ‘mini-case studies’ that follow the Scottish schools have been anonymised, but showcase a wide variety of interesting practice across continents and sectors. Some of the schools represented are expensive fee-paying establishments and others are state-funded schools facing challenging social and economic circumstances. In each case you can read about the current picture of IDL provision in the school, although this is not always accompanied with a description of the process undertaken by the school to arrive at that model.

All the schools represented here make reference to some sort of global citizenship element within their IDL. For this reason the author of this document felt that a similarly global reach had to be applied to the content of the case studies. There is no particular agenda behind the choice of schools from beyond Scotland other than to uncover ideas that support, challenge and inspire Scottish school leaders to develop effective interdisciplinary learning.
5a. Case Study 1: St. Joseph’s Academy

St. Joseph’s Academy in Kilmarnock, East Ayrshire, is a Catholic comprehensive school of approximately 700 pupils. It has implemented a range of IDL from S1 - S6, in particular its BGE programme known as LifeSchool 360.

Its approach has brought together teachers, businesses and a variety of IDL models from other schools and places the development of values and skills at the heart of learning.

a. Background

At St. Joseph’s Academy pupils experience the following range of interdisciplinary learning.

S1 - S2: LifeSchool 360 which is an integrated IDL curriculum taught by a variety of staff from different departments timetabled for 3 periods per week. Across the two years pupils undertake up to eight projects. These are divided into masterclasses (whole class experiences that explore the theme of project) and DARES, which are more personalised projects undertaken individually or in small groups to respond to the themes established in the masterclasses.

S3: One period per week of timetabled IDL through which pupils undertake a negotiated interdisciplinary project which is supervised by a teacher who assists the pupils in bringing together various disciplines and areas of interest within the project. The final outcome, christened a Junior Baccalaureate DARE, is a key factor in the S3 Diploma of Achievement.

S4: The school experimented with a variety of IDL for the first year of Senior Phase (2013-14), but has found that the menu of IDL options struggled to be fulfilled as it lacked time on the timetable. Consequently a two period insert of IDL and wider achievement has been introduced for 2014-15 which offers a variety of experiences.

S5/6: For the past three years there have been a variety of IDL options including an interdisciplinary Bakery and Microbiology course which offers multiple qualifications in one experience, a Life Literacy course, an Enterprise course, Personal Development, Leadership and Caritas, all of which combine in various ways to create IDL opportunities. There have been a very small number of pupils undertaking the Scottish Baccalaureate and the school’s main IDL challenge in Senior Phase is to facilitate challenging options for the most able.

The case study that follows focuses on the development and implementation of LifeSchool 360.

b. Rationale

At St. Joseph’s the rationale for their approach to IDL was founded on a number of concepts. Firstly, providing a sense of coherence within
the curriculum - IDL should be at the heart of the learning, rather than a bolt-on. Secondly, it should allow pupils to experience challenge and apply their knowledge and learning from discrete subject areas within new contexts. Thirdly, the learning experience should be underpinned by a clear focus on the school’s Catholic vision and values with a strong sense of living out the values of the school through projects and community work, including enterprise. Fourthly, a cohering principle of the IDL would be ten skills developed and defined in-house that are transferable and that accommodate the principles of BtC 4. Fifthly, the tasks, whilst informed by the Es and Os, should not be bound by them, but should encourage a strong sense of curiosity and tackle big questions as well as knowledge and skills that would enrich the curriculum. With this final point there was a sense in which the IDL would address the inevitable shortfall within the curriculum created by understaffing in certain subjects.

The school expected to focus on literacy, numeracy and health and wellbeing with the outcome that, in particular, IDL would bolster literacy, develop personal choice in learning (HWB) and support the further application of numeracy skills in new contexts. Beyond this they expected to see improvements in pupils’ confidence, their communication skills and in their capacity to undertake learning independent of their teacher and outwith the classroom. As the S1 who began the IDL (known as LifeSchool 360) progressed through the school staff expected them to develop specifically in the 10 skills and to be reflective and deliberate in applying their knowledge and skills to improve the circumstances of others.

The outcomes are delivered through eight interdisciplinary tasks undertaken across S1 and S2 and further project-based study in S3. This was the original plan, although it was not what was realised in delivery with timescales that required adjustment and a variety of issues that determined the courses would develop and evolve at their own pace. It was, on the whole, a positive.

c. Development process

The consultation and development phase lasted three years. It was driven exclusively by the imperative of CfE in the sense that it is hard to see that the school would have arrived at the implementation of IDL so soon without there being a national expectation. That said, it was very clear from the positive reaction of many staff to the project that there is a natural instinct within many teachers for an interdisciplinary framework, especially within BGE.

Much of the consultation in the initial stages (which lasted for two years) focussed on the super-structure and time allocations for IDL in S1 to S3. In general, this seems to be the way of things when major change is being discussed and implemented and it occurs (as it did at St. Joseph’s) at the expense of the much harder, but necessary, discussions around learning and teaching and pupil experience. These came later. The initial proposal was for each year stage (S1 - S3) to undertake 4 tasks per year for a total of 20% of each week (i.e. 6 x 53 minutes periods out of 30 each week). This was reduced to four periods per week after consultation. The only agreement about the content of the tasks was that they should be based around the broad, traditional modes of the curriculum.

Time would be provided by creating rotas of some subjects, removing PSE and reshaping the time allocations of other subjects areas whose content might be reflected in some way in the IDL.

The vast majority of the consultation in the first two years was with staff and was undertaken on in-service days and at after school meetings as well as through a working group. Having been influenced by the Queensland New Basics Rich Tasks, the DHT at the time leading the innovation, proposed that a pilot implementation be run with the S1 in the summer term. This was entitled Festival of
Scotland and would entail a 9 day ‘off-timetable’ experience involving all departments and most staff. Whilst very successful, it revealed the considerable challenges of such one-off learning and confirmed the original decision to maintain IDL as a weekly, timetabled commitment. The evaluation of this pilot project by staff and pupils was instrumental in developing the final model of IDL for full implementation.

In session 2009 - 10 the focus for development and consultation shifted to address the content and pedagogy of IDL. This entailed greater dialogue with parent council members, pupils, some businesses and staff.

Pupils themselves were not a significant part of the planning process for IDL until it was up and running, although their feedback from the pilot project contributed to the overall shape of IDL. Now that they are into year 5 of the project there has evolved a much greater emphasis on pupil-led learning and project-based work that is heavily reliant on learners planning their own learning. This has been challenging for many staff to accommodate and has led to development work being directed towards producing materials that allow teachers to structure this sort of learning more carefully.

As stated earlier, there is a theme of values running through all the learning that takes place in LS360, especially as pupils move into S3. This has informed other whole school developments. For this reason, the development of IDL was concurrent with a complete overhaul of the school’s vision and values and a detailed, sometimes difficult, re-considering of what the school community wanted for their pupils. This assisted the planning in as much as it encouraged teachers to plan for the pupils’ learning rather than for the transmission of content. However, when it came to teaching the IDL tasks, this meant that it was an ongoing task to translate the sometimes vague, if well-resourced, experience into actual classroom practice.

Since one of the unspoken aims of the IDL model was to break down the subject silo mentality, partnership across departments was emphasised, especially in the planning phase. Developing meaningful collaborations between teachers was a significant challenge in itself. However, the pilot project, Festival of Scotland, was planned and taught in partnership with local businesses and providers. This is something that the school brought into the first year of implementation of LifeSchool 360, but that has proved hard to sustain.

All departments in the school contributed to the main development work for IDL (the pilot project in June 2009 and the development year 2009 - 10). All departments were represented in the pilot project, although only a handful of PTs assisted in leading the work. For the development year all staff were put into eight groups (one per IDL task). Each group was composed of approximately eight staff of differing levels, experience and subject. As far as possible, distributed throughout the groups, were teachers who had undertaken Critical Skills (CSP) and the Tapestry/ Harvard ‘Teaching for Understanding’ course. Eight staff were identified as group leaders based on their CPD and general approach to teaching. The school felt they had eight leaders who were enthused by the possibilities of IDL and were keen to shape it. It was made clear to staff that anyone could be expected to teach LS360 and therefore all staff should be involved in developing it. The aim was that each task would be ‘classroom-ready’.

Over the year that followed the eight groups developed their tasks from the initial stimulus of a single word or phrase e.g. ‘Power’ or ‘Horizons.’ The development work was launched with a whole staff session on CSP. From that point the groups met to make an initial proposal to SMT which was then reviewed and discussed again with the groups before being refined. Thereafter every in-service day and staff meeting time was allocated to the development of the tasks. Most groups divided the tasks between members according
to interests or expertise. By the end of the
development period most of the tasks were
close to completion, but few were considered
fully ready. A planning proforma was
developed and used to guide the development
process and to ensure uniformity of approach,
building each task around ‘big questions’.

The planning and development phase was
closely monitored and led by a DHT who
provided considerable guidance to staff and
steered the IDL curriculum in a particular
direction as required. The lack of national or
local guidance meant that they had to look
further afield to find interesting examples of
IDL from other schools around the world.
Regular meetings with the group leaders also
enhanced the process.

d. What do pupils do and
experience?

The final IDL model at St. Joseph’s was called
LifeSchool 360 (LS360). It was agreed that the
pupils should experience 4 tasks in S1 and 4 in
S2, providing further development time for the
S3 course which, it was felt, would have to be
differentiated from S1 and S2 in some way.

The model has been through a number of
refinements. As things currently stand in S1
and S2 pupils work in classes of approximately
22 pupils on various different themed tasks.
These tasks are split into a Masterclass and a
DARE. The Masterclass is the part of the
course that all pupils do. This introduces them
to an overall theme and area of knowledge.
Once this is completed, pupils are given a range
of choices of tasks. They must choose one. The
DARE is linked to the Masterclass, but is more
specialised and allows for greater depth of
study. For example, pupils in S1 all do a
Masterclass entitled Global Village and then go
on to study the aspect of the Masterclass that
interests them most in more detail in the
DARE. This might involve performance,
cooking, design, writing or service to the
community.

The projects also aim to build on the natural
curiosity, wonder and excitement of the young
people, providing learning that is enriching and
challenging. The tasks demand, and will help
to develop, independence of thought,
perseverance, resilience and many other
important qualities. Through these projects
pupils will also be able to see clear connections
between subjects that they study and will gain
knowledge and skills to equip them for
learning, life and work. Staff will also place
particular emphasis on reading, writing,
numeracy and health and wellbeing, to support
other subjects across the curriculum.

In Lifeschool 360, much of the work involves
being part of a team and undertaking a
challenge. This could mean building an electric
gadget, making a mask, learning a dance or
communicating with young people across the
globe. Pupils will occasionally work with
people from outside the school, may participate
in study trips and will benefit from the school’s
excellent links with local businesses. Their
learning in Lifeschool 360 will be challenging,
active and will offer many opportunities for
them to realise their potential.

As the name suggests, Lifeschool 360 connects
all subjects in the curriculum and encourages
pupils to consider how their learning prepares
them for life and work beyond school. It is
allocated 3 periods per week on the S1
timetable. Pupils tackle 2 - 3 tasks in first year,
each task lasting approximately ten weeks.
There is time built in that is designed to allow
pupils to ‘reflect and project’: look over their
learning, consider their strengths and
weaknesses, set targets and work out how to
improve their learning and skills.
The 8 projects that form the majority of work in Lifeschool 360 have been written by staff from across the school, drawing on their experience and expertise. Each project challenges pupils to use skills from across the curriculum and seeks to support the development of ten skills that will assist pupils in all their subjects. The list of skills has been drawn up by staff in consultation with the school community and representatives from local businesses. The skills are listed on the school’s website - parents were asked to display a skills poster at home and give some time to discussing the importance of these skills with their child.

e. Skills and assessment

The development of the IDL took place prior to any significant national and local developments around moderation and the use of Es and Os. For this reason, and because staff wanted ‘big ideas’ to dominate the tasks unfettered by curriculum bureaucracy, they did not build them around the Es and Os. Instead they retro-fitted the experiences and outcomes to the tasks. This has brought some advantages, but has meant too that as experiences and outcomes have come to dominate curriculum development in general and as staff have become much more familiar with them, they have sometimes struggled to audit their coverage in LS360. This has had a resultant impact on assessment and reporting and on the development of the S3 profile. Certain aspects of particular tasks were, from the start, very closely tied to RoA Es and Os, especially Literacy.

The learning experiences within LifeSchool 360 place a strong emphasis on self- and peer-assessment. This is central to the development of confidence and independence through interdisciplinary learning. It also means that a combination of this with teacher assessment of skills renders the process of monitoring and recording progress more manageable. At the heart of the LS360 experience are the school’s ten skills for learning, life and work and the eight values. These are the basis around which all learning in the school is planned, particularly in the broad general education. Pupils complete online self-assessments in relation to these skills and values and to record their progress during each task.

f. Personalisation and choice

The tasks that pupils undertake are designed to enrich the curriculum by offering greater breadth of experience, for example through the application of skills and knowledge in unfamiliar contexts, and greater challenge by demanding more independence and placing an emphasis on collaboration.

Personalisation and choice has become an increasingly important and developed aspect of LifeSchool 360. Whilst initially the topics were taught in their entirety to all pupils and augmented with a freestanding ‘personal project’, pupil feedback identified the need to extend this choice and make it fundamental to the experience. The result of this was the division of each task into a masterclass, or overarching introductory experience to each task, and the DARE (derived from the Latin Sapere Aude or ‘dare to know’) which challenged pupils to formulate a personal interdisciplinary response to the task through one of a variety of ways.

For example, the topic ‘Global Village’ began with a look at global trade and politics and a variety of common tasks and then offered pupils a range of routes for learning and outcomes through which they could demonstrate their understanding of the issues explored. Most of the choices have a dominant discipline, but remain interdisciplinary as well.

g. S3 - S6 IDL

In its first phase of implementation LS360 extended into S3 and was allocated two periods per week. However, after the first year of this approach pupils and staff felt that there was a
lack of pace and challenge and a need for greater emphasis on independence and project-based learning that mirrored the Scottish Baccalaureate.

Since that realisation IDL in S3 has taken a different form. For the past two sessions pupils have had one period of IDL in S3 during which they pursue a project that brings together at least two subject areas to investigate a question or hypothesis.

The assessment of this project is ongoing throughout the year and is supported by a piece of extended writing that contributes to the pupil’s S3 profile and their St. Joseph’s Academy Diploma of Achievement - the overarching recognition of wider achievement, academic success and character development operated by the school. As with the LS360 course in S1 and S2, pupils are assessed using the 10 skills and 8 values as well as looking at development of knowledge and skills that are subject-specific. The projects are also built by teachers around the Es and Os on a personal basis for each pupil.

In the Senior Phase there are a number of opportunities for IDL. Pupils in S4 undertake a range of activities that are timetabled between Maths and English for up to two periods per week. These experiences are short-term and can involve other subjects according to need. In addition, throughout the Senior Phase pupils can pursue a variety of leadership, personal development and service to the community courses (including Caritas) all of which have interdisciplinary elements. More specifically, the school offers a course that combines NPA Bakery with Microbiology.

As it reviews its Senior Phase model the school intends to apply the S3 approach in S4 - 6 so that all pupils are able to undertake an IDL project that combines their study across the curriculum. This has been successfully piloted in S6 in 2014-15 with a series of interdisciplinary projects that look at cancer. Christened the Karkinos Project S6 pupils have been placed in interdisciplinary groups and given data and personal stories about cancer as well as listening to presentations about prevention, research, fundraising and innovation. Using this information they have been challenged to solve one of six cancer challenges using the skills across their group. They must then present these solutions to a critical panel of judges.

It is this kind of learning that roots high level academic enquiry in the reality of life outside school that St. Joseph’s seeks to build on to create a unique, challenging interdisciplinary Senior Phase.
a. Context

Opened in 2009, Saint Peter the Apostle is a Roman Catholic Comprehensive High School which serves the town of Clydebank. The current roll is 1460 pupils. The school is situated in West Dunbartonshire Council which, in relation to the Scottish Index of Multiple Deprivation, is an area of significant deprivation. Developing skills for learning, life and work underpins Curriculum for Excellence which strives to ensure that all learners are equipped to meet the challenges of an ever changing world.

As one of the four contexts for learning, interdisciplinary learning is absolutely crucial in developing the young people of Saint Peter the Apostle High School as successful learners, confident individuals, effective contributors and responsible citizens. It is also vital in addressing the challenges of Developing Scotland’s Young Workforce (Wood Commission).

Saint Peter the Apostle HS has rebranded interdisciplinary learning (IDL) as Learning for Life (LFL) and ensures a core timetabled commitment from S1 through to S6. The LFL curriculum aims to develop the SQA Skills framework of; thinking skills, literacy skills, numeracy skills, enterprise skills, enterprise skills and employability skills. The LFL curriculum across the stages is constructed around this skills framework and seeks to teach, assess and track core skills explicitly through a range of interdisciplinary contexts.

The importance of IDL is acknowledged in the Building the Curriculum 3, 4 and 5 documents which outline desirable learning opportunities afforded to school pupils. Learning beyond subject boundaries enables learners to experience deep, challenging and relevant learning. IDL enables teachers from any discipline, together with learners, to make connections in their learning through exploring clear and relevant links across the curriculum. It facilitates the application of learning in new, real life contexts which provides opportunities for a deeper level of learning.

b. The Evolution of IDL

In the first two years of the school, IDL was delivered in two ways. Firstly through several whole school "rich tasks". These included a primary/secondary transition project entitled the “From the Swinging Sixties to the 21st Century”, “Money Week”, “Holocaust Memorial
Day” and “Mini-Olympics”. These "rich tasks" were built around thinking skills, numeracy, literacy and health and wellbeing and were complemented with a range of interdisciplinary departmental projects throughout the session. Although many strengths were identified in this approach, the IDL Steering Group reported two major weaknesses; a lack of rigour in ensuring clear skills development and progression and the whole school tasks were perceived as a bolt-on to the curriculum.

In May 2011 the school established an IDL Steering Group which had strategic responsibility for the development of IDL in Saint Peter the Apostle HS. The group agreed a number of core principles in developing the new IDL curriculum. S1 IDL would now be timetabled for single teacher delivery for two periods a week from August 2011. 3rd and 4th level experiences and outcomes were used to plan the new IDL curriculum and all stakeholders were involved in the planning process including pupils, parents, associated primary schools and community partners.

The group focussed on identifying appropriate contexts for IDL and ensured skills for learning life and work underpinned the new curriculum. This innovative approach was recognised nationally as Saint Peter the Apostle HS reached the top 3 in the Enterprise and Employability Across Learning Award (Secondary) in the Scottish Education Awards (2012). Examples of units of work from S1 IDL included an Enterprise topic that involved pupils designing products to sell at a Christmas Fayre, a Community day where S1 pupils welcomed members of the local community and a more in-depth exploration of the Holocaust.

A year later, following on from the success of S1 IDL, a new Steering Group was formed which had the strategic responsibility for the development of IDL into the S2 curriculum. The main priority of the group was to create an IDL curriculum for S2 which ensured challenge and progression from the S1 curriculum. This was also allocated two periods a week with a single teacher delivery. 3rd and 4th level experiences and outcomes were used once again to inform planning and pupil choice was be built in through the development of electives in term 2 of the new curriculum. Examples of electives included samba music lessons, cake decorating and camera and editing skills.

Following an extensive consultation with pupils, parents and staff regarding the implementation of the Senior Phase in Saint Peter the Apostle High School, the following was agreed during May 2013:

- IDL would be rebranded to Learning for Life from August 2013
- S1 and S2 pupils would continue to experience two periods a week of Learning for Life
- S3 and S4 pupils would experience one period a week of Learning for Life
- S5 and S6 pupils would have access to a range of Learning for Life options as part of their timetabled week.

The S3/S4 Learning for Life Experience includes financial education, growth mindset and study skills which aim to build upon the skills acquired in S1 and S2. All staff members in the school were invited to create a series of Learning for Life options accessible to S5 and S6 during session 2013 -2014. A range of options were developed from across every subject department in conjunction with a Learning for Life course planner to maximise pupil choice and ensure a continuing focus on the development of skills for learning, life and work. Further to this, the school is in the process of developing SQA accredited units of work focused on employability skills to be delivered through Learning for Life classes.

Current units of work include jewellery making, driving theory test unit and interview skills. In response to the challenges of ensuring consistency in delivery and credibility, Saint Peter the Apostle HS created a Learning for
Life full time teaching position within the school in June 2013. This teacher has responsibility for implementing and monitoring Learning for Life S1 through to S6. In June 2014 two temporary members of staff with Learning for Life responsibilities were added to the staff to assist in the creation of a Learning for Life department.

Learning for Life has now become a permanent fixture in the school curriculum with over 40 members of staff from across the school leading Learning for Life classes each session. Staff are supported through meetings with the Learning for Life teacher, teaching materials delivered through the school intranet and on-going curriculum evaluation in response to feedback from pupils, parents and staff. Annual audits of the curriculum take place and lessons respond to developments in the local community, the education system and our global context. Learning for Life has evolved significantly in Saint Peter the Apostle HS and it is evident that it will continue to grow and progress in the years to come.
a. School Context

Dalbeattie High School is a 6 year comprehensive secondary school of 394 pupils, in rural south-west Dumfries & Galloway. The school serves Dalbeattie, St Peter’s RC, Kirkgunzeon, Palnackie, and Colvend Primary Schools. The school also regularly receives placing requests from areas including Hardgate, Auchencairn, Springholm and Kirkbean.

There is a variation in P7/S1 uptake from the largest primary school, Dalbeattie Primary, with variances from two P7 classes to one P7 class, which can change our intake significantly from c.90 to c.50. Dalbeattie Primary School is recognised as a school of deprivation but the other associated Cluster Schools have a significant number of professional working families.

b. Interdisciplinary Learning in the Context of Curriculum Refresh

In 2011, Dalbeattie High School began a process of refreshing the lower school curriculum. As part of this curriculum refresh, staff were asked to consider the opportunities for Interdisciplinary Learning in the context of ‘Building the Curriculum 3’. In the same year, junior school year groups were timetabled for the first time based on Curricular Area; i.e all pupils in a year group would attend Expressive Arts at the same time (one class in Art and Design, one class in Drama, and one class in Music). This meant that some of the logistical problems often faced when Interdisciplinary Learning is introduced in Secondary Schools were minimised. For example, pupils could move between teachers (and even subject areas) as and when required; teachers could team teach; and teachers could target support where required.

Staff were split into broad Curricular Areas and asked to brainstorm ideas for interdisciplinary projects. They were asked to consider the Experiences and Outcomes of each Curricular Area and to plan activities based on a range of specific subject areas, which would also allow for progression in skills and in knowledge and understanding. English and Maths specialists were split up amongst other Curricular Areas to ensure that Literacy and Numeracy skills permeated curricular planning.

Staff were then asked to spend time writing up a plan for their identified project, including details of:

Dalbeattie High School in Dumfries and Galloway, has redesigned large sections of its S1 - S3 curriculum using interdisciplinary learning.

This has resulted in a diverse provision of experiences, many of which are based on the expressive arts. This has been complemented by a rota in S1 that explored higher order thinking skills through IDL and which is closely tied to primary transition work.
Resulting Examples of Interdisciplinary Learning

Expressive Arts: Guernica

The Project: Pupils used Picasso’s Guernica as a starting point to generate various pieces of work across the subjects of Expressive Arts, leading to a showcase presenting the work created at the conclusion of the project.

Evidence Generated: Pupils used drama conventions to investigate human elements in the painting and produced a short presentation about the characters. They were able to investigate the monochromatic style of the painting, and took elements such as the “Mother and Child” and compared them to the work of other artists, such as Käthe Kollwitz. Pupils also created compositions with various instruments, using the painting as inspiration. Invitations were written in English to P7 pupils, to attend a showcase of pupil work. The local press were invited to attend the showcase event, and post-event reviews of the showcase were also written in English.

The Impact: Pupils were able to meet a range of Experiences and Outcomes from across the Expressive Arts organisers, developing subject specific skills in Art and Design, Drama, and Music. Overarching Literacy outcomes were also overtaken. Higher Order Thinking Skills were built into the project to encourage independent investigation.

Health and Wellbeing: Health Diary

The Project: Young people used learning opportunities in PSE, PE and Home Economics as a context to ‘kick-start’ a long term change in their health and wellbeing. They produced a diary mapping this change.

Evidence Generated: Pupils produced a health diary, which was introduced through PSE lessons. In PSE, pupils investigated the impact of good health, including positive personal hygiene, and the need for regular sleep. They were issued with their diaries, and pupils were asked to record and reflect on their sleeping habits. The diary also included fitness test results gathered in PE, based on power, speed, and flexibility. Pupils investigated methods of improving each of these areas and produced a training log for their diary. In Home Economics, pupils investigated nutrition and healthy eating, engaging in practical food activities including blind tasting for high or low salt and sugar content, and meal swaps. Young people kept a record of their dietary habits in their diary and were encouraged to reflect on the changes they could make. This was supplemented with recipes either invented or found by pupils, as well as photographic evidence of healthy meal preparation.

The Impact: Pupils could demonstrate measurable improvements in their health and fitness, while overtaking a number of Experiences and Outcomes from across the Health and Wellbeing organisers. Literacy and
Numeracy skills were addressed, through the compilation of the diary and the analysis of raw data. Pupils engaged in Higher Order Thinking Skills by analysing and evaluating their progress and creating measurable targets for their health and fitness.

Technologies: Design & Market a Tablet PC

The Project: Pupils were asked to design and market a new tablet PC, following the process from developing a brand; conceptualising, designing, and modelling a prototype; through to designing a website and Microsoft Powerpoint presentation to market the new product.

Evidence Generated: Pupils developed their corporate image, designing a logo and agreeing upon a company name. They were encouraged to research the current market in tablet PCs, and to identify trends which they could capitalise upon. Pupils then designed their prototype, and produced either an MDF model in a practical class, or a CAD model. Once they had a produced a finished prototype, learners designed a web page which effectively marketed the product, integrating their branding into the design of the site and concentrating on the design’s unique features. They then designed and presented a Microsoft Powerpoint presentation to market their idea to the rest of the year group. Pupils were encouraged to provide feedback and engage in peer assessment and evaluation.

The Impact: Pupils were able to meet Technologies Experiences and Outcomes in a creative, enterprising, and engaging way. They were able to develop literacy skills in their presentations, and numeracy skills in their designs. Group work and Active Learning encouraged creativity and positive collaboration between learners.

Evaluation

These planned Interdisciplinary Learning projects were evaluated by both teachers and pupils. Results of these evaluations were shared amongst staff in each Curricular Area and used to develop and streamline each project over the course of the following years.

c. Interdisciplinary Learning in a ‘one-off’ Context

In addition to specifically timetabled units of Interdisciplinary Learning, ‘one-off’ interdisciplinary projects are also planned regularly. These projects are ‘stand-alone’ in the sense that they are delivered outwith the traditional timetabled curriculum setup, either through a series of after school sessions or during a residential trip.

Resulting Examples of Interdisciplinary Learning

Social Studies: Edinburgh Trip

The Project: Pupils used a residential visit to Edinburgh to overtake Experiences and Outcomes in Literacy, Numeracy, and Health and Wellbeing, as well as RME and Social Subjects.

Evidence Generated: Pupils used their experiences in the visit to independently complete a trip diary. They performed their own risk assessments, and recorded examples of their daily budget. They also found out various pieces of information about the area. They planned their route when navigating the city and young people visited the Scottish Parliament building, and met and interviewed an MSP. Pupils also used their experience on the trip to put together an evidence based assignment in Social Subjects when they returned, a religious timeline and presentation based on their visits to places of worship, and a solo talk on their experience.

The Impact: Pupils were given some experience of independent living, and had to take responsibility for much of the trip. The project allowed them to meet a range of Experiences and Outcomes, and the trip was able to inform other work on their return.
Various Curriculum Areas: Da Vinci Challenge

The Project: The Da Vinci Challenge is an international competition run by Knox Grammar School in Sydney, Australia. Pupils took part in various fundraising activities to secure the funding they needed to compete in the final in Milan, where they had to take part in a number of trials from a range of categories, including code-breaking, science, general creativity, philosophy, design, engineering, cartography, the English language, art and poetry, and mathematics and chess.

Evidence Generated: Pupils planned a range of fundraising activities, using skills developed across the school. They wrote articles to publicise their efforts, designed posters, baked cakes, and held raffles. Pupils also ran a number of fundraising events, both in school and in the wider community. Young people also attended regular classes after school on each of the competition categories, in the process meeting a number of Experiences and Outcomes.

The Impact: Pupils worked independently. A number of Experiences and Outcomes were met, and the challenge has been developed into a regional initiative in Dumfries and Galloway. Dalbeattie High School was the only State School involved, so pupils were encouraged to form new relationships with other pupils from around the world. Pupils gained Saltire Awards.

d. Timetabled Interdisciplinary Learning

Historically, Dalbeattie High School have reserved a double period each week in S1 called ‘S1 Activities’, which traditionally was an opportunity to engage all learners in extracurricular work.

In 2012, S1 Activities was transformed into a coherent, planned, and timetabled opportunity for Interdisciplinary Learning. It is staffed by teachers from across Curriculum Areas, as well as the school’s police link, and invites contributors from the local community, such as the RSPB, Dalbeattie Museum, and Community Learning and Development.

S1 Activities

As a result of feedback received in the Record of Inspection Findings following our HMIe Inspection in 2012, S1 Activities was transformed in order to provide a strong interdisciplinary, curricular focus, and to promote Higher Order Thinking Skills, and Reflective and Independent Learning.

S1 Activities provides an ideal opportunity to deliver creative, engaging curricular solutions based firmly on the seven principles of curriculum design, and encourages collegiate working and whole school cooperation. It allows for delivery of Experiences and Outcomes entirely apart from the traditional ‘classroom’ structure, allowing for such aspects of Curriculum for Excellence as Outdoor Learning; Skills for Learning, Life and Work; Interdisciplinary Learning; as well as providing ample opportunity for the inclusion of Higher Order Thinking Skills and Enterprise.

Building the Curriculum 4: Skills for Learning, Skills for Life, and Skills for Work states explicitly the skills needed for learning, life, and work, and asserts that they must be embedded in the Experiences and Outcomes of Curriculum for Excellence:

The skills include literacy, numeracy and associated thinking skills; skills for health and wellbeing, including personal learning planning, career management skills, working with others, leadership and physical co-ordination and movement skills; and skills for enterprise and employability. These skills will be relevant to all children and young people and the responsibility of all practitioners.

S1 Activities is therefore perfectly placed to meet the demands of these skills, including opportunities for promoting reflective and independent learning through the completion of Broad General Education E-Portfolios which can then be developed to form part of the S3 Pupil Profile.

Staff responsible for leading Activities groups were identified from a broad range of
Curricular Areas, and projects and tasks were developed to address Experiences and Outcomes in Literacy, Numeracy, and Health and Wellbeing. Data gathered during the 2011 curriculum refresh was used to identify which Experiences and Outcomes should be prioritised, and units of work were developed with these outcomes in mind.

The Three Part Course
S1 Activities was split up in to three main sections, which addressed Experiences and Outcomes in Literacy, Numeracy, and Health and Wellbeing. The year began with an Outdoor Learning project run in collaboration with the RSPB at Mersehead; this was followed up by a series of stand-alone projects devised by the individual Activities teachers; followed by a larger transition project at the end, where pupils used their developing skills in Literacy, Numeracy and Health and Wellbeing to develop a magazine for the associated Primary Schools.

Throughout the programme, approximately every five weeks, pupils were given the opportunity to take part in reflective learner dialogue where they were encouraged to think about their own experiences and progress through the Literacy, Numeracy, and Health and Wellbeing outcomes. This built on the good practice introduced by the school’s Learning Log, and fed in to the pupils’ e-portfolios.

Mersehead Project
Pupils engaged in an Outdoor Learning project which was designed in collaboration with the RSPB, which aimed to capture various Responsibility of All Experiences and Outcomes, whilst helping young people to explore the connections which they have with their natural environment. Pupils took part in a number of engaging and stimulating activities at a local nature reserve, and eventually produced a piece of writing or artwork inspired by their local environment.

To gauge the results of the project, the RSPB carried out a survey with S1 pupils at the start of the project and at the end, to measure whether pupil opinion on their local environment had changed. Results showed that the project had an overwhelmingly positive influence on young peoples’ perceptions of their local area.

Rotational Blocks
Each Activities teacher was also given the opportunity to plan and deliver a small, five week block of the course to suit their own style and interests, working within a broad ‘Our Community’ theme. The only requirements of these blocks were that they were engaging; overtook a number of Literacy, Numeracy, and Health and Wellbeing Outcomes; and that they were linked to the community theme.

Each block was evaluated by both pupils and staff after each rotation, and feedback used to inform the next rotation.

Transition Project
The year finished off with a transition project, where pupils used a magazine format to communicate their experiences in S1 Activities to the primary schools, as well as other information that they deemed to be relevant for the transition programme.

Monitoring Progress
It was initially hoped that progress in the identified Experiences and Outcomes would be monitored using SEEMIS On Track With Learning, however after an initial pilot, it was decided that a simple Microsoft Excel spreadsheet would be effective. A password
protected document was put into the Shared Area where all staff could access it, and was used to keep a record of progress for each pupil in S1. All staff had access to this document, so it could be used as a help in the reporting purposes.

S1 Activities in the Future

Due to particular logistical issues (lack of funding for the RSPB reserve), the S1 Activities programme as it stands at the moment will no longer be sustainable in the future. For this reason a series of changes is being proposed for subsequent years, which will transform S1 Activities into the S1 Ambassador Programme.

S1 Ambassador Programme

S1 Activities will continue in the coming session as an Interdisciplinary Learning project, which is designed to address a number of overarching themes, such as Literacy; Numeracy; Health and Wellbeing; Leadership; and Skills for Learning, Life and Work.

Dalbeattie occupies a unique geographical location with a wide variety of diverse outdoor environments which are readily accessible, incorporating densely wooded forests, vibrant wetlands, and sweeping beaches all within a very compact area.

The accessibility of these spaces offers a fantastic opportunity to capitalise on the benefits of Outdoor Learning. Indeed, it is the professional responsibility of all staff to engage with approaches such as Outdoor Learning in delivering the Experiences and Outcomes of Curriculum for Excellence, as outlined in *Curriculum for Excellence through Outdoor Learning (2010)*:

> All staff at every level of involvement with the education of children and young people have a responsibility to make the most of the outdoor environment to support the delivery of the experiences and outcomes of Curriculum for Excellence.

And in *The Standard for Career-long Professional Learning (2012)*:

> [All staff must] understand and develop the most appropriate contexts and environments for learning, including outdoor learning, and be able to apply appropriate pedagogies for these environments.

The curricular justification for innovative approaches such as Outdoor Learning is also widely documented in Curriculum for Excellence materials, such as *Curriculum for Excellence through Outdoor Learning (2010)*:

> Such experiences motivate our children and young people to become successful learners and to develop as healthy, confident, enterprising and responsible citizens… Well-constructed and well-planned outdoor learning helps develop the skills of enquiry, critical thinking and reflection necessary for our children and young people to meet the social, economic and environmental challenges of life in the 21st century.

These skills and qualities, particularly confidence, enterprise, and responsibility, are developed in the Primary Phase, and it is our duty to build on these experiences in the Secondary School.

For this reason, the new S1 year group will become S1 Ambassadors, responsible for planning and delivering an engaging outdoor transition event for the P7s: planned together, and resourced and funded through class enterprise.

The S1 Ambassador role will allow Leadership to permeate the S1 Curriculum, building on skills previously acquired earlier in the Broad General Education. This can then be further expanded in later years, through peer mentoring and the buddy system, or leading to SQA Leadership awards in the Senior Phase.

Building the Curriculum places a strong focus on Leadership throughout the learners’ education from 3-18, and emphasises progression that will carry through into lifelong learning and adulthood:
Working with others in a wide range of settings can also help young people to develop leadership skills which will become increasingly important to them as they move through their school years and beyond compulsory education into lifelong learning and adulthood. They will need to understand that everyone can develop leadership skills, which can be used across learning, life and work settings. Effective leaders may show many different styles and characteristics, but often share common characteristics. Young people will learn to:

- value the views and contributions of others in their group;
- exert influence and help others to envisage new ways of thinking, seeing and working;
- show a determination towards achieving the highest standards for everyone in the group;
- show initiative and actively pursue their objectives;
- be good listeners and know the members of their group or team well;
- serve as models to others, providing insights into what success in the group’s activities might look like.

The S1 Ambassador programme will allow our Young People to consolidate the leadership, teamwork, problem solving and thinking skills they have developed in the Primary School, and provide a solid base on which to develop these skills further in the school, either later in the BGE or in the Senior Phase.

The bulk of the S1 Ambassador programme will be run in a weekly double period, with four days throughout the year set aside where the year group work off-timetable (a day at the very start of the year, one in around March, and a two day residential event shortly after the change of timetable).

Rotational blocks will be used for planning the events, and for engaging in other Leadership/Outdoor Learning activities, which will include the carefully planned delivery of Experiences and Outcomes from other Curricular Areas.

e. Interdisciplinary Learning in the Senior Phase

The development of Interdisciplinary Learning at Dalbeattie High School has thus far focussed primarily on the Broad General Education Phase. A priority for the future will be the development of Interdisciplinary Learning in the Senior Phase, allowing for pupils’ entitlement to further develop the four capacities whilst also attaining qualifications.

This will be done through the further development of SQA Awards already offered at Dalbeattie, such as Safe Road Users, PC Passport, and Leadership, as well as the possible introduction of others, such as standalone Literacy and Numeracy Units, or the Scottish Studies Award.

Interdisciplinary Learning in the Senior Phase will therefore focus mainly on developing Skills for Learning, Life and Work.

f. Conclusion

The approach to Interdisciplinary Learning taken by Dalbeattie High School has been largely successful. A planned and coherent approach is imperative to ensure Interdisciplinary Learning is delivered successfully, and a collegiate and willing staff has been essential in its development. Careful timetabling is also essential to allow staff to work together and join up learning. A robust approach to tracking and monitoring must be adopted to avoid over assessment of Experiences and Outcomes, and a priority for Dalbeattie in the future will be to develop further effective monitoring procedures. Any approach must be sustainable, however, so programmes must be flexible enough to ensure that they can be adapted to meet requirements year on year.
a. Introduction

In the ten case studies that follow we explore examples of interesting practice from outside Scotland. The schools have been anonymised, but there are details of their practice and approach that can inform school leaders looking to plan interdisciplinary learning.

The ten schools are very different, but common themes emerge from their work. All talk about the need to develop pupils for a challenging and uncertain future in which they will be expected to lead, serve and contribute. Most of the schools stress the need for a global outlook in their pupils, pointing to both the international jobs market and the way in which technology has shrunk the world. Many emphasise leadership and community service through interdisciplinary learning and all, in some way, have ensured that their model of interdisciplinary learning has grown from the unique values of their school. Several talk in detail about the restless innovation that has led them to develop their interdisciplinary learning, particularly with regard to pedagogy and teacher learning. Most have models that rely on a degree of external partnership. The schools usually offer some form of personalisation through interdisciplinary learning based on project-based enquiry.

The geographical reach of the schools described here is international. They provide a global snapshot of interdisciplinary learning practice that is certainly not exhaustive and raises the issue that although many schools operate systems of interdisciplinary learning it is often not promoted publicly in school literature. As a result, the sharing of practice can be hampered and the great benefits of interdisciplinary learning hidden, or at least not celebrated. It is worth considering, then, the reasons why these schools are proactive in sharing their practice. Quite simply they value interdisciplinary learning, see it as important and have experienced its positive impact on learners.

A look at the wider context in which they work reveals many parallels with Scotland: various statements on the higher purposes of education, employability and work-readiness, entitlements, active learning, greater choice and personalisation, flexible assessment and changes to national systems of accountability and inspection. These schools are reflective of the international trends with which we are all familiar that lead states and local authorities to

5d. Case Study 4: Global IDL Examples

Although relatively new in Scotland, a survey of practice in schools across the world reveals that interdisciplinary learning is in good health.

Many schools offer a wide range of provision and view IDL as central to the development of their schools, of learning and teaching and of the curriculum. In the ten examples covered here there are many challenging and thought-provoking approaches.
reconsider the meaning and purpose of education and redesign learning around the learner. The response of these schools to such challenge is interdisciplinary learning: it is a symbol of the need for change and of the implementation of such change.

The schools discussed in this section have been anonymised because what is written here is based on research undertaken by the author of this document, not by direct dialogue with the schools.

b. Global Case Study 1

This 11 - 16 school has been graded ‘good’ and ‘outstanding’ by Ofsted in various categories. Its pupils last session achieved 98% grades A - C in five or more subjects. This represents a steady increase from its baseline in 2010. The school is very ethnically diverse, with over 40 languages spoken. Over the past three years it has made a very significant investment in ICT so that every one of the 900 pupils has an iPod Touch or an iPad. The school is viewed as a repository of good practice in this area and has advised on similar innovations in other schools internationally.

Pupils in several year groups (including GCSE presentation cohorts) work in large groups of up to 60 young people on themed tasks (similar to the Queensland New Basics curriculum and described by the school as ‘transdisciplinary’) that make up a significant chunk of their first year in the school. The pupils are placed into three groups (called pods) in which they study four interdisciplinary tasks. Each pod is staffed by learning assistants and staff from a variety of disciplines (usually at least two teachers one who leads the rich task and another who leads the ‘pod’). Another member of staff oversees the wellbeing of the pupils in the year group and co-ordinates the ‘pods’.

Each rich task has a clear and ambitious outcome such as a conference, a ceremony or a multimedia presentation. The tasks combine a wide range of subject areas under four themes and within each theme particular subjects dominate to provide balance across the tasks. The 4 rich tasks are British National Identity, Science and Ethics, Built Environment and Celebratory Performance.

The school has developed a distinctive pedagogy of collaborative teaching and learning in recognition of the fact that the tasks are futures-oriented and require fresh methodology if they are to impart and develop 21st century skills and attributes.

c. Global Case Study 2

Located in England this is an 11 - 18 school established seven years ago by an Academy sponsor as a rebranding of an existing secondary school. Its 1100 pupils are generally high achieving, although inspection reports have identified the need to focus on the progress of particular groups of pupils. The school follows the RSA (Royal Society of Arts) Opening Minds curriculum, in common with over 200 other schools in England. Its building is specifically designed to reflect this curriculum in its layout.

The school deploys interdisciplinary learning as part of its transition work in Year 7 (the first year in the school) through projects that encourage pupils to learn about the school, its ethos and about learning to learn. There is a clear sense of the projects being accorded a high status through the way in which they are publicised and celebrated as well as in the way in which they are resourced through IT.

In years 7 and 8 the curriculum is organised around five themes that dominate young people’s learning and, in common with other schools featured here are futures-oriented and skills-based. The themes are: citizenship, learning, information, people and situations. The projects arising from these themes aim to build pupils confidence, resilience and preparedness for a changing and unpredictable world. Each project results in an exhibition or presentation to which parents and staff are
invited and they are described by the pupils as being ‘a bit different’. Staff also describe the themed, interdisciplinary approach (which covers most of the junior school curriculum) as being motivating and exciting.

d. Global Case Study 3

One of Singapore’s highest achieving schools describes itself as a ‘mega school’ of over 4300 pupils (aged 11 - 19) and 500 staff. The school emphasises the development and nurture of future leaders as a central aim and it’s management and organisational structures reflect both this and an overt commitment to interdisciplinary learning. In tandem with this they place great store by innovative teaching and teacher leadership.

The sheer scale of this school means that it can offer a wide range of interdisciplinary experiences. Each of these proclaims its intent (variously) to nurture global thinking, leadership, character, volunteering or other similar attributes. It describes its curriculum as an ‘integrated programme’ that culminates in pupils sitting A-level examinations after six years. Within this programme pupils progress from a general curriculum to a more specialised one based on a very wide range of options choices, before settling on final choices for examination. A key part of this process is a series of interdisciplinary projects that aim to ‘develop global, independent lifelong learners by enhancing the research culture amongst both pupils and teachers.’

The school itself notes that the quality of these projects has undergone a massive shift in quality over several years with pupils moving increasingly away from projects based on traditional subject areas to those that constitute authentic research, often supported by mentors. The projects are thoroughly guided and assessed using oral presentations, artefacts and a web-based report. The school has established a project competition in which all pupils make entries. Those involved in judging the projects include staff from universities, some of whom also mentor the pupils. The school comments that, ‘Because of the inter-disciplinary nature of many projects, there is application and transfer of knowledge and skills across disciplines and the recognition of the relevance and inter-relatedness of what is learnt.’ The projects are often collaborative so that they build social skills and attitudes. It is interesting to note that on the web page describing the entire integrated programme it is the projects that head the information, the subject areas follow thereafter, suggesting the extent to which the school values the learning offered by the projects. The use of information technology plays a significant part in these projects both as a research and a presentational tool.

The school has established a separate website for the projects containing a huge amount of information and support materials. There are twelve categories for the projects ranging from inventions to creative arts to engineering science to future trends. The school has also entered some of its projects in the international competition Thinkquest which describes itself as ‘inspiring students to think, connect, create, and share. Students work in teams to build innovative and educational websites to share with the world.’

A brief survey of the titles of these projects indicates the extent to which they are both interdisciplinary and innovative. Projects include: ‘Mind, Prison and Internet Addiction disorder’, ‘Cloning and Bioengineering’, ‘Using Durian Waste as Water Purification’ and ‘An Exploration of Digital Poetics’.

The school allocates at least one hour per week for the pupils to work on their project, usually with staff and mentor input. They also operate a very sophisticated and complex assessment system that relies on weighting different elements of the project and on assessing all aspects of the project from the research processes to the final presentation. It is interesting that these projects play such a significant role in the curriculum as far as the final year in the school and attract so much in
the way of external support - they clearly have a very high degree of credibility amongst learners, staff and parents.

**e. Global Case Study 4**

Set-up to offer an arts-based curriculum to pupils aged 13 - 18, this school of over 1000 pupils runs what it describes as an integrated arts curriculum and is an International Baccalaureate (IB) World School.

Much is made at this school of a number of interdisciplinary experiences that pupils can access. These range across the six years of education that pupils enjoy at the school and some of them are contained within the structure of the International Baccalaureate. As with School 3 (above) the school’s publicity material and policy devotes considerable time to describing the interdisciplinary options available and to articulating clearly the benefits of this approach. In contrast to the project-based approach of some other schools in this survey, School 4 has assimilated interdisciplinary work into the day-to-day experience of learning for pupils. At the same time, in common with many other schools mentioned here, it stresses the links between this form of learning and notions of service, character and community responsibility. It presents this as a triangle of approaches: academic (‘an holistic curriculum... building connections for meaningful learning’), artistic (‘heightened creative awareness...real life creative processes’) and affective (the development of learners who have ‘humility, integrity, passion and are people centred’). It also states that its teaching philosophy is ‘future-oriented, learner centred...and well grounded in theory’.

Its overarching interdisciplinary programme is unique in this survey of schools in that it is purely arts-based. Pupils experience and learn in each artistic discipline whilst developing a common vocabulary and learning about the connections across these artistic disciplines and into other areas of study. The comments of pupils on this approach are revealing of the implied success of the integrated programme: ‘The integrated arts and academic education has taught us to think differently. To be brave, take unconventional steps and venture into things that have not been explored before...The opportunity to collaborate, discuss, debate and share about different issues is central to gaining multiple perspectives in both the arts and academics.’

Within both the International Baccalaureate programmes offered by the school and other experiences there are timetabled interdisciplinary lessons sometimes augmented by visiting speakers who present on a curriculum area different to that being pursued by the class. Many pupils also undertake a research project and pursue interdisciplinary units within subjects such as ‘Literature and Film’, and ‘Exploration of the Relationship between Art, Culture and the Society’. In Science even at the highest level of certificated study the interdisciplinary options are stimulating: Balance (with Dance); Music and Sound (with Music); Photography (with Visual Arts, Media Education and Theory of Knowledge); Respiration (with Outdoor Education); Nutrition (with Outdoor Education). In Maths the interdisciplinary projects include Motion Geometry (which combines maths with Music and visual art) and Sports and Statistics.

**f. Global Case Study 5**

A very well-established, two hundred year-old private school of over 1000 pupils, it has put at its heart a commitment to interdisciplinary learning. A search of its website reveals over 50 documents pertaining to IDL and many examples. Its current head summarises a personal vision for education in ‘three qualities (that) must be our absolute goals: Intellectual Ambition, Global Exploration and Goodness.’ He also states that ‘our world needs individuals who can forge radical new ideas across the disciplines of art, humanities and science.’
The school has a longstanding tradition of evolving new pedagogy in response to societal and cultural change. It has also embraced a spirit of enquiry that imbues every aspect of the school’s operations. This is evident in its use of the so-called Harkness table teaching approach whereby pupils are taught around an oval table for many different subjects. This encourages enquiry, discussion, independence of thought and responsibility. It is the direct opposite of the passivity that can result from whole class teaching in rows of desks.

For pupils in the first year of school a bespoke interdisciplinary course has been devised taught by a team of eight staff and two librarians. It is designed, in the words of the staff to develop ‘critical thinking, seeing and reading and writing... empowering them to become self-learners and problem-solvers.’ The course is separated into three units and is themed around ‘the individual standing against the odds’. Through this course the pupils learn about explorers, scientists and designers who have provoked public ire or stood against prevailing opinion. The subjects involved are literature, art, history, science, outdoor learning and religion. For example, having undertaken an artistic study of a war memorial pupils are then asked to interpret the symbolism of the memorials and their designs. This evolves into literacy-based work once the pupils have learnt about different ways of reading different texts and challenge their ability to be critical. The final piece of work is an assessment that asks the pupils to create a research paper summarising and personalising their work. To do this the pupils have to create an hypothesis to investigate that reflects their learning in theme and then structure a paper in response to their question.

The school’s Physical Education department has adopted an interdisciplinary approach that, in their words, is ‘a way of making the gymnasium more than just ‘a place to kick a ball around.’ They have achieved this by establishing a sports science laboratory that ensures pupils’ learning connects the physical and the cognitive so that they acquire a much deeper understanding of ‘fitness’ and ‘wellness.’ Pupils can learn about muscles and the cardiovascular system by using their own bodies and performances. This goes beyond simply learning the science of the body and then reflecting on its relevance to a particular sport or activity and has become a sports-related anatomy course that also has learners developing their sports skills by learning from the scientifically measured reactions of their own bodies. Such pedagogy has also been realised in collaborations between, for example, Dance and Biology in which the phenomenon of mitosis is explored through a devised dance routine and the disruptive impact of cancerous cell division is introduced as a challenge to the dancers.

In recent months the school has begun piloting online interdisciplinary courses such as ‘Water and Humanity’ which uses video conferencing, online instruction and personal projects to explore the biological, aesthetic and political impact of water on our lives. This approach has also informed the school’s programme of professional development in a range of themed courses for educators that explore a particular issue in an interdisciplinary manner. For pupils other interdisciplinary endeavours have included projects linking poetry, theatre and art, that also took in maths to deconstruct a poem numerically. The school has a significant archive of planning documents and changes to its management structure that indicate the extent to which they have invested in interdisciplinary learning and have sought to provide it with credibility by creating dedicated management positions. In addition, the school places great value on the notion of service and of pupils developing wisdom, values and discernment that mean they apply their learning for the good of others.
g. Global Case Study 6

An academy of nearly 1,500 pupils this school has several well-established interdisciplinary courses in the junior school that serve as transition experiences and as introductions to the school’s transferable skills framework. The school also offers IB and IBCc courses for older pupils. Its pupils consistently perform above the national average in public exams. It is oversubscribed and was judged to be outstanding in its recent inspection.

The bulk of interdisciplinary learning at the school takes place in Years 7 and 8. Here a large portion of the curriculum is dedicated to the study of eight topics that connect subjects across the curriculum. The school has supported this approach by identifying five sets of skills that are vital for learners in the 21st century. These are: citizenship skills, information skills, learning skills, people skills and situation skills. The curriculum in these two year groups is also aligned to that of the International Baccalaureate Middle Years programme as well as preparing pupils for more commonly taken English qualifications such as GCSE.

The eight projects undertaken across the two years of study are: Man & Beast, Genius & Invention, The Power of Humans and Nature, My Values, My Family Values; Clashes and Celebrations of Culture; The Power of Our Technology and My Voice. Alongside these modules sit the discreet subjects studied by the pupils but within each subject area the work is linked and relevant to the overarching theme of the topic. For example, the themed-project that begins Year 7 is about self-knowledge and the place of the individual within society and history. Therefore, to complement the overall study of the theme, in English the pupils learn about autobiographical writing, in Science they learn about the cellular make-up of the human body and in Art they undertake a self-portrait. This way their learning in each subject area is thematically connected and supports the idea that they need to apply their skills to a theme.

The school’s ethos and approach to pedagogical innovation are very much part of their interdisciplinary development. They took the decision to introduce IDL, having become limited and constrained by the National Curriculum. Their academy status afforded them the freedom to develop and implement a new approach that was informed by a wide range of research. The school identified a number of drivers for change that led to a more interdisciplinary approach: the need to raise attainment; the need for a coherent overview of each child’s progress; addressing the duplication of concepts and experiences across the curriculum; the aim of developing a new model of teaching and of organising teaching to reflect a new curriculum.

To ensure that the curriculum and teaching was coherent the school rebranded the units as chapters and created smaller teaching teams for each unit so that pupils coming into the school were not inundated with a huge number of teachers. In this the interdisciplinary nature of years 7 and 8 built on the pupils’ experience in primary school. This in turn led to a more open-ended style of teaching, a different view of homework (study as a continuation of the school day rather than onerous tasks) and to tasks normally reserved for older pupils introduced to more junior years.

The school also undertook a rigorous evaluation of their new approach using a pilot project of 85 pupils. This saw improvements in measurable academic performance of 15% and reports of higher levels of engagement and more positive behaviour. The pupils also spoke positively of enjoying learning and teachers commented on how fulfilling the new approach was, according more with their professional view of themselves.

In Year 9 the interdisciplinary approach becomes more personalised and more challenging with pupils choosing a topic for research (choices include battlefields, H2O, Olympics, Space Travel) and presenting their project at the end of the year as a culmination.
project at the end of the year as a culmination of their personalised interdisciplinary study. The project is also overseen by a mentor. The pupils’ work in years 7 - 9 then lead them to choices of GCSEs, BTEC and various International Baccalaureate options.

h. Global Case Study 7

A school of close to 400 pupils this institution is described as one of India’s top ten state day schools. Its pupils follow a curriculum unique to the school before going on to study for the iGCSE exams and the school dedicates time to preparing pupils for college life. ‘Design thinking’ has informed many of the headteacher’s strategic decisions as has a clear adherence to shared values and social justice. The school has developed an international reputation way beyond its expectations, particularly through its Design for Change global programme.

There cannot be many schools that are so overt in placing the development of young people as social activists at the heart of learning and teaching. The school’s pedagogical model is build on a super-structure that, over three phases, sees pupils progress from developing awareness to becoming empowered to effect sustainable change. The school also stresses the importance of the learner being ‘meta cognitive (aware of the learning process) and thus, empowered to “solve problems and fashion products” that are aligned with his competencies that are used to effect change for self and the environment.’ A range of processes and practices have been developed at the school that develop a culture of enquiry. These include pedagogies founded on Gardner’s theory of multiple intelligence, the application of skills and knowledge in a real life context, varied approaches to sharing learning with parents and carers and strategies that provoke curiosity and creativity.

The model of interdisciplinary learning at the school is, broadly speaking, project-based work that is underpinned by a common vocabulary of skills and methodologies. This has been especially effective in supporting pupils’ learning to create projects that allow them to apply their skills to challenges in their local community. Consequently, much of the work at the school is interdisciplinary, but is described as ‘citizenship’. To ensure that staff can realise this vision there is a relentless focus on professional development that is written into the school’s philosophy along with the learning and teaching policy. Each teacher aims for 45 days of professional development per session with the stated aim of ‘maximising their potential to maximise student potential.’ Pupils have undertaken projects to work with cancer patients, improve adult literacy and to support the education of more impoverished youngsters. The school has taken the unusual step of enshrining its philosophy in its architecture, working with a local firm to create learning spaces that reflect the experiences of those who use them. This work has been recognised internationally as good practice.

i. Global Case Study 8

This 4 - 18 school has embedded a wide range of programmes for all pupils that offer interdisciplinary learning contexts. It serves an urban, ethnically diverse catchment and places great emphasis on preparing pupils for learning, living and working in the 21st century. Project based learning, oracy and integrated ICT all feature heavily in its programmes. These are further underpinned by what the school describes as six attributes pupils require to learn, achieve and thrive.

There is a clear structure to the interdisciplinary learning of this school which is accompanied by an unusual aim: to create beautiful work. The philosophy of this is that too much secondary school creates work that is incoherent and of little value, however much it might contribute to attainment in examinations. Instead School 8 aims to offer pupils the opportunity to work on interdisciplinary projects such as astronomy, World War One and Human Rights, through a process of enquiry.
This unites topics from one area of the curriculum, with stimuli from others to afford the opportunity to pupils to generate a product that is of itself appealing and valuable. They describe their process as follows:

- A driving enquiry question. An intriguing starting point or essential question that gets students wondering, exploring, discovering. This will lead to subsidiary questions that students may wish to pursue.
- A grounding text. This could be a novel, a play, a poem, a piece of art or music. Something to stimulate deep, immersive learning.
- Multiple drafts. Beautiful work is the result of multiple drafts and critiquing from peers and teachers that help a student to reach new heights.
- A meaningful end product with real world value. Projects with a tangible link beyond the realm of the classroom.
- An exhibition. A student must be accountable for their work to a wider audience than just their teacher or their class.

This has been supported by a cross-curricular emphasis on oracy and eloquence and by allowing time within each week for pupils to undertake study that fulfills a particular need, interest or passion. They recognise the link between developing skills in public speaking and mental and emotional wellbeing.

**j. Global Case Study 9**

An all-through school, this institution describes itself as a leader in interdisciplinary learning for the past 30 years. There are established, challenging and well planned programmes for pupils at all stages of the secondary school. The school is very high achieving and well regarded. It emphasises the importance of ‘positive’ character education and of promoting grit, resilience and global awareness in young people. Whilst IDL projects are integrated into its middle school (S1 - S4 equivalent) in the senior school they command their own place and dedicated time in the curriculum.

The Middle School curriculum establishes effective interdisciplinary learning in a number of ways through project learning weeks where pupils can select from over 20 workshops; through STEAM (Science, Technology, Engineering, Arts and Maths) activities and through planned interdisciplinary experiences. The project weeks afford pupils the chance to ‘explore feminism, immigration, sustainability, museum collecting, product design, and cultural crosscurrents, among other themes.’ They are collaborative experiences for both staff and pupils that place a high value on creativity and enjoyment, as well as on applying knowledge and skills in new contexts. Some of the interdisciplinary work takes place across stages with senior pupils leading drama workshops so that younger pupils can explore concepts from other areas of study.

Much of the school’s IDL is integrated into subject courses so that, for example, pupils studying a play about blues music then go on to explore the setting and music in their Music class before coming together with other pupils to undertake themed projects. The school’s Director of Learning comments: ‘we are looking for ways to learn together, from one another in a reciprocal relationship which makes the Middle School really special as pupils learn from one another and staff learn from pupils without the expected hierarchy.’ It is interesting to note that the school’s established mid-term examinations have been replaced entirely by the week-long project learning events affording a fresh approach to assessment.

In the Upper School pupils select from a range of IDL projects. In Constructing America (taken by all pupils in Grade 11 or age 16-17), for example, they explore ‘themes from politics and social history, literature, film, art, and architecture, from the 17th century to the present. It is team-taught by an English and history teacher, whose interactions challenge assumption across disciplinary lines. While each class meets with their two teachers twice a day, the whole 11th grade comes together for
films, faculty presentations, lectures from visiting academics, and a three-night trip to Washington, D.C. Student work on that trip includes a political advocacy project, visits to museums and cultural sites, and meetings with political figures.

The school describe their interdisciplinary approach as a hallmark of the learning at the school and has even appointed an Interdisciplinary Studies Director. They stress that most real-world problems are complex and require the kind of solutions that can only be achieved through IDL. Their Physics/Calculus class blurs the distinction between the two disciplines to the point where one informs the other and they become one. The staff report that pupils derive great stimulation from seeing teachers team-teaching and ‘playing off one another’ providing a richer experience. For the school, seeing beyond disciplines and making connections develop crucial intellectual skills.

Also on offer for pupils are so-called Global Programmes. These are interdisciplinary experiences that bring together service, cultural exchanges, language learning and entrepreneurship resulting in pupils teaching overseas and working on microfinance projects in the developing world.

k. Global Case Study IO

This school offers a highly innovative integrated curriculum. It is located in a major city and this is reflected in the choice of themes selected by the school and in the development of certain partnerships that support the curriculum. The school has an outstanding reputation for attainment and the quality of its learning and teaching.

Much of the curriculum at this school is integrated. The school describes it as ‘progressive in its emphasis on depth of learning over breadth of exposure, its project- and problem-based orientation and its interdisciplinary nature.’ It also draws heavily on its position in a large city to inspire a new approach the curriculum and to interdisciplinary learning in particular. Examples of its integrated approach include language arts projects that under a particular theme (Innovations and Revolutions, for example) explore literary characters, the theme of change in literature, the dilemmas that this presents and then the ethics of good decision making. Alternatively, in another project that looks at Earth’s resources, pupils learn about water, the exploitation of resources, the ecosystems of Earth and space and the arrangement of molecules. In doing so, the school ensures that all learning has not only relevance, but a strong values base.

In the senior school the entire curriculum is organised simply around three themes: STEM, humanities and life skills. The school feels that such an approach creates greater collaboration between departments: ‘rather than a more traditional departmental approach, these clusters of subjects promote cross-disciplinary work and collaborative, problem-based learning.’

A key part of its upper school interdisciplinary curriculum is its World Course which offers a wide range of themed electives such as citizenship and social innovation that are contexts for learning. Its humanities course is genuinely interdisciplinary, uniting philosophy, literature, global history and religion. As a result pupils study the theme of globalisation, looking at its causes and effects, by learning about literature old and new, specific cultures, scientific advancements and the impact of faith and ways of thinking. All of this takes place within one course taught by a team of teachers. The school is keen to emphasise that the courses have been developed directly by those teaching them and have not been bought in or imposed by the administration of the school. In addition, as the curriculum changes each year in response to such courses the school is able to employ staff with an appropriate skills-set, thereby refreshing the learning of other staff in the process.
I. Reflecting on the mini-case studies

Reviewing these ten mini-case studies reveals a number of obvious themes and similarities that are useful in developing our own models of interdisciplinary learning. The ten schools are very diverse ranging from state-funded comprehensives serving areas of high deprivation and social instability to private schools that require parents and carers to pay thousands of pounds each term. They are geographically disparate, have very diverse models of governance, funding and management, and yet all have chosen not only to develop interdisciplinary learning, but to invest in it, develop it with confidence and promote its merits to their communities. It is also interesting to note that all the schools articulate their vision and purpose for interdisciplinary learning in the same way.

It would be all too easy to be disheartened by the level of resourcing that is available to some of the schools in these case studies, but what is clear is that whilst such support is important, it is not the most vital element in getting interdisciplinary learning off the ground. Far more important is the will to make it happen: a collective drive, or perhaps the motivation of a handful of staff.

The overarching connection between these schools is a commitment to creativity and innovation. This could also be described as a willingness to embark on a risky venture on the basis that not to do so would actually jeopardise the pupil experience more because it would mean maintaining an ineffectual status quo. As the longer Scottish case studies show, schools that begin this process must expect failure, imperfection, changing plans, even criticism. However, maintaining a focus on the reasons and rationale for such curriculum change is key to edging closer to success along the way. If ten schools from across the world feel that a purely subject-based, silo-mentality curriculum needs radical change and have effected such change, then it suggests that our own schools should continue their journeys of interdisciplinary learning. It is also interesting to note that most of these schools have not limited their interdisciplinary learning to younger age groups or low risk cohorts of pupils. Many have extended such learning to include the most able and ambitious learners in their schools as preparation for university and college. In other words they have perceived and acted upon a positive correlation between interdisciplinary learning and raising attainment and achievement. Where this idea has been discussed publicly by the school their reasoning is always marked by great clarity: interdisciplinary learning is more challenging, more relevant and a better preparation for what comes after school.

The prevalence of successful interdisciplinary learning in these schools also poses the following interesting challenge. In most states the education system is charged with raising attainment and in many measurable exam success is rising. However, if interdisciplinary learning is so important and transformational and the exam systems and assessment instruments of most countries do not (or cannot) measure its impact on learners, are rises in attainment as valuable as they are claimed to be? Further to this, can assessment systems be developed that are sufficiently nuanced to reward interdisciplinary learning in public examinations? It is worth grappling with these questions and others that flow from them as we continue to develop interdisciplinary learning in Scottish schools in the light of the new National Qualifications.

There are many practical ideas for introducing and developing interdisciplinary learning that can be taken from these ten schools. What follows is simply a list of the interesting practice about which you have just read - things that are happening now in schools across the world. It is intended to form the basis of discussion in schools that are planning interdisciplinary learning for the first time or are reviewing their current provision. The decisions made by the schools represented here
were, of course, driven by their own circumstances - the context of a school is a crucial factor in all such curriculum planning.

- Teaching pupils in large groups in a single space with teaching teams from different subjects (rather than 1:30 in a normal classroom)
- Having formal presentations to external audiences as the outcome of interdisciplinary tasks
- Building interdisciplinary tasks around an agreed skills framework that is informed by skills for the future
- Allowing a specific subject or curriculum area to be the dominant one in an interdisciplinary task, with others as ‘minor’ subjects
- Using interdisciplinary tasks as transition projects between key stages and as experiences through which pupils learn about their new school, its culture and ethos, as well as learning how to learn and to apply their prior learning within the new school
- Prioritising process over outcome so that pupils develop research skills through interdisciplinary learning
- Establishing links with interdisciplinary work at university
- Providing a system of mentoring to support groups or individuals undertaking interdisciplinary projects
- Locating all interdisciplinary resources online in one space for both ease of access and to establish credibility and raise awareness
- Devise a system of assessment unique to your own model of interdisciplinary learning
- Use the implementation of interdisciplinary learning as a driver for the development of a new pedagogy in school
- Employ interdisciplinary learning as a key aspect of staff development and professional learning in the school
- Connect knowledge, skills and values as one coherent approach
- Employ interdisciplinary learning to develop a culture of enquiry-led learning and discussion in the school
- Build interdisciplinary learning around a theme that is connected to wellbeing (such as ‘resilience’) and explore the theme through a variety of subjects
- Use non-teaching staff, such as librarians, to supplement interdisciplinary learning
- Create a dedicated management and leadership position to oversee interdisciplinary learning
- In addition to timetabled interdisciplinary tasks, connect the work of other subjects to these tasks so that there is greater coherence across the curriculum
- Allow pupils to negotiate and develop personalised interdisciplinary learning projects
- Develop special spaces within the school building for interdisciplinary learning
- Link interdisciplinary learning to service, social action and community development
- Develop and articulate to the school community a particular way of thinking about learning that is interdisciplinary, such as ‘design thinking’ and that permeates all aspects of school life
- Link interdisciplinary learning and character education
- Develop project weeks or fortnights
- Use interdisciplinary learning tasks as summative assessments across the curriculum
- Introduce STEAM, rather than just STEM
- Reorganise faculties on interdisciplinary learning themes, rather than curriculum areas
- Ensure that your staff develop interdisciplinary learning courses and that they are not bought in and bolted on
- Explore non-SQA qualifications providers such as the International Baccalaureate (Diploma, Middle Years and Careers courses) and the International Middle Years Curriculum
- Build interdisciplinary learning around certain key texts to develop literacy
- Plan staffing around the possibilities of interdisciplinary learning, rather than let staffing dictate interdisciplinary learning
In response to Curriculum for Excellence Scottish schools have refocussed on fundamentals such as aims, vision, values, mission and purpose. In doing so they have had to respond to the introduction of new qualifications and new legislation that puts young people’s rights and entitlements at the centre of the education system. This has taken place against a background of significant reductions in resources and changes in the structures at local authority level that support schools. Schools have often chosen to build their aims, values and vision around ideas of service, community, character, global citizenship and the application of learning to life beyond school. They go on to attempt to reflect these aims in a curriculum that is unique to their school context, responsive to change and built collaboratively. Interdisciplinary learning sits well within this context.

Where a school claims to be global in outlook and creative and entrepreneurial in approach it is hard to see why it would not implement IDL enthusiastically, particularly when the experience of the learner is ‘at the centre’. As the global case studies have shown, there are schools across the world which have done just this and sought to establish interdisciplinary learning as an experience from which recognised qualifications can be gained. Whilst it would be pointless and irresponsible for an education system to allow anything to be identified as interdisciplinary learning, the range of provision showcased in this publication does prompt questions about the rigour with which schools, authorities and inspectors should question the definition of IDL. The practice described and discussed earlier, particularly where it is working well, should make us cautious about being over-prescriptive in defining IDL. That there is a high quality experience for learner must be paramount; it must bring together subject knowledge and skills from at least two areas; it should be creative and challenging; and it should offer professional development for staff as well as improved outcomes for learners.

Beyond these fundamental considerations it may well be more important that schools attempt IDL, than be constrained or even discouraged by singular definitions of interdisciplinary learning. These can limit school’s options and create a risk averse approach that is the antithesis of the creativity IDL seeks to impart. What is most impressive about many of the schools in this publication is their commitment to interdisciplinary learning, their rationale for it and their continued efforts...
to refine and develop their model.

If we consider that CfE began officially in August 2010 in secondary schools (and therefore ignore the considerable planning and lead time prior to this) then schools in Scotland have had five years to implement some sort of version of interdisciplinary learning. In that time many people have progressed from tentatively rebranding project work as IDL to thinking much more carefully about how they will develop and introduce interdisciplinary learning. The case studies here prompt thinking around a number of topics.

a. Planning and staff development
It is self-evident that effective interdisciplinary learning requires careful, thoughtful planning. In the Broad General Education this can be structured around the experiences and outcomes. In doing, this schools need to consider overlap between subjects. For some concepts it may be very useful to have more than one subject area teach the same concept, in other ways this can simply be confusing for pupils and frustrating for staff. However, addressing this overlap means a department giving up their claim to teach certain things and allowing them to be subsumed within a more coherent whole. This can be difficult for subject specialists and, as the case studies show the development of staff in taking interdisciplinary learning forward is essential. It is very important that teachers understand why interdisciplinary learning is part of the school’s development plan, how they can contribute, what they need to do to develop their own skills and what the intended outcomes are for pupils. Achieving this requires considerable collegiality and shared understanding. It represents a great shift towards teachers as co-creators of the curriculum rather than ‘deliverers’ of it.

Considerations
• Using of teams of staff to write IDL tasks and experiences
• Choice and use of Es and Os as the basis of IDL activities
• Securing the support and understanding of staff to develop and implement IDL
• Allowing sufficient time for the planning and review of IDL
• Auditing the curriculum for overlap between curriculum areas
• Building IDL around responsibility of all areas
• Staff development and leadership opportunities for IDL

b. Learning and teaching approaches
Interdisciplinary learning also necessitates a review of the pedagogy within the school. Those responsible for it need to consider the methodologies that best suit the IDL experiences for pupils and take account of the more creative, innovative and flexible nature of IDL. For this reason investment in training programmes for teachers, such as co-operative learning or Critical Skills, has been employed by some of the schools represented in this publication, as has the development and implementation of interdisciplinary learning as part of a wider focus on learning and teaching. One of the challenges within this is ensuring that IDL has its own identity whilst simultaneously guaranteeing that lessons learned from its introduction are shared with other areas of the school. It is an awkward irony that creating an IDL department or faculty can unwittingly disconnect interdisciplinary learning from the rest of the curriculum. Additionally, the focus of IDL must resolutely be on what is learned and learners must be clear about this. In many of the case studies pupils are provided with an interdisciplinary framework within which they undertake their own projects. This demands that the role of the teacher is different than in many other subject areas; taking on a coaching or mentoring role, providing guidance. In this respect IDL can demand that the learners themselves are more responsible for pedagogy. Whatever the approach taken, it is most important that the learners themselves understand that what they are doing is IDL and
and perceive that it is of value; this cannot be left to chance.

Considerations
• Establishing a pedagogical approach to IDL
• Investing in particular staff development training programmes
• Placing the emphasis on the process of learning
• Ensuring learners understand what IDL is and why they are doing it
• Linking IDL to whole school learning and teaching policy

c. Curriculum Structures
One of the greatest challenges of IDL, and it is alluded to in several of the case studies, is the amount of timetabled time dedicated to it. Allocating any time at all requires that other, perhaps more established learning experiences, concede time to which they may feel entitled. Key to addressing this potential conflict is the development of a shared whole school strategy and understanding of IDL. As well as this, particularly in Senior Phase, there is scope for reviewing the whole curriculum and looking for areas of commonality that might benefit from a connected IDL approach. This can be seen in many of the case studies where IDL experiences are used to teach cross-cutting themes and skills that unite several subject areas. A result of this is that pupils develop a greater understanding of the links between curriculum areas and do not have to endure repetitious teaching of the same experience.

In Senior Phase, where schools are working hard to offer a range of pathways there is even greater sensitivity around the amount of time allocated to particular qualifications and subjects. It is here that IDL can be much harder to timetable and must be even more carefully planned to ensure that it is relevant, connected to the qualifications being studied and of high quality. Solutions can be found in the use of certain SQA qualifications that are largely content-free, but which make provision for a wide variety of pupil-led experiences that can be interdisciplinary. In addition, using mentors and initiatives such as tutor time to allow pupils to check-in with staff on the progress of IDL projects can be effective, as can be the cohering of value-added projects and investigations.

Considerations
• Auditing the curriculum to find areas that share particular experiences and learning
• Allocating time to IDL
• Using SQA qualifications

d. Assessment & Qualifications
As has been asserted at various points throughout this publication, interdisciplinary learning is for most schools an entirely new venture and one that can struggle to assert its place and gain credibility. It is for this reason that schools who choose to timetable it on a weekly basis find that it has a higher status. One of the thorniest issues arising from this is the meaningful assessment of IDL and its role within a school’s offer of qualifications. Other than the Scottish Baccalaureate and Scottish Studies, there are very few options for schools who wish to accredit their IDL. Whilst accreditation is not itself a reason for introducing IDL, it is a major consideration and an effective way of lending credibility to interdisciplinary learning, especially at Senior Phase.

Schools can consider combining units from particular courses that provide interesting or creative experiences, implementing Enterprise, Personal Development or Leadership qualifications or trying to combine elements of subject qualifications to create an accreditation framework. In this respect it is worth looking at examples such as the International Baccalaureate (IB) qualifications which combine service and personal development with intellectual enquiry, IDL projects and cross-cutting themes and investigations. If nothing else such an approach can be a useful inspiration for developing IDL in senior phase that can be SCQF rated.
Considerations

- Qualifications can bring credibility, so how can this be achieved?
- Consider combining freestanding units
- Consider a range of PDA and similar awards from the SQA
- Look to the IB and similar for inspiration
- Consider bespoke experiences unique to the school that can be SCQF rated

e. The place and role of the school in society

Curriculum for Excellence places considerable emphasis on schools developing partnerships to facilitate their curricular model. As many of the schools featured here demonstrate partnerships with universities, colleges, businesses and others can add an extra dimension to interdisciplinary learning. More than that, linking the IDL experience to challenges set by local employers or to ‘real life’ situations is an effective way of providing relevance and of giving interdisciplinary learning importance and status.

If schools are truly to build their own curriculums then beginning with interdisciplinary learning and creating experiences around this, rather than bolting it on as an afterthought is an advisable approach.

The challenges and opportunities of interdisciplinary learning as shown by the schools in this publication are a reminder that schools must strive to refresh their curriculum, keep it relevant and, in doing so, make a case for the vitality and necessity of a school-based secondary education.