Wider skills for learning

What are they, how can they be cultivated, how could they be measured and why are they important for innovation?

Bill Lucas and Guy Claxton

Foreword

Debate in education often polarises around the acquisition of knowledge on one hand, or skills on the other. This is a false dichotomy that risks distracting us from a more pressing debate: how to foster the combination of knowledge and skills required by the social and economic challenges of the 21st century.

Knowledge is, of course, crucial but young people need to understand how to find it, how to interpret it, how to utilise it and how and when to act on it. This requires a broad set of skills including foresight, imagination, self-awareness, curiosity and the capacity to take informed risks.

The challenge is that these wider skills are often seen to be intangible, difficult to influence and problematic to measure. Despite this however, it is critical that we find ways to inculcate these wider skills in young people, to help them navigate their way through an increasingly uncertain and unpredictable world – a world in which the ability to originate and implement new ideas will be essential.

This publication outlines a range of ideas and approaches to developing and measuring these wider skills, and asserts their importance both for learning and for innovation. The education debate needs to shift away from whether these skills are important, to how they can be developed. We hope this report will help prompt this change in focus.

Helen Gresty
Executive Director Innovation Programmes, NESTA

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Executive summary

A timely debate is currently under way about the kinds of skills that young people need to acquire in order to function effectively in the 21st century. This necessarily explores the issue from a number of perspectives – competitiveness, innovation, well-being, social inclusion, basic skills and lifelong learning – each one of which has the potential to enrich our thinking.

In looking critically at current approaches to wider skills we have been able to take stock of current trends and observe how thinking and practice might be developed. Specifically we make a case for talking about 'dispositions' and 'habits of mind' rather than about skills. This, we suggest, usefully shifts the emphasis onto what young people actually choose to do as opposed to what they 'can' do.

We have identified and commented on a number of different frameworks that list wider skills drawn from four different kinds of sources:

1. National and regional educational departments.

2. Research institutions.

3. Third sector.

4. Private sector.

We have made some general observations about similarities and differences along with a more detailed commentary about each framework.

We suggest that there are significant pedagogical implications for the development of wider skills and argue that there are linguistic and cultural issues which need to be explored.

We review progress in thinking about the measurement of wider skills and suggest that there are a number of methods, which, if used together, may provide a more rounded and usefully formative picture of what is being learned.

Finally, we look at the connections between wider skills and skills associated with innovation. In general, we find that the frameworks currently available do not reach the level of psychological sophistication required. We see a sound bedrock of basic and wider skills as being important but not sufficient. Certain dispositions also need active nurturing if innovation is to be effectively developed in young people. Nevertheless, we conclude that many of these frameworks for wider skills are at least searching in the right place for skills for innovation: in the mental and emotional habits of mind that underpin innovation, and in the cultural practices of schools and colleges that invite and strengthen those habits.

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We are particularly grateful to those individuals who have helped us by reading a draft version of the paper and suggesting ways in which to develop it further. We have been able to include a number of these useful ideas in the final version.

Specifically we would like to thank:

Contents

1. Introduction

Education systems reflect the values of their societies, both through the knowledge they consider worth teaching and the skills they hope to develop through the study of those topics and themes. These underpinning values reflect governments' preoccupations with national security and prosperity, and the threats to and opportunities for their citizens' well-being and 'lifelong learning', in the light of international pressures, tensions and opportunities. In recent years the UK government, like many others, has sought to redefine what those valued skills might be. In this paper we have brought together and reviewed a number of illustrative attempts at describing the kinds of skills that are being considered, in order to draw out underlying trends and generalities.

To anticipate some of our conclusions, there is a strong interest in two broad classes of these 'wider skills': innovation skills (typically associated with international competitiveness) and those more personal skills associated with individual potential (more likely to be connected with achievement and well-being). We should say at the outset that we see both of these strands of thought, along with what are sometimes referred to as 'basic skills', as important. Taken together, and coupled to certain habits of mind, they make up the overarching capacity to learn how to learn. We should also acknowledge that we are particularly focusing here on the age range 14–25, although what precedes and follows this period is clearly important too.

The paper is structured around four questions:

1. What are the similarities and differences between the skills that these frameworks have identified?

2. What ideas are being put forward about how these valued skill sets may be cultivated through education?

3. What progress has been made in identifying methods for assessing progress in the cultivation of these skills?

4. Why are these skills important for innovation?

The paper arose out of a seminar hosted by the National Endowment for Science, Technology and the Arts (NESTA) on measuring wider skills in September 2008. It builds on work currently being undertaken by Professor Elizabeth Chell at Kingston University that seeks to measure innovative characteristics in young people.[1] Following the seminar The Centre for Real-World Learning[2] was commissioned to look critically at current approaches to describing wider skills, to explore some of the issues with regard to their cultivation and chart progress in thinking about their measurement.

To anticipate our conclusions, it appears that many agencies have been successful at producing extended wish-lists of desirable qualities (answers to the first of our four questions). However, they have failed at suitably answering the second (how education systems are to be reconfigured so that the cultivation of these qualities occurs naturally and reliably), or the third question (how the development of such qualities might be tracked and measured). The fourth question, about the links between these skills and the skills necessary for innovation, is becoming clearer and more widely accepted.

1.1 From skills to something wider

What do we mean by 'skills'? At its broadest, a skill is a learned capacity to do something useful. Such skills can be very situated and specific – the ability to tie one's own shoelaces – or much broader – being able to empathise with someone who is distressed. Our concern in this paper is clearly with the latter: those that have broad currency and utility in the worlds of life and work.

We take the word 'wider' to mean not just 'generic', but also wider than those largely cognitive skills developed in a traditional school or college curriculum. Though the content of lessons has varied over the years, pedagogy has seemed designed, for a great many students, to cultivate a rather narrow set of cognitive skills and attitudes. We might describe these skills, only slightly mischievously, as comprising:

- The ability to accept what you are told without question.

- Learning how to compute without understanding what you are doing.

- Copying notes quickly and accurately.

- Retrieving and transcribing information acquired months or years previously quickly and accurately.

- 'Parking' your own mental and emotional concerns for large periods of your waking day.

- 'Reading' teachers' minds.

- Sitting still for protracted periods of time.

All of these are skilled performances, some of which many students find hard to master. Few, however, would find themselves at the top of a list of 'life skills for the 21st century'. The idea of 'wider skills' points to this yawning chasm between 'school skills' and 'life skills', and invites suggestions as to how that gap may close.

We should also ask 'wider in what way'? The most obvious answer is 'in their connection and relevance to life beyond school'. For a while, this was taken by many to refer essentially to further study at college or university, and led to a concern with 'independent study skills' and the like. There is now a broad consensus that 'wider' has to include the 50 per cent of young people who will not be taking the scholastic route. So 'wider skills' will include those that are of use to a bricklayer, an animator, a personal assistant and a carer, as well as to an accountant and an engineer. It follows that the skills of interest are not merely cognitive. Explicit, rational, deliberate thinking is a powerful tool, but so are the skills of sophisticated practising, of learning from one's mistakes, of mental rehearsal and dreamy visualisation, and of reading one's own and other people's emotional signals.

3. See the work of Arthur Costa and Bena Kallick – www.habits-of-mind.net – and of Lauren Resnick, for example, in Making America smarter in 'Education Week.' June 1999.

4. See Katz, L. (1993) Dispositions: Definitions and implications for early childhood practices.' No 211, Monograph series no 4; Perkins, D. et al. (1993) Beyond abilities: A dispositional theory of thinking', Merrill-Palmer Quarterly, 39, pp1-21; and Claxton, G. (2002) Building Learning Power TLO Ltd

5. See Dweck, C. (1993) Self-theories: their role in motivation, personality and development, Philadelphia Psychology Press.

6. See OECD (2007) Human Capital: How what you know shapes your life

Finally, the idea of 'wider skills' seems to demand a broadening of the notion of 'skill' itself, from something rather technical and/or impersonal to something that includes more personal and subtle sensibilities, attitudes and values. To acknowledge this, terms such as 'habits of mind', 'dispositions' and 'orientations' are used frequently in the mapping of the 'wider skills' territory. They have different connotations from 'skill'. For example, 'habits of mind'[3] suggest more about how intelligence works in practice. 'Dispositions'[4] hint at something closer to 'character' in thought and action. While 'orientations'[5] seem to suggest more settled dispositions. Other frequently encountered terms include 'attributes', 'capabilities', 'inclinations', 'competences', 'capacities' and 'strengths'. 'Skills' as a term also suffers from its widespread association with certain other words such as 'basic', 'intermediate', 'soft' and so on, which limit its scope.

One particular reason why the notion of 'dispositions' has gained a good deal of recent currency is the recognition that the idea of 'skill' conceals a very important real-life problem: that of realising when to make use of the skill, as well as of merely 'possessing' it. For many simple, technical skills, this is not a problem. The environmental cues as to when to make use of the skill of 'a sliced backhand' or 'whisking egg whites into stiff peaks' are generally strong and unambiguous. However, the 'wider skills' of 'looking at a situation through someone else's eyes', 'persisting in the face of difficulty', or 'asking yourself what assumptions you might have been unconsciously making' are not so strongly marked. A learner has to be on the lookout for such occasions and opportunities. The development of this readiness, as well as of the ability itself, thus becomes of crucial importance, one which is finessed and obscured by the casual use of the word 'skill'.

Consider these statements:

1. 'Paula can use her imagination.'

2. 'Paula does use her imagination.'

The first sits in the territory of skill. It merely tells us that Paula has learned a capacity to imagine. However, the second tells us that if we zoom in on Paula's life we may notice how in her writing, in her personal life, in her dealings with her parents Paula demonstrates on a daily basis that she not only can but actually does use many facets of her imagination. Here we are speaking the language of dispositions. Paula is actually using her skill. It has become a habit of mind for her to do so. We believe that it is in all of our interests to move beyond 'can do' to 'does do' discussions of the wider skills which young people need.

Thus far (and elsewhere in this paper) we have talked about 'the learner' in the abstract. It is therefore important to state here that the development of a richer understanding of wider skills needs to proceed both at this theoretical level and, importantly, in discussion with learners themselves .

1.2 Overview of sources

There are a number of reasons why the narrower and more traditional conception of 'skills' does not adequately describe what many people want to see cultivated in learners. In its recent work on human capital[6] the Organisation for Economic Co-operation and Development (OECD) is explicit on this topic, arguing that students are currently not learning what they need to learn. Approaching this from the perspective of increased globalisation, major social and economic change and knowledge economies, the OECD concludes: "To be truly effective education needs to give a wider set of competences to help people navigate their way through the modern world."

The OECD recommends three broad categories for the setting of educational goals:

1. The ability to use 'tools' such as language and computers effectively.

2. The ability to interact with people from different cultures and backgrounds.

3. The ability to manage our own lives.

The European Commission's Centre for Research on Education and Lifelong Learning[7] (CRELL) has reached similar conclusions in their work on the measuring and monitoring of key competences. It argues that we need a richer conception of skills, one that embraces both affective and cognitive domains, and deals with life in civic society as well as with learning.

Debating the skills that countries want their citizens to have is a primary method through which governments can engage with their electorates. Therefore, we have included a number of both national and regional examples of such frameworks from ministries and departments of education. In many cases, governments' attempts to identify the broader set of characteristics and qualities that they wish to see in the next generation, and that they therefore wish to see schools and colleges promoting, are useful and timely ways of focusing attention back onto the core purposes of education itself.

We also review some illustrative attempts to distil wider skills into frameworks from other sources including:

• Research-based organisations.

• Non-governmental organisations.

• Commercial publishers.

Frameworks from individual institutions (schools, colleges and informal learning organisations) have not been included. Neither have those related to specific examination and curriculum structures (such as the International Baccalaureate).

We are particularly indebted to work undertaken by Futurelab in scoping wider skills[8] in the UK. More information can be found in their report about some of the frameworks which space did not allow us to include in the present paper. Futurelab's Enquiring Minds[9] project (not included in this paper, as it is more a philosophy of education than a framework for wider skills) is also a powerful reminder of the complexity of this territory, and of the importance of acknowledging the prior experience of learners (another aspect of the debate that we are unable to explore here).

Although published in 2002, *Key competences: A developing concept in general compulsory education*,[10] a detailed analysis by the Eurydice network of the education systems of European Commission member countries, remains an extremely thorough and useful technical summary of some aspects of the debate about wider skills for learning.

Of all the phrases we have encountered in our research, 'capabilities for living and lifelong learning', the one adopted in the New Zealand curriculum, seems particularly helpful. However, to keep things simple we will mainly use the phrase 'wider skills' in this paper.

7. See http://crell.jrc.ec.europa.eu/ and see Hoskins, B. and Deakin Crick, R. (2008) Learning to Learn and civic competences: Different currencies or two sides of the same coin? European Union Joint Research Centre

8. See Facer, K. and Pykett, J. (2007) Developing and accrediting personal skills and competences, Futurelab

9. See www.enquiringminds.org.uk

10. See www.mszs.si/eurydice/pub/eurydice/survey_5_en.pdf

2. Current approaches to wider skills for learning

We have identified a number of helpful attempts to define and describe wider skills, often organised into frameworks or lists. In this section we offer headline summaries of a selection of these, followed by an attempt to make sense of the various frameworks.

More detail about each framework can be found in the appendices where in each case we have also commented briefly on the worldview it seems to presuppose, especially with regard to any educational or societal issues with which it appears to be concerned, along with our view of the utility and validity of the approach. If the proponents of a framework have suggested ways in which wider skills can be cultivated or specific approaches to their measurement then we have included these, using speech marks to suggest where we have been unable to validate the specific claims made. However as most do not explore these in detail, we have included in this paper some general comments on the ease of learning wider skills (pages 20-22) and on their measurability (23-25).

2.1 National and state education departments

In the past five years various Australian states and New Zealand have done much pioneering thinking about wider skills and, more recently, there have been exciting developments in the UK. Table 1 contains a headline summary of the frameworks we considered. In Appendix 1 we have included much fuller information along with our commentary.

2.2. Research-based approaches

A number of university departments and individual researchers have contributed significantly to our understanding of wider skills. Indeed, stimulated by Margaret Carr and Guy Claxton,[11] Frank Coffield was moved to write a paper whose title – *Skills for the future: I've got a little list*[12] – points up the sense in which the proliferation of lists of wider skills has moved from research into speculation.

In seeking to predict the future, it is almost inevitable that a researcher has to both adopt a socio-political stance and make predictions about the unknown! The current sudden global recession is a powerful reminder of the difficulty of this kind of work. Coffield's paper also helpfully raises another question about the kind of future being envisaged. There is insufficient space in this paper for us to develop our own detailed analysis and to distinguish, as some have argued, between probable, possible and preferred futures.

The following examples in Table 2 have attracted citation and interest from practitioners. Much fuller detail can be found in Appendix 2.

11. See Carr, M. and Claxton, G. (2002) 'Tracking the development of learning dispositions', Assessment in education: Principles, policy and practice, 9 (1)

12. See Coffield, F. (2002) 'Skills for the future: I've got a little list', Assessment in education; principles, policy and practice, 9 (1)

Table 1

Framework	Description
a. Queensland New Basics	Rich tasks and a focus on four skill areas
b. Victorian Essential Learning Standards	Whole-school planning based on four components
c. South Australia (SA) Learning to Learn	The SA Compass with two sections – Learning for Teaching and Teaching for Learning
d. Tasmanian Curriculum	Strong focus on the teaching of thinking skills
e. New Zealand Key Competences	Five key competences rooted in principles of effective teaching
f. Singapore Desired Outcomes of Education	A long list of outcomes implicitly derived from the teaching of wider skills
g. Finland Learning to Learn competences	A complex framework with a strong emphasis on the process of learning and on its assessment
h. England Personal Learning and Thinking Skills	Six groups of wider skills adopting a competency-based approach
i. Northern Ireland Thinking Skills and Personal Capabilities	Five groups of core skills explicitly based around the development of thinking
j. Scottish Curriculum for Excellence	Four broad core capacities
k. Social and Emotional Aspects of Learning	Five affective aspects of learning resources with materials

Table 2

Framework	Description
a. Effective Lifelong Learning Inventory	Seven dimensions of learning power used to create a learner profile
b. Project Zero	A range of approaches, e.g. Visible Thinking, Multiple Intelligences, seven key principles for smart schools
c. EU Framework for key competences	Eight key competences for successful life in knowledge society
d. DeSeCo Framework	OECD's Three broad clusters of competences
e. Character strengths and virtues	24 character strengths grouped around six virtues from a group of US researchers
f. Centre for Science Education's Personal Capabilities Framework	Ten personal capabilities related to science
g. McCoombs Learner-centred Psychological Principles	12 principles drawn from psychological research
h. TLRP Principles for Effective Teaching and Learning	Ten principles derived from expert reviews of the literature for the ESRC

13. See www.edwdebono.com/cort/

2.3 Third sector approaches

In parallel to new thinking from governments and research bodies, third sector agencies have often felt able to experiment more radically with ideas about skills.

The following examples in Table 3 have attracted interest from researchers, policymakers and practitioners. Much fuller detail can be found in Appendix 3.

Table 3

Framework	Description
a. Partnership for 21st Century Skills	Three sets of broader skills
b. RSA Opening Minds	Five categories of competences for secondary schools
c. Campaign for Learning	Five broad dispositions/aspects of mind as part of an ongoing research project into learning to learn in schools
d. Talent Foundation	16 elements of being smart linked to learning to learn and applying knowledge

2.4 Commercial approaches

In the 1970s Edward de Bono[13] developed his CoRT Thinking lessons explicitly with the belief that thinking could be taught. Many schools use his materials and tools and, in this sense, he was a pioneer for the wider thinking and learning skills that have been developed both commercially and by education departments. His 'Six Thinking Hats' approach, for example, aimed to teach students six distinct modes of thinking. They were:

- Feeling (red hat).

- Positive thinking (yellow).

- Critical appraisal (black).

- Exploring possibilities (green).

- Gathering information (white).

- Checking the thinking process (blue).

Since de Bono's contribution, several other proprietary frameworks have been developed for the cultivation of the wider skills. To illustrate these we have selected two approaches, in Figure 4, both widely in use, one mainly in the US, one mainly in the UK. Both of these adopt an approach to skills that looks more broadly at the cultivation of certain dispositions.

Table 4

Framework	Description
a. Habits of Mind	16 wider habits of mind, developed by Arthur Costa and Bena Kallick
b. Building Learning Power	4Rs (dispositions) each of which is differentiated into four or five more specific 'learning capacities' developed by TLO based on the work of Guy Claxton

2.5 Making sense of the plethora of approaches to wider skills

The range of approaches we have described so far in this paper indicates just how much interest there is in the topic of wider skills. We now want to see if it is possible to come up with any answers in response to our first question:

What are the similarities and differences between the skills that these frameworks have identified?

There is a risk, of course, that attempts to digest the various lists simply create yet another list, yet mapping the territory is clearly a valuable exercise in principle. We are not the first to have tried.

Clearly there are some features that recur time and again across the different frameworks. All value the development of literacy. For some this is principally taken to mean text-based and numerical literacy. For others, digital literacies take an equal place. For a few – the EU for example – literacy in at least one foreign language is taken to be crucial. Not surprisingly perhaps, English-speaking countries are less concerned with this form of multilingualism. In addition, for a few, what we might call critical literacy – the ability to deconstruct knowledge claims, and investigate questions of power and privilege – is also important.

Most countries and agencies value citizenship. They want the citizens of the future to be actively engaged in shaping social and community development. Most emphasise tolerance as a key civic virtue, some unpacking this notion into a concern to develop perspective taking and the ability to empathise with people with different backgrounds and beliefs. Only a few are willing to use more morally or spiritually overt concepts such as compassion, humility, gratitude and temperance. Singapore wants its citizens to be 'morally upright', for example; a kind of language that is often eschewed elsewhere in the world. Some want their young to be actively skilled in conflict resolution and negotiation – perhaps through the deliberate development of playground mediation skills.

Almost all of the frameworks value social skill and communication, often elaborating these into concerns with collaboration and effective teamwork (a language that often betrays the focus on workplace effectiveness). A few of the frameworks even aspire to make all young people capable of leadership. Some include not only the social and cultural worlds in their definition of citizenship but also the natural and ecological worlds, wanting the citizens of the next generation to be actively concerned with issues of sustainability and globalisation.

There is a broad consensus that the next generation should be capable of effective 'self-regulation' (perhaps reflecting awareness that the present generation has not perfected this ability). Young people should become good at self-management, planning and organising their time and their activities in a deliberate and systematic way. A few frameworks suggest

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that one function of education is to help youngsters discover their passions – whether they be 'bookish' or not – and to develop the confidence and self-knowledge to pursue them. The idea of delayed or deferred gratification – being able to sacrifice short-term pleasures in the interests of long-term goals – appeals to some. Costa and Kallick, for example, value 'managing impulsivity' as one of their 16 key 'habits of mind'.

Many frameworks promote the virtues of thoughtfulness, reflection and self-evaluation, often bundled together under the jargon umbrella of metacognition. Some extol the value of 'emotional intelligence', a large part of which is to do with 'emotional self-management'. Very few frameworks seem to value the balancing of this conscious and deliberate approach to life and self with other virtues such as 'joy', 'exuberance', 'spontaneity' and enjoyment of the small, incidental, often cheap and sometimes accidental pleasures of life (though Costa and Kallick again do include 'wonder and awe' in their habits of mind). Some frameworks want youngsters to develop an understanding of 'responsible risk', though many are uninformative about how exactly this can be engendered. Some link this to issues of healthy lifestyles and personal security. Only a few frameworks explicitly value the arts and aesthetic awareness and engagement, and the vernacular opportunities that many young people already take to use digital technologies go largely unmentioned.

Many frameworks seek to cultivate the skills and dispositions of clear, methodical, rational thinking and problem solving. Being capable of analysing arguments and providing rationales, explanations and justifications for views and actions is clearly seen as a high priority (again, perhaps, reflecting an awareness that much of public life is currently less than perfectly dispassionate). The desire for accuracy and precision in thought and action is one reflection of this concern. A few frameworks (for example the Talent Foundation's *New Kinds of Smart* and Perkins's *Visible Thinking*) ally this to the ability to distil the transferable lessons from experience and to spot novel and appropriate opportunities to make good use of what they have learned elsewhere.

While many frameworks, especially those that are economically or entrepreneurially driven, stress the importance of 'creativity, innovation and enterprise', few seem to stress the 'learnability' of such essential mental qualities as imagination, visualisation, intuition and patience – qualities that are generally shown to be of value within the scientific literatures on creativity. Project Zero's exploration of the concept of 'mindfulness' is an exception to this. For some, 'entrepreneurship' seems to refer more to the ability to set up and run a small business, than to the frames of mind that are conducive to genuinely innovative thinking. Some agencies do stress the importance of questioning, curiosity and inquisitiveness, though rarely do they seem to follow through the implications of this for the organisation of schooling.

Several of the frameworks explicitly value the development of 'resilience', 'determination' and 'persistence' – often in the context of work, but also as a more general asset in life. A few link this to work on the underlying beliefs or 'mindsets' that have been shown to exert powerful influences – for good or ill – on this kind of 'mental toughness'. Some link the willingness to engage and persist with difficulty with notions of self-esteem and self-image, and argue that the strengthening of self-esteem is a vital precondition for effective lifelong learning. Others see resilience as a quality that can be directly strengthened and self-esteem as an outcome of sustained, successful engagement with learning, rather than an entry condition.

Despite a good deal of overlap, many of the frameworks do have their idiosyncrasies. Only one (Building Learning Power) sees 'imitation' – the disposition to pick up useful ways of thinking and learning from nearby (or media-related) role models – as a powerful lifelong learning disposition capable of being cultivated. Consequently, very few draw attention to the potential role of teachers' modelling of the desired attitudes and skills in the classroom. And we have already mentioned the relative neglect of habits of mind that are not essentially

rational, explicit and under conscious cognitive control – faculties such as imagination, intuition and the aesthetic ways of knowing that include wonder, awe and the feeling of being unexpectedly 'touched' or 'moved'. It may be that, as these lists of desiderata develop further, they will come to include a broader range of psychological traits and habits.

Let us now make a few general comments in a more critical vein.

- **Essentially wish lists.** Each framework betrays its predominant aspirations and anxieties about the contemporary global world, and its assumptions about the general direction in which 'progress' seems to lie. As we said at the beginning, some major on international competitiveness and the demand for a 'world-class workforce'. Many of the wider skills they propose are the ones that employers currently bemoan the lack of – responsibility, self-management and so on. Other approaches, to put it crudely, favour a view of 'lifelong learning' that is tied more to subjective well-being, personal fulfilment and personal development than to economic effectiveness. Many of the approaches seem to assume that the same set of wider skills will be good for both purposes, though this assumption is rarely spelt out, and is indeed questionable.

- **Frequently incoherent.** Some of the frameworks seem to be lacking in conceptual coherence. Ideas have been grouped together that might just as well have been grouped in a different way. For example, in the English QCA framework of Personal Learning and Thinking Skills, it is not clear why 'identifying questions to answer' should be a characteristic of 'independent enquirers' while 'asking questions to extend their thinking' should characterise a different quality, that of being a 'creative thinker'. In terms of communicating these frameworks to teachers, students and their parents, such a lack of coherence may create unnecessary problems.

The Futurelab report, to which we referred earlier, identifies nine meta-categories:[14]

1. Learning.

2. Management.

3. People.

4. Information.

5. Research/enquiry.

6. Creativity.

7. Citizenship.

8. Values/attributes.

9. Preparation for the world of work.

Useful as this is, it is immediately clear that this list, too, has its own inbuilt inconsistencies. Why, we might ask, is 'research/enquiry' separated from 'learning', when they are so obviously closely related? To take another example, why is 'preparation for the world of work' treated as a separate category when many of the other categories will surely be an integral part of this?

The list also contain ideas of very different 'sizes', some of the skills named being specific to particular materials or situations (e.g. mathematics vs foreign languages) while others are presented as entirely universal in applicability.

14. See Facer, K. and Pykett, J. (2007) Developing and accrediting personal skills and competences, Futurelab

15. Adopted by the EU Education Council,
2006 annex, paragraph 5, and quoted in
Hoskins, B. and Fredriksson, U. (2008)
Learning to Learn: What is it and can it be
measured?, European Commission

- **Implementation assumptions are often naive.** The implicit assumption seems frequently to be that many of the wider skills (capabilities, dispositions and so on), once identified and named, can easily be developed. Yet, especially when they may involve a change of behaviour, this may be extremely complex and difficult. Our view would be that the construction of such lists constitutes not (say) 80 per cent of what needs to happen, if change is to be successful, but nearer to 5 per cent. Articulating the aims is vital, but is just a start towards reconfiguring the effective practice of education.

- **Apparently equally easy to cultivate.** Clearly some people will find some of these wider skills harder than others to learn, yet this diversity is only infrequently acknowledged. Indeed, progression maps, where provided, seem to take no account of the fact that the development of something as basic as, for example, self-confidence may not be linear. An apparently confident 11 year old may be all at sea in a new secondary school a few months later.

- **Context-free.** While some of the curriculum frameworks seek to map wider skills on to subjects, the lists of wider skills largely inhabit a strange context-free zone. Yet common sense and psychological research tell us that you cannot teach wider skills (or any similarly broad concept) in a vacuum. You need to start with concrete experience first. Related to this it is noteworthy that few frameworks seek to address the issue of whether skills are best cultivated in class or out of it, in curriculum, cross-curriculum or extra-curriculum mode.

- **Learning to learn.** Some frameworks divide out 'learning to learn' as a separate category of skills, yet many of those that they list under other headings seem to contribute equally to learning. Empathy, for example, is a vital ingredient of tolerance; yet being able to look at situations through the eyes of different parties is equally an important asset for learning. In general, the separation of 'skills for life' and 'skills for learning' seems more and more contentious, the more you look at it.

Lifelong learning and learning to learn

This last point bears exploring in a little more detail. Two phrases occur repeatedly in connection with the various frameworks – 'lifelong learning' and 'learning to learn'. While 'lifelong learning' is clear in suggesting that the wider skills must have relevance beyond school, even this phrase can carry very different connotations. Some use it to refer to an indefinite process of work-related skills-updating and professional development, often involving school-like processes of teaching and accreditation. Others use the phrase much more broadly to refer to all kinds of real-world learning such as the informal development of expertise in parenting, gardening or self-control.

The second phrase, 'learning to learn', is, if anything, even more problematic. Just how difficult it is to define learning to learn is clearly exemplified by the EU's own definition, clearly the product of many minds:[15]

> *Learning to learn is the ability to pursue and persist in learning, to organise one's own learning, including through effective management of time and information, both individually and in groups. The competence includes an awareness of one's learning process and needs, identifying available opportunities, and the ability to overcome obstacles in order to learn successfully. This competence means gaining, processing and assimilating new knowledge and skill as well as seeking and making use of guidance. Learning to learn engages learners to build on prior learning and life experiences in order to use and apply knowledge and skills in a variety of contexts: at home, at work, in education and training. Motivation and confidence are crucial to an individual's competence.*

You only have to pause for a moment and think of the wider skills that would be necessary to be an effective learner of learning using this definition and you might wonder whether there is a single human quality that can be excluded as irrelevant.

It does not just end with learning to learn. In their work for the EU, Bryony Hoskins and Ulf Fredriksson[16] argue that three other competences are closely related to or overlapping with learning to learn. These are:

1. Intelligence.

2. Problem-solving.

3. Learning strategies.

In the light of much recent research in the learning sciences, it would look like a wild goose chase to attempt to create clear distinctions between these three concepts. Learning to learn clearly involves many strategic elements, while intelligence itself is increasingly seen, as Lauren Resnick puts it, as merely the sum total of one's habits of mind.[17]

An important question begged by many of these frameworks is the degree to which some skills or dispositions are more important than others. Is there an inner core of more important wider skills (the broader literacies of learning, for example)? It would be easy to make a case for any one of, say, questioning, reciprocal group working or empathy. However, precisely which ones you select will depend on the purpose for which you are selecting. If well-being is your goal you will get one answer to your question. Whereas if you are interested in innovation, or even adaptability, the answers will change. There is more work to be done here, considering the different answers and investigating the degree to which there is a common core of wider skills.

The interesting differences that emerge from an analysis of these lists of wider skills are, arguably, the different views of learning that they espouse and the attendant ease or difficulty that they see when it comes to cultivating and using wider skills at school and in the real world. This is what we will explore in the next section.

16. See Hoskins, B. and Fredriksson, U. (2008) Learning to Learn: What it is and can it be measured, European Commission
17. See Resnick, op. cit.

3. Cultivating wider skills

We now turn to the second of the three questions with which we began our paper:

What ideas are being put forward about how wider skill sets may be cultivated through education?

The reason we have been exploring different frameworks of wider skills is that we believe that they enable us to shed new light on the content of curriculums, both school and non-school. Whereas it is easy to think of teaching, let us say, Chinese rather than French or even citizenship rather than history, when it comes to wider skills the pedagogical implications are more significant, yet harder to pin down. Teaching someone to develop an enquiring mind or a resilient disposition is self-evidently more complex than explaining soil erosion or quadratic equations.

Some of the organisations behind the frameworks we have been discussing have begun to consider the issue of the ease of learning these wider skills, and – to the extent that they are learnable – how best to develop them. The Northern Ireland Curriculum lists seven classroom strategies for cultivating wider skills derived from the research literature and, for each one, offers sensible guidance. The seven are:

1. Setting open-ended challenges.

2. Making thinking important.

3. Effective questioning.

4. Making thinking explicit.

5. Enabling collaborative learning.

6. Promoting independent learning.

7. Making connections.

Similarly, the New Zealand Curriculum specifically acknowledges the complexities inherent in cultivating complex competences, suggesting that students learn best when teachers:

• create a supportive learning environment

• encourage reflective thought and action

• enhance the relevance of new learning

- facilitate shared learning

- make connections to prior learning and experience

- provide sufficient opportunities to learn

- inquire into the teaching–learning relationship

While these look like sound principles of effective teaching and learning, do they go far enough? Where does 'good practice' for raising standards, conventionally defined, stop, and 'good practice' for the systematic development of useful, transferable habits of mind begin? Surely, they are not the same thing? It is perfectly possible to get good results – with the right students – through a kind of spoon feeding that enables examination success, but which stifles intrinsic curiosity and builds dependency rather than independence. To take one tiny example: How do you teach so that it is not the teacher who is 'making the connections', but the students who are building the inclination to look for connections for themselves?

Teaching, training or cultivating?
To illustrate some of the issues here, we only have to consider the language we use to frame the problem. Consider the three words in the heading to this section. Do you cultivate the disposition of, say, resilience? Do you teach resilience or do you train people to become more resilient? The language you select is a powerful indicator of the approach you are likely to adopt.

Teaching implies that a largely intellectual transaction is going to take place between someone who knows about resilience and someone who is going to be taught to understand resilience. Yet there is all the difference in the world between understanding resilience and being resilient, just as there is between being knowledgeable about rugby and being an international player. Being able to discuss moral dilemmas, and approve a considered course of action, for instance, has been shown not to predict the likelihood of making the same choice in real life.

The language of training (and of 'skill' itself) conjures up a sense in which there must be a few key skills that can be easily practised and acquired in order to become more resilient. It invites the assumption that developing the disposition to ask questions, say, is the same kind of activity as developing the ability to take cuttings from a plant, or master a desktop publishing package. Yet, as we argued in the Introduction, these are not the same thing at all. Knowing when to take a cutting, or how to make a white sauce, is not, usually a big problem. However, knowing when (and how) to put yourself in someone else's shoes, or to show tolerance for difference (as opposed to an appropriate disapproval of unacceptable behaviour) is a highly personal matter.

The wider skills we have been looking at are complex. They mostly involve a rich mix of cognitive, affective and socio-cultural elements. As we have previously argued, agreeing which ones are the most significant or important is, relatively speaking, the easy bit. Deciding how students are best going to acquire them is the tricky bit. From our analysis of the research literature we are in no doubt that, of the three verbs, 'cultivate' is the one that comes closest to what needs to take place when dealing with the wider skills for learning.

The metaphor of cultivation suggests that the process of learning to be more resilient will be gradual land progressive. It will require the creation of a well-designed and conducive environment. This means creating a coherent culture in schools and classrooms that consistently invites, rewards and exemplifies the wider skills that are treated as desirable. Only a few of the frameworks have made much headway in describing what the most important cultural levers are, and how schools need to be adjusted accordingly. These levers

18. See Perkins, D. (2008), Learning the Whole Game, Jossey-Bass , San Francisco

19. See Perkins, D. (1993) 'Teaching for understanding' The Professional Journal of the American Federation of Teachers 17 (3) pp 8,28-35

will almost certainly include the default discourse of classroom, staffroom and reporting; the visual and physical environment; the amount of responsibility and 'ownership' students take for their own learning; and the examples set by teachers and school leaders. Current thinking suggests that, unless these features are in place, merely pasting a concern with 'key competences' or 'personal learning and thinking skills' over the top of 'business as usual' is unlikely to be effective.[18]

Earlier, we made the crucial point that abilities do not automatically translate into dispositions. 'Can do' does not entail 'does do'. The presumption behind all the frameworks we have reviewed is that the qualities they identify as valuable will not be merely trotted out on special occasions, when strongly prompted, but will become second nature to young people, so they will make a real difference to how they run their lives. This takes more than a few worksheets or some fun activities on 'thinking skills'.

As Perkins has argued:

> *Research shows that very often pupils do not carry over the facts, principles and skills they acquire in one context to other contexts. Knowledge tends to get glued to the narrow circumstances of its initial acquisition. If we want pupils to transfer their learning we need to teach explicitly for transfer, helping pupils to make the connections they otherwise might not make and helping them to cultivate the mental habits of making links and connections.*[19]

If this applies to conventional school knowledge, it applies all the more strongly to the wider skills. Unless the detail specification of wider skills is balanced with an equally clear description of how they are to be cultivated – in real schools, in real time, with real young people – teachers are likely to be bemused, and the wider community may well react with incomprehension, or even hostility, to the proposals.

The fate of the Essential Learnings programme in Tasmania provides a cautionary tale. Schools were flooded with detailed specifications of what they were newly expected to achieve, but without clear guidance about exactly what they were expected to do differently. In addition, parents and local politicians were not clearly enough persuaded of what was being done and why. The documents contained too much aspiration and too much jargon for many people to comprehend, or stomach. Consequently, both influential local figures, and the media, rose up against the proposals, and they have been virtually emasculated.

4. Measuring wider skills

Now for the third of our questions:

What progress has been made in identifying methods for assessing progress in the cultivation of wider skills?

Let us start with a basic issue. The motive for any kind of educational measurement will largely determine not only what you measure but also the way you measure it. Common purposes for assessment include:

- Summative evaluation, grading and certification of individual students (e.g. examinations).

- Formative and diagnostic assessment that helps to guide and channel individual students' learning (e.g. Assessment for Learning).

- Ipsative assessment that compares students' progress not with objective criteria, nor with their peers or standardised populations, but with their own past performance.

- Evaluation of educational provision (e.g. by individual teachers or schools) against agreed criteria (e.g. in England, the Ofsted criteria).

- Evaluation of educational interventions and innovations (e.g. a research study of a new teaching method).

For example, if you are looking for system accountability, you will probably want to see summative scores from schools and districts, while if you are looking to motivate learners then you are more likely to choose a formative or even ipsative assessment tool of the kind adopted by Assessment for Learning.[20] The same method of assessment cannot be presumed to work for a different purpose. For example, summative tests are demonstrably de-motivating, while ipsative assessments are much more encouraging. And different assessment methods have different pros and cons, as well as different implementation costs. Self-assessment questionnaires may get closer to students' experience of change than standardised tests, but they also run the risk that students will lack the self-awareness to answer accurately, or may bias their answers to give the impression that they think is expected or required.

Even the optimal form of a questionnaire may depend on the purpose for which it is being used. A summative instrument, designed to be as objective and comprehensive as possible, may be quite time-consuming to fill in, be administered under quite formal conditions, and need to undergo extensive testing of validity and reliability for target populations before being used. On the other hand, the same wider skills might be better checked with a shorter, more flexible, more student-friendly quiz, if the purpose is to stimulate students' self-awareness and interest in developing the wider skills for themselves, perhaps via discussion

21. See Facer,K. and Pykett, J. (2007) Developing and accrediting personal skills and competences, Futurelab, Bristol

22. See Carr, M. (2001), Assessment in Early Childhood Settings: Learning Stories, Paul Chapman Publishing, London

23. See www.nesta.org.uk/measuring-innovative-characteristics-in-young-people/

of the quiz's results with a classroom buddy or a parent. One form of the questionnaire would be more scientifically robust but less engaging; the other, more effective at stimulating learning but less valid as a formal evaluation. A third purpose, that of providing a teacher with feedback about how successful she is being at developing wider skills in her classes, might be best served by a kind of anonymous online inventory that is different again.

The way in which the wider skills themselves are seen may also be a powerful determinant of the kind of assessment that is used. For some, the gathering of large-scale quantitative data about skill development is vital if national resources are to be directed towards these ends. For others, this exercise could all too easily tip into a crude summative labelling of individual young people as 'level 6 in resilience' that is nothing short of a nightmare scenario.

We consider that the four headline conclusions reached by Futurelab[21] with regard to the assessment of wider skills still set a useful agenda. Futurelab suggests that it may be beneficial to:

- establish principles for assessment

- develop new tools

- integrate innovative curriculum and assessment practices

- develop a participatory curriculum

The question remains: what kinds of assessment tools will be most suited to the evaluation of the development of wider skills and dispositions, and for what purposes? A number of countries and organisations have made brave attempts to answer these challenges, though few would disagree with the conclusion that we still have a long way to go, and there are a number of intrinsic problems that remain to be satisfactorily solved. There is not scope in this paper to investigate all the issues in detail. Here we shall have to be satisfied with making a few general remarks.

The range of methods that have been trialled or proposed for the periodic assessment of wider skill development in individual students include the following:

- Self-report questionnaires of various kinds.

- Evaluation of students' learning portfolios or diaries, or other written reflections.

- Structured teacher observation in terms of various quasi-objective 'ladders of progression' for each of the wider skills.

- 'Learning stories': short vignettes and digital photos or videos that capture a series of increasingly accomplished 'leading edge moments' in individual students' learning careers.[22]

- Periodic 360-degree assessments of student progress drawing on testimony from parents, friends, teachers and coaches, as well as documentary evidence of various kinds.

- Dynamic assessment of young people's performance in novel, demanding learning situations.

The assessment of wider skills is currently a very active research and development area in many countries, and there are signs of progress, as well as some painful 'learning by mistakes'.

NESTA has itself commissioned work to explore the identification and measurement of innovative characteristics of young people.[23] The measurement of creativity and innovation

has been variously explored by others[24] who have concluded that it is possible but difficult and essentially involves 'being clear about what is being assessed and why, and who should be involved'.[25]

Specifically in terms of wider skills for learning and learning to learn we have encountered two examples of nationally supported assessment initiatives, neither of which has yet been widely taken up. The National Board of Education in Finland and Helsinki University[26] have developed various assessment tools for the Finnish learning to learn initiative (described on page 13). The test has been piloted in both Finland and Sweden (where significant problems were encountered). In the Netherlands the University of Amsterdam was commissioned to develop tests of cross-curricular skills but these appear only to have been piloted with a small number of cohorts.

Recently an EU Expert Group has been established to create a European test for learning to learn as illustrated in Table 5.

Table 5: Framework for a European test to measure learning to learn

The affective dimension	1. Learning motivation, learning strategies and orientation towards change
	2. Academic self-concept and self-esteem
	3. Learning environment
The cognitive dimension	1. Identifying a proposition
	2. Using rules
	3. Testing rules and propositions
	4. Using mental tools
The metacognitive dimension	1. Metacognitive monitoring tasks
	2. Metacognitive accuracy
	3. Metacognitive confidence

A number of versions of the test have been piloted in eight countries and decisions as to any next steps will be taken in 2009. In line with some of our earlier comments, it may be indicative of the difficulty of trying to use the same test for different purposes that either students or teachers have often been found to resist what the test-makers have developed. In the specific example reported by Bryony Hoskins and Ulf Fredriksson[27] it is ironic that many students simply gave up on lengthy tests of perseverance and resilience!

These different methods of assessment have been reviewed, for example by Carr and Claxton.[28] The general – and still rather unsatisfactory – conclusion is that some varied basket of different measures is needed to provide a rounder picture, and to offset the flaws inherent in each measure on its own. Overall, the assessment and evaluation of wider skills is a highly active and contentious area at the present. Progress is slow because it is fraught with conceptual difficulties as well as serious risks. The idea that young people could come out of school labelled as a 'level 7 imaginer' or 'grade C collaborator' is horrific – yet clearly some kind of evaluation of success is necessary. We can expect significant progress in the development of different forms of assessment of wider skills, targeted more effectively at different purposes, over the next few years.

24. See For example, see Villalba, E. (2008) On Creativity: Towards an understanding of creativity and its measurements, European Commission, and Anna Craft (below)

25. See Craft, A. (2008) Approaches to assessing creativity in fostering personalisation, University of Exeter/OU

26. See www.edu.fi/julkaisut/learning.pdf

27. See Hoskins, B. and Fredriksson, U. (2008) Learning to Learn: What it is and can it be measured, European Commission

28. See Carr, M. and Claxton, G. op. cit.

5. Wider skills and innovation

Finally to the last of our questions:

What is the relationship between innovation and the wider skills we have been discussing?

The international search for a core set of 'wider skills', on the development of which the education of young people can be focused more effectively, makes a positive contribution to the widespread concern with and desire for innovation. The search is in the right place: in the mental and emotional habits of mind that underpin innovation, and in the cultural practices of schools and colleges that invite and strengthen those habits.

Indeed, this literature makes a welcome counterbalance to the technocratic language within which the concern to foster an 'innovation nation' is often couched. The current clamour for innovation is frequently matched by the naivety of ideas about how such innovation is to be brought about. Of course people need material resources and social and institutional encouragement, and of course they need the technical skills to turn ideas into products, practices and performances. Both of these need to be addressed.

Nevertheless, at the heart of an innovation nation beats the mindset of its people. Innovation is not merely a technical or a resource matter; it involves the accomplished deployment of a complex and interdependent set of habits of mind. You can put people in a room and make them 'brainstorm', but we know that that is an inefficient way of generating good ideas. It generates ideas, but often ones that are trivial and impulsive.

It is not sufficient to exhort people to have good ideas; they have to know how to use their minds skilfully, and to want to do so. They have to be as good at problem finding as problem solving. Problem solving starts with a well-defined predicament: creativity and innovation start with sensitivity to currents, details, patterns and often obscure dissatisfactions. Innovators heed that faint itch, even when no one else around seems to be feeling it. They are interested in the quirky and the incongruous – they are 'snappers-up of unconsidered trifles' – and that interest in the odd and the problematic is one that is more often squashed at school (under the stampede for grades and 'coverage') than it is honoured and cultivated.

Problem solving is predominately rational; innovation is often an order of magnitude more complex: it requires a rapid interweaving of perception, tinkering, imagination and hard-nosed analysis. Innovators have to know how to vary their 'frame of mind' to enable imaginative thinking at one moment, and critical evaluation at another. Problem solving may have a time-course of hours or days; true innovation, which runs from a hazy concern to a finished product, may have a complex natural history that last for months or years. The pressure for speed and technique that often goes along with the clamour for innovation is almost inevitably counterproductive.

It does innovation a disservice to present it as fun or as easy. Innovation is frequently slow and frustrating, so innovators need patience and determination. They need to be able to bear with confusion, and to tolerate the phases of the innovative cycle where progress stalls and one seems to have 'run out of ideas'. Innovators need to be both socially sensitive and thick-skinned; they often need to find and work well with collaborators, and at the same time they need to pursue their ideas stubbornly in the face of social incomprehension or disapproval. Innovators may not be willing to take 'yes' for an answer, when everyone else is fed up and keen to move on.

Some of the frameworks of wider skills we have come across seem to acknowledge the importance of such resilience, though they are often shorter on ideas about how such an invaluable mindset is to be systematically cultivated. Still, they are an improvement on bland statements about 'unlocking talent', as if innovation were a pent-up force, just waiting to be liberated, and all that were needed were a decisive turning of a key in a well-oiled mechanism. In *Innovation Nation*,[29] for example, the chapter on 'innovative people' (Section 7) is disappointingly short on clues as to how these essential habits of mind are to be cultivated in schools, colleges and work places. Indeed, Section 7 does not even attempt to describe the skills that DIUS thinks innovative people possess. Instead, all that can be found are vague statements about 'idea-generation', 'creativity', 'talent', 'higher-level skills', and so on.

In general, however, most of the wider skills frameworks do not reach the level of psychological sophistication that is required if schools and colleges are to understand what it is they are being asked to do differently, and how to go about it. Labels such as 'initiative' and 'problem solving' are too crude to give educators much to go on, as they struggle to implement these wider-skills frameworks. There is a good deal of innovation going on in colleges and schools that is designed to foster these wider skills – use of ICT, student-led learning, problem-based learning and so on – but, because the learning intentions are specified so crudely, they are often rather unfocused, and fail to hone the requisite habits of mind as effectively as they might. It is to be hoped that, as these frameworks are further developed, they come to specify more clearly what they are getting at.

Professor Elizabeth Chell[30] in her work on measuring innovative behaviour in young people has settled on five broad areas on which to focus: creativity, leadership, self-efficacy, energy and risk. These five areas are broken down into a number of statements that form the basis of psychometric analysis in Table 6.

29. See Innovation Nation (2008) DIUS White Paper
30. See Chell, E. and Athayde, R. (2009) Final Report: The identification and Measurement of Innovative Characteristics of Young People, Kingston University

Table 6

Scale	Statements
Creativity	I would like my lessons to involve lots of different creative activities.
	I prefer lessons that involve different activities rather than just sitting at my desk.
	I feel proud when I've designed something myself and made it.
	I like doing things that are very practical.
	I have chosen subjects at school/college that give me the freedom to express my own ideas.
	The subjects I have chosen at school/college require my imagination.

Scale	Statements
Leadership	I really like being leader of a group.
	Project work gives me the chance to take a leading role in the group.
	When working in a group I do my best to persuade the others to take up my ideas.
	I am often chosen to be the team leader or captain of my team.
	I like organising other people.
	My friends follow my suggestions when they can't make up their minds.
Energy	It's energising when you are given rewards for good work (e.g. a school day trip).
	I feel really motivated when I produce something that no one else has.
	I feel really enthusiastic about my chosen subjects.
	It's energising and rewarding to help other people.
	I really push myself to achieve good grades.
	When I'm doing something I like to feel it has a purpose or goal.
	I have lots of energy for work and play.
Self-efficacy	I like to pursue my interests outside school/college where I feel more in control.
	I want my future work to be based around a set of challenges that I would find interesting.
	Once I start something I like to finish it.
	I would join a club/interest group independently of my friends if it was something I really wanted to do.
	I'm not easily swayed by other people's opinions, but do what I think is best.
	Students should have a say in how a school/college is run.
	My spending money is important because it gives me a sense of my independence.
	I've been brought up to think for myself.
Risk	When I make choices I want to be as sure as possible what the future consequences will be for me.
	I want my work to provide me with opportunities to show that I can overcome problems.
	I would not take a risk on an activity that might spoil my chances of getting good grades at school/college.
	Fearing that I might fail my exams is a powerful motivator at school/college.

Some of these statements share common ground with wider skills listed in the frameworks we have identified.

Many of the frameworks, for example, mention 'Creativity' including the English Personal Learning and Thinking Skills and Northern Ireland's Thinking Skills and Personal Capabilities,

although their implied definitions of creativity are all different. 'Risk' and 'Energy' are hardly explored at all in the frameworks created by education departments (although they turn up in some of the research and third sector-inspired ones).

'Leadership' covers a multitude of skills, some of which are sometimes mentioned, for example in the Victorian Essential Learning Standards' emphasis on teamwork.

'Self-efficacy' is specifically listed in The Talent Foundation elements but hardly mentioned in others.

Moreover, we, in any case, would want to make the case for some learning dispositions or wider skills that are not explicitly mentioned in the Chell model, of which resilience, tolerance of ambiguity, intuition and questioning are just four examples. These, we suggest, are wider skills which contribute hugely both to learning and innovation.

In summary, we think that the depiction of the wider skills that contribute to innovation is currently crude and unsatisfactory. There needs to be greater specificity and greater consensus, otherwise progress on developing ways in which these habits of mind are to be cultivated will continue to be slow. There also needs to be a greater translation of what is known about the conditions that foster creativity from scientific research into the wider awareness of policymakers and educators.

6. Conclusions and next steps

There seems to be wide agreement about a number of things. The focus of education has to shift from the transmission of revered bodies of knowledge (and the quality assurance of that transmission) towards a greater concern with the mental and emotional habits of mind that the process of schooling routinely invites or requires and therefore routinely stretches, exercises and strengthens.

These 'wider skills' have to have currency and validity beyond the worlds of formal study, whether that be school, college, university or professional/workplace learning. In addition, they have to be of self-evident utility to the vast numbers of young people who are not going to proceed to and succeed in the world of scholarship (however diluted).

There is a broad consensus that the skills, attitudes, belief and interests of lifelong, real-world learners are central to this set of wider skills, though those of tolerance, civic participation, and ecological responsibility are also seen as important. Within this broad picture, countries and agencies differ about the precise specification of the wider skills they most value, and about the principles that underpin their sense of how these goals are best pursued.

We feel there is a tendency to underestimate the difficulty of this challenge. There are deep habits and assumptions that underlie the conventional model of schooling, and it will take time, clarity, persistence and detailed, targeted support if the requisite changes are to come about. Merely creating wish lists of desirable qualities will not bring about the required change. Nor will overlaying existing practices with a veneer of skills-focused teaching or training. In the best schools, there is a tangible sea change in the culture, with a different sense of priorities and engagement by both staff and students. We think examples of such good practice need identifying and disseminating. We also believe that the most urgent priority is not to generate yet more lists of desiderata, but to gather as much case lore as possible about which aspects of a school culture contribute most to the development of wider skills, and what kinds of guidance and support are most effective in bringing those culture changes about.

We also think there is a need to beware of loading too much aspiration onto schools, especially if the practical guidance and support for bringing about the necessary changes is not readily available. The example of Tasmania shows how easy it is for those who do not understand what is being asked of them, and why it is being asked, to sabotage well-intentioned initiatives.

Our recommendation is that schools focus their attention on the subset of wider skills that relate most directly to lifelong learning and learning to learn. It seems to us that this is a school's natural territory – developing the skills and attitudes of effective learning – and it is where the natural sympathies and skills of most teachers lie. However, teachers' experience of learning needs to be supplemented by the recognition that much of real-world learning proceeds differently from traditional school learning.

In the outside world, people's priorities are to get better at things that matter to them, and 'theorising' is useful to the extent that it is a means to that end. In the real world – except on quiz shows – displays of knowledge for its own sake are rarely valued. Real-world learning involves a lot of observing and imitating; tinkering, practising and redrafting; and collaborating, discussing and arguing. If school is to be reconfigured as an effective apprenticeship for a lifetime of learning, it needs rich descriptions of how real-world learning actually occurs, and it needs to look for ways to narrow the gap between those practices and the learning methods that they employ day after day with their students.

We think schools need to think carefully about the vexed question of assessing wider skills. As we have argued, there are a variety of good reasons for such assessment, but there are also pitfalls and traps to be avoided. We suspect that involving young people more and more in moderating the level of difficulty of the challenges that they are undertaking will prove a useful direction in which to move. Moreover, our experience suggests that finding ways of tracking and articulating progression in the wider skills may well best be done in collaboration with the learners themselves. We think finding ways of talking about the wider skills that recruits the interest of young people and their parents is an important task.

We believe there might be a useful piece of work mapping the connections between wider skills and the skills for innovation in more detail and teasing out a shortlist of dispositions or habits of mind that are particularly useful in this regard. It would also be worth looking in more detail at the issue of whether there are different hierarchies of wider skills (different for different purposes, we suspect) and the degree to which it is possible to suggest a common core of these.
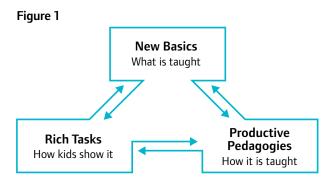
At present too much of the discussion is held in language that is technical and forbidding, and sometimes unnecessarily jargon heavy. The services of the Plain English Campaign would be very useful in this context. If young people themselves understood that the concern with wider skills is in their own practical best interests, we suspect that they could bring considerable energy, intelligence and ingenuity to the challenges that education is facing.

Finally, we are convinced that real progress in developing ways of cultivating the wider skills of learning and creativity will be hampered unless we insist on speaking and thinking in terms of dispositions and habits of mind, rather than merely of skills. If the wider skills agenda is to fulfil its promise, it has to help young people develop not just abilities, but the inclination to make use of those abilities in the real world. This demands that schools and colleges think seriously about the cultural messages and values that they currently embody as well as the good intentions that they espouse.

Appendix 1: National and regional education departments

A) Queensland New Basics

New Basics draws on a range of theories of learning and is grounded in the assumption that the best learning takes place when people have to solve substantial real problems, what it calls 'rich tasks'.

Figure 1

New Basics is organised into four skill areas.

1. Life pathways and social futures

Who am I and where am I going?

Living in and preparing for diverse family relationship
Collaborating with peers and others
Maintaining health and care of the self
Learning about and preparing for new worlds of work
Developing initiative and enterprise

2. Multiliteracies and communications media

How do I make sense of and communicate with the world?

Blending traditional and new communications media
Making creative judgements and engaging in performance
Communicating using languages and intercultural understandings
Mastering literacy and numeracy

3. Active citizenship

What are my rights and responsibilities in communities, cultures and economies?

Interacting within local and global communities
Operating within shifting cultural identities
Understanding local and global economic forces
Understanding the historical foundation of social movements and civic institutions

4. Environments and technologies

How do I describe, analyse and shape the world around me?

Developing a scientific understanding of the world
Working with design and engineering technologies
Building and sustaining environments

- Commentary on Queensland New Basics

  1. World view

  Learning is mindful, connected to the real world, lifelong, futures-orientated and global – a fundamentally different way of 'doing school'.

  2. Cultivation

  Various New Basics booklets provide support materials with much local autonomy and little explicit guidance about how the approach can be embedded in schools.

  3. Measurement

  The rich task assessment model involves teachers in making holistic judgements using a number of criteria that are moderated by other teachers at Local Consensus Events. For an evaluation of this process by James Cook University, Queensland, see www.education.qld.gov.au/corporate/newbasics/pdfs/lce_over.pdf

  4. Fitness for purpose

  New Basics has been extensively and largely positively evaluated (for example by the Australian Council for Educational Research) and found to have contributed to real improvements in student outcomes and classroom practices. Given its radical nature, the evaluators suggest that some of its values and practices would not be universally accepted were it to be extended to all schools.

B) Victorian Essential Learning Standards (VELS)

A whole-school planning framework, VELS is composed of four components:

1. Interpersonal development

Building social relationships:

- understanding social conventions

- building empathy

- managing conflict

Working in teams:

- working as a team member
- reflecting on the contribution to the team

2. Personal learning

The individual learner:

- learning strategies
- responding to and learning from feedback
- learning environment

Managing personal learning:

- organisation and goal setting
- personal growth

3. Information and Communications Technology

ICT for visualising thinking:

- using ICT tools to visualise thinking
- visualising thinking strategies
- modifying visualising thinking strategies
- reflecting on visualising thinking strategies

ICT for creating:

- designing solutions and information products
- producing solutions and information products
- evaluating solutions and information products
- managing files
- creating digital portfolios
- using safe work practices
- ethical and legal obligations

ICT for communicating:

- locating data and information
- evaluating data and information
- sending and receiving data and information

4. Thinking processes

Reasoning, processing and inquiring:

- questioning/methodology of inquiry
- managing information
- problem solving
- decision making

Creativity:

- generating ideas

- generating solutions

- testing and exploring ideas

Reflection, evaluation and metacognition:

- using the language of thinking

- evaluating effectiveness

- examining change

Commentary on Victorian Essential Learning Standards

1. World view

There is a relatively prescriptive, highly structured attempt to map the skills needed by young people for success in life.

2. Cultivation

There are various materials and sample units but only patchy guidance on how complex skills can be cultivated.

3. Measurement

'The assessment strategy required by the Victorian Essential Learning Standards is a combination of authentic, summative and formative assessment to encompass the integration of knowledge, skills and behaviours.'

4. Fitness for purpose

Given that the VELS are presented as 'standards' to be achieved and assessed, there is considerable conflict between 'what students should know and be able to do at different stages of learning' and the complexities of becoming a more effective learner. The frameworks are very prescriptive and, therefore, not fit for all purposes.

C) South Australia (SA) Learning to Learn

South Australia's Learning to Learn initiative has been running since 1999. It seeks to make the wider skills of learning to learn the centrepiece of the SA school experience.

It has created the 'SA Compass' – essentially a framework – to provide a common vocabulary for teachers and students. The Compass has two elements:

1. Learning for Teaching

2. Teaching for Learning

Learning for Teaching is divided into a number of areas:

- understanding how you and others learn

- developing deep pedagogical and content knowledge

- participating in professional learning communities and networks

31. See www.cmslive.curriculum.edu.au/leader/default.asp?id=12065

- engaging with the community

- discussing educational purpose and policy

- planning and organising for teaching

Teaching for Learning has three sub-sections as shown in Table 7.

Table 7: Teaching for Learning

Create safe conditions for rigorous learning	Develop expert learners	Personalise and connect learning
Developing democratic relationships	Teaching students how to learn	Building on learners' understandings
Building a community of learners	Fostering deep understanding	Connecting learning to student lives and aspirations
Negotiating learning	Exploring the construction of knowledge	Applying and assessing learning in authentic contexts
Supporting and challenging students to be successful	Promoting dialogue as a means of learning	Communicating learning in multiple modes

Outcomes to date report improvements in the areas of:

- improving student engagement and well-being

- enhancing student achievement

- revisiting teacher professionalism and pedagogy

- building system-wide learning

Specifically, research[31] into data generated between 1999 and 2003 gives some useful insights into the wider skills that have been developed. From this research it appears that greater numbers of students are:

- exercising choice responsibly

- using metacognitive skills

- taking responsibility for learning

- experiencing easier transition between year levels and schools

- accepting alternative viewpoints

- working with greater persistence

- expressing greater hope for a future with expanded opportunities

- experiencing improved progression in site-based programmes

- able to articulate their learning

- self-assessing their learning

> ### Commentary on South Australian Learning to Learn
>
> **1. World view**
>
> 'Learning to Learn is changing the way teaching and learning is conceptualised and constructed for the children and students of South Australia.'
>
> **2. Cultivation**
>
> There is an extensive resource library, learning communities and programme of events.
>
> **3. Measurement**
>
> Accountability and assessment are largely formative.
>
> **4. Fitness for purpose**
>
> External evaluation would seem to suggest considerable fitness for purpose and attendant benefits.

D) The Tasmanian curriculum

The Tasmanian curriculum, while stressing many of the features of the Essential Learnings approach adopted by other Australian states, has recently been simplified to put the development of thinking skills at the heart of what it does and add a new vocational and applied learning pathway.

Its implementation has created considerable controversy about its fitness for purpose.

Through all curriculum areas, it is intended that students will learn to:

- reason, ask questions, make decisions and solve problems
- communicate, create and convey ideas effectively and confidently
- develop a positive vision for themselves and their future
- participate responsibly in the community
- understand and apply important concepts, knowledge and skills

> ### Commentary on Tasmanian Essential Learnings
>
> **1. World view**
>
> It is explicitly seeking to create a 21st Century curriculum with a shift towards a capabilities-based approach with an emphasis on the development of thinking.
>
> **2. Cultivation**
>
> Many electronic and other resources are available but explicit guidance to ways in which the Learnings can be cultivated is under-developed.
>
> **3. Measurement**
>
> This is heavily dependent on teacher assessment.
>
> **4. Fitness for purpose**
>
> There has been considerable controversy with public outrage at convoluted language and a very critical Benchmarking Australian Primary School Curricula report.

E) New Zealand Key Competences

The New Zealand curriculum identifies five key competences, which it calls 'capabilities for living and lifelong learning'. Interestingly, these have been developed into a full school curriculum from pioneering work originally carried out in the context of Early Year's provision. The NZ Early Years Curriculum, Te Whaariki, is internationally acknowledged as a groundbreaking enterprise.

The description of the process by which wider skills – key competences – are developed is particularly illuminating:[32]

> *'People use these competences to live, learn, work, and contribute as active members of their communities. More complex than skills, the competences draw also on knowledge, attitudes, and values in ways that lead to action. They are not separate or stand-alone. They are the key to learning in every learning area.*
>
> *The development of the competences is both an end in itself (a goal) and the means by which other ends are achieved. Successful learners make use of the competences in combination with all the other resources available to them. These include personal goals, other people, community knowledge and values, cultural tools (language, symbols, and texts), and the knowledge and skills found in different learning areas. As they develop the competences, successful learners are also motivated to use them, recognising when and how to do so and why.*
>
> *Opportunities to develop the competences occur in social contexts. People adopt and adapt practices that they see used and valued by those closest to them, and they make these practices part of their own identity and expertise.*
>
> *The competences continue to develop over time, shaped by interactions with people, places, ideas, and things. Students need to be challenged and supported to develop them in contexts that are increasingly wide-ranging and complex.'*

The New Zealand Curriculum specifically acknowledges the complexities inherent in cultivating complex competences. Students learn best when teachers:

- create a supportive learning environment
- encourage reflective thought and action
- enhance the relevance of new learning
- facilitate shared learning
- make connections to prior learning and experience
- provide sufficient opportunities to learn
- inquire into the teaching–learning relationship

The New Zealand Curriculum identifies five key competences:

1. Thinking.
2. Using language, symbols, and texts.
3. Managing self.
4. Relating to others.
5. Participating and contributing.

1. Thinking

Thinking is about using creative, critical, and metacognitive processes to make sense of information, experiences, and ideas. These processes can be applied to purposes such as developing understanding, making decisions, shaping actions, or constructing knowledge. Intellectual curiosity is at the heart of this competency.

Students who are competent thinkers and problem solvers actively seek, use, and create knowledge. They reflect on their own learning, draw on personal knowledge and intuitions, ask questions, and challenge the basis of assumptions and perceptions.

2. Using language, symbols, and texts

Using language, symbols, and texts is about working with and making meaning of the codes in which knowledge is expressed. Languages and symbols are systems for representing and communicating information, experiences, and ideas. People use languages and symbols to produce texts of all kinds: written, oral/aural, and visual; informative and imaginative; informal and formal; mathematical, scientific, and technological.

Students who are competent users of language, symbols, and texts can interpret and use words, number, images, movement, metaphor, and technologies in a range of contexts. They recognise how choices of language, symbol, or text affect people's understanding and the ways in which they respond to communications. They confidently use ICT (including, where appropriate, assistive technologies) to access and provide information and to communicate with others.

3. Managing self

This competency is associated with self-motivation, a 'can-do' attitude, and with students seeing themselves as capable learners. It is integral to self-assessment.

Students who manage themselves are enterprising, resourceful, reliable, and resilient. They establish personal goals, make plans, manage projects, and set high standards. They have strategies for meeting challenges. They know when to lead, when to follow, and when and how to act independently.

4. Relating to others

Relating to others is about interacting effectively with a diverse range of people in a variety of contexts. This competency includes the ability to listen actively, recognise different points of view, negotiate, and share ideas.

Students who relate well to others are open to new learning and able to take different roles in different situations. They are aware of how their words and actions affect others. They know when it is appropriate to compete and when it is appropriate to cooperate. By working effectively together, they can come up with new approaches, ideas, and ways of thinking.

5. Participating and contributing

This competency is about being actively involved in communities. Communities include family, whānau, and school and those based, for example, on a common interest or culture. They may be drawn together for purposes such as learning, work, celebration, or recreation. They may be local, national, or global. This competency includes a capacity to contribute appropriately as a group member, to make connections with others, and to create opportunities for others in the group.

Students who participate and contribute in communities have a sense of belonging and the confidence to participate within new contexts. They understand the importance of balancing rights, roles, and responsibilities and of contributing to the quality and sustainability of social, cultural, physical, and economic environments.

Commentary on New Zealand Competences

1. World view

It is a competence, not skills-based, framework with a strong emphasis on creativity, energy and enterprise alongside the development of active lifelong learners.

2. Cultivation

General principles of effective learning are clearly articulated, but there is a gulf between the description of 'effective pedagogy' and the aspiration of the key competences.

3. Measurement

Despite the competence approach, assessment is relatively traditional – and knowledge and skills being assessed summatively at various stages.

4. Fitness for purpose

The curriculum is rich and well developed, but the five strands do not always clearly relate to the core aspiration to develop 'active, engaged, connected lifelong learners'.

F) Singapore Desired Outcomes of Education

From the outcomes specified by Singapore's Education Ministry it is possible to deduce some of the wider skills which may be encouraged.

All post-secondary and tertiary students should:

- be morally upright, be culturally rooted yet understanding and respecting differences, be responsible to family, community and country

- believe in our principles of multi-racialism and meritocracy, appreciate the national constraints but see the opportunities

- be constituents of a gracious society

- be willing to strive, take pride in work, value working with others

- be able to think, reason and deal confidently with the future, have courage and conviction in facing adversity

- be able to seek, process and apply knowledge

- be innovative – have a spirit of continual improvement, a lifelong habit of learning and an enterprising spirit in undertakings

- think globally, but be rooted to Singapore

The following list also shows what is expected of those intent on attaining future leadership roles. They should:

- be committed to improving society

- be proactive in surmounting our constraints

- have compassion towards others

- be able to inspire, motivate and draw out the best from others

- be able to chart our destiny and lead

- be able to forge breakthroughs in a knowledge-based economy

- be creative and imaginative

- have the tenacity to fight against the odds and not quit

Table 8: The Singapore Desired Outcomes of Education

Primary At the end of primary school, pupils should:	Secondary At the end of secondary school, students should:	Junior College At the end of junior college, students should:
be able to distinguish right from wrong	have moral integrity	be resilient and resolute
have learnt to share and put others first	have care and concern for others	have a sound sense of social responsibility
be able to build friendships with others	be able to work in teams and value every contribution	understand what it takes to inspire and motivate others
have a lively curiosity about things	be enterprising and innovative	have an entrepreneurial and creative spirit
be able to think for and express themselves	possess a broad-based foundation for further education	be able to think independently and creatively
take pride in their work	believe in their ability	strive for excellence
have cultivated healthy habits	have an appreciation for aesthetics	have a zest for life
love Singapore	know and believe in Singapore	understand what it takes to lead Singapore

Commentary on Singapore Desired Outcomes of Education

1. World view

'To prepare a generation of thinking and committed citizens who are capable of contributing towards Singapore's continued growth and prosperity' geared to the needs of the 21st century. Attempts to blend a rather individualistic 'Western' view with the more communitarian and in some ways more overtly moralistic values of the 'East'.

2. Cultivation

There is an emphasis on outcomes with nothing explicitly about methods.

3. Measurement

There is a range of formative and summative approaches.

4. Fitness for purpose

It is seemingly successful, pragmatic and flexible, balancing a wide range of social 'goods'.

33. See www.oefeb.at/veranstaltung/Niemi-virta_Slides.pdf?PHPSESSID=a67151d441 e5bcc7fb1605eedfead565

G) Finland Learning to Learn competences

The establishment of key learning to learn competences[33] was seen as an integral part of the development of a new framework by The National Board of Education in 1998. Competences were described as being 'a transferable multifunctional package of knowledge, skills and attitudes'. The framework divides learning to learn into three broad areas (see the diagram on the next page).

Of all the frameworks we present in this paper the Finnish example is potentially the one with the most developed approach to assessment, with a tremendously complex range of indicators, performance tasks and self-report questionnaires.

Commentary on Finland Learning to Learn

1. World view

There is an emphasis on adaptation to novel tasks, a commitment to thinking and a 'perspective of hope'.

2. Cultivation

There is a real attempt to find ways of developing learning to learn competences that are transferable to different contexts.

3. Measurement

There are highly complex and developed approaches from the Centre for Education Attainment at Helsinki University.

4. Fitness for purpose

Finland Learning to Learn is highly complex, distinctive and driven by assessment.

Table 9: Learning to learn

The ability and willingness to adapt to novel tasks, activating one's commitment to thinking and the perspective of hope by means of maintaining one's cognitive and affective self-regulation in and out of learning action.

Context-related beliefs	Self-related beliefs	Learning competences
Societal frames such as: • valuing reflection and intellectual pondering Perceived support, for example: • parents' attitudes • teachers' attitudes • schoolmates' attitudes	Learning motivation such as: • goal orientation Action-control beliefs Academic selves at school Task acceptance Self-evaluation, for example: • self-esteem • social self-concept Future orientation	Learning domain, for example: • verbal-argumentational comprehension Reasoning domain Management of learning, for example: • real use of study skills Affective self-regulation, for example: • epistemic resilience • management of resourcefulness

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H) England Personal Learning and Thinking Skills (PLTS)

England recently introduced the Personal Learning and Thinking Skills framework into the secondary curriculum. This consists of six groups of skills (referred to as 'skills, behaviours and personal qualities'). Originally developed in the context of employability skills, the PLTS have now been re-positioned as part of a more fundamental approach to wider skills: 'The PLTS framework also reflects competency frameworks and skills taxonomies promoted through other initiatives such as Social and Emotional Aspects of Learning (SEAL), RSA Opening Minds and Futurelab's Enquiring Minds'.

Recently the PLTS have been explicitly linked to subjects, with cases studies and examples given to show how they might be embedded. Other organisations (notably TLO Ltd[34]) have developed materials and training that show how these skills can be cultivated. The six PLTS are:

1. Independent enquirers

Focus
Young people process and evaluate information in their investigations, planning what to do and how to go about it. They take informed and well-reasoned decisions, recognising that others have different beliefs and attitudes.

Skills, behaviours and personal qualities
Young people:

- identify questions to answer and problems to resolve

- plan and carry out research, appreciating the consequences of decisions

- explore issues, events or problems from different perspectives

- analyse and evaluate information, judging its relevance and value

- consider the influence of circumstances, beliefs and feelings on decisions and events

- support conclusions, using reasoned arguments and evidence

2. Creative thinkers

Focus
Young people think creatively by generating and exploring ideas, making original connections. They try different ways to tackle a problem, working with others to find imaginative solutions and outcomes that are of value.

Skills, behaviours and personal qualities
Young people:

- generate ideas and explore possibilities

- ask questions to extend their thinking

- connect their own and others' ideas and experiences in inventive ways

- question their own and others' assumptions

- try out alternatives or new solutions and follow ideas through

- adapt ideas as circumstances change

3. Reflective learners

Focus
Young people evaluate their strengths and limitations, setting themselves realistic goals with criteria for success. They monitor their own performance and progress, inviting feedback from others and making changes to further their learning.

Skills, behaviours and personal qualities
Young people:

• assess themselves and others, identifying opportunities and achievements

• set goals with success criteria for their development and work

• review progress, acting on the outcomes

• invite feedback and deal positively with praise, setbacks and criticism

• evaluate experiences and learning to inform future progress

• communicate their learning in relevant ways for different audiences

4. Team workers

Focus
Young people work confidently with others, adapting to different contexts and taking responsibility for their own contribution. They listen to and take account of different views. They form collaborative relationships, resolving issues to reach agreed outcomes.

Skills, behaviours and personal qualities
Young people:

• collaborate with others to work towards common goals

• reach agreements, managing discussions to achieve results

• adapt behaviour to suit different roles and situations, including leadership roles

• show fairness and consideration to others

• take responsibility, showing confidence in themselves and their contribution

• provide constructive support and feedback to others

5. Self-managers

Focus
Young people organise themselves, showing personal responsibility, initiative, creativity and enterprise with a commitment to learning and self-improvement. They actively embrace change, responding positively to new priorities, coping with challenges and looking for opportunities.

Skills, behaviours and personal qualities
Young people:

• seek out challenges or new responsibilities and show flexibility when priorities change

• work towards goals, showing initiative, commitment and perseverance

• organise time and resources, prioritising actions

• anticipate, take and manage risks

• deal with competing pressures, including personal and work-related demands

• respond positively to change, seeking advice and support when needed

• manage their emotions, and build and maintain relationships

6. Effective participators

Focus
Young people actively engage with issues that affect them and those around them. They play a full part in the life of their school, college, workplace or wider community by taking responsible action to bring improvements for others as well as themselves.

Skills, behaviours and personal qualities
Young people:

- discuss issues of concern, seeking resolution where needed

- present a persuasive case for action

- propose practical ways forward, breaking these down into manageable steps

- identify improvements that would benefit others as well as themselves

- try to influence others, negotiating and balancing diverse views to reach workable solutions

- act as an advocate for views and beliefs that may differ from their own

---

Commentary on English PLTS

1. World view
Designed to develop 'the areas of competence that are most often demanded by employers' but is now seen more broadly as a means of creating 'successful learners, confident individuals and responsible citizens'.

2. Cultivation
Real effort has been made to embed PLTS in other aspects of the curriculum and to other initiatives, but there is no explicit acknowledgment of their complexity and what this means for their cultivation.

3. Measurement
There are no specific methods although reference is made to schools using them as the basis of self-assessment and profiling.

4. Fitness for purpose
Increasingly in use, the PLTS framework is not yet as coherent as it might be and sits within a welter of subjects and curriculum dimensions among which it can easily become lost.

I) Northern Ireland (NI) Thinking Skills and Personal Capabilities

The NI skills and capabilities approach places an 'explicit emphasis on the development of skills and capabilities for lifelong learning and for contributing effectively to society'.

Thinking skills are defined as 'tools that help children to go beyond the acquisition of knowledge in order to search for meaning, apply ideas, analyse patterns and relationships, create and design something new and monitor and evaluate their progress'. Personal and interpersonal skills and capabilities are believed to 'underpin success in all aspects of life'. Children's self-esteem and self-confidence are 'explicitly fostered' along with 'the ability to understand and manage their own emotions and to interact effectively with others'.

There are five core areas:

1. Managing information:

- ask focused questions

- plan and set goals, break task into sub-tasks

- use own and others' ideas to locate sources of information

- select, classify, compare and evaluate information

- select most appropriate method for a task

- use a range of methods for collating, recording and representing information

- communicate with a sense of audience and purpose

2. Thinking, problem-solving and decision-making:

- sequence, order, classify, make comparisons

- make predictions, examine evidence, distinguish fact from opinion

- make links between cause and effect

- justify methods, opinions and conclusions

- generate possible solutions, try out alternative approaches, evaluate outcomes

- examine options, weighing up pros and cons

- use a variety of question

- make connections between learning in different context

3. Being creative:

- seek out questions to explore and problems to solve

- experiment with ideas and questions

- make new connections between ideas/information

- learn from and value other people's ideas

- make ideas real by experimenting with different designs, actions, and outcomes

- challenge the routine method

- value the unexpected or surprising

- see opportunities in mistakes and failures

- take risks when learning

4. Working with others:

- listen actively and share opinions

- develop routines of turn-taking, sharing and cooperating

- give and respond to feedback

- understand how actions and words affect others

- adapt behaviour and language to suit different people and situations

- take personal responsibility for work with others and evaluate own contribution to the group

- be fair

- respect the views and opinions of others, reaching agreements using negotiation and compromise

- suggest ways of improving their approach to working collaboratively

5. Self-management:

- be aware of personal strengths, limitations and interests

- set personal targets and review them

- manage behaviour in a range of situations

- organise and plan how to go about a task

- focus, sustain attention and persist with tasks

- review learning and some aspect that might be improved

- learn ways to manage own time

- seek advice when necessary

- compare own approach with others and in different contexts

Commentary on NI Thinking Skills and Personal Capabilities

1. World view

There is a deliberate attempt to create successful lifelong learners.

2. Cultivation

Drawing from the research literature, the NI Curriculum identifies seven classroom strategies for teachers to use to 'cultivate and strengthen their pupils' skills and capabilities and to ensure that they use these in new situations'.

3. Measurement

NI actively embraces Assessment for Learning principles, but does not explicitly assess capabilities.

4. Fitness for purpose

It is grounded in research, is clear and well supported by practical resources.

J) Scottish Curriculum for Excellence

The Scottish Curriculum,[35] as the diagram below shows, aims to create learners who abide by four core capacities:

1. Successful learners.

2. Confident individuals.

3. Responsible citizens.

4. Effective contributors.

Less prescriptive than before, it seeks to identify desirable experiences and outcomes rather than specify methods or content. The Scottish Curriculum for Excellence was introduced in 2004 and is still evolving as it is implemented.

Figure 2

Successful learners

With:

- enthusiasm and motivation for learning
- determinism to reach high standards of achievements
- openness to new thinking and ideas

And able to:

- use literacy, communication and numeracy skills
- use technology for learning
- think creatively and independently
- learn independently and as part of a group make reasoned evaluations
- link and apply different kinds of learning in new situations.

Confident individuals

With:

- self-respect
- a sense of physical, mental and emotional well-being
- secure values and beliefs
- ambition

And able to:

- relate to others and manage themselves
- pursue a healthy and active lifestyle
- be self-aware
- develop and communicate their own beliefs and view of the world
- live as independently as they can
- assess risk and make informed decisions
- achieve success in different areas of activity

To enable all young people to become:

Responsible citizens

With:

- respect for others
- commitment to participate responsibly in political, economic, social and cultural life

And able to:

- develop knowledge and understanding of the world and Scotland's place in it
- understand different beliefs and cultures
- make informed choices and decisions
- evaluate environmental, scientific and technological issues
- develop informed, ethical views of complex issues

Effective contributers

With:

- an enterprising attitude
- resilience
- self-reliance

And able to:

- communicate in different ways and in different settings
- work in partnership and in teams
- take the initiative and lead
- apply critical thinking in new contexts
- create and develop
- solve problems

Commentary on Scottish Curriculum for Excellence

1. World view

This is an attempt to redesign the curriculum. Through 'improved learning, children and young people can achieve a full range of skills and abilities necessary for living in today's world'.

2. Cultivation

There are plenty of materials but no specific acknowledgement of the complexity of cultivating capacities.

3. Measurement

The curriculum is consciously seeking to celebrate broader achievements with much more development work to be undertaken on relating assessment of subjects to capacities.

4. Fitness for purpose

There are some concerns about relationship to subjects and summative assessment.

K) Social and Emotional Aspects of Learning

In England, SEAL[36] has been introduced into both the primary and secondary curriculum. It focuses on certain affective aspects of learning taking five areas and provides a range of materials for teachers to use in developing whole-school and subject-specific work at primary level.

The five areas are:

1. Self-awareness.
2. Managing feelings.
3. Motivation.
4. Empathy.
5. Social skills.

Commentary on SEAL

1. World view

SEAL, as its name suggests, believes that the social and emotional aspects of learning need more attention.

2. Cultivation

Materials suggest how social and emotional aspects of learning can be nurtured and where this might sit within the curriculum, but with much less emphasis on the complex nature of these aspects of learning.

3. Measurement

No attempt to measure has been made.

4. Fitness for purpose

This is largely a set of materials rather than a coherent 4–19 approach and, along with PHSE/Citizenship, it can bring confusion rather than clarity in some teachers' minds.

Appendix 2:
Research-based approaches

37. See www.ellionline.co.uk

A) Effective Lifelong Learning Inventory (ELLI)

ELLI,[37] developed at Bristol University by Patricia Broadfoot, Guy Claxton and Ruth Deakin-Crick, has seven dimensions. As its name suggests it is a list that seeks to describe aspects of an individual's 'learning power'.

Designed as a self-report questionnaire, it helps learners to be more explicit about what is going on when they are learning and to record their progress (diagrammatically rather than with any scores or grades) in a personal profile. Data can be aggregated at class or school-wide levels to provide evaluation and guidance to teachers and leadership teams. Its seven dimensions, along with their associated descriptors, are illustrated in Table 10.

Table 10

1. Changing and learning	I know that learning is learnable
	I know that my mind can get bigger and stronger just as my body can
	I feel good about my capacity to learn
	I expect to change as time goes by
	I celebrate my learning
2. Critical curiosity	I want to delve deeper and find out what is going on
	I don't accept things at face value
	I want to know how, why, what and where
	I don't accept information without questioning it for myself
	I enjoy finding things out
3. Meaning making	I like to fit new bits of information
	I like to make connections between subjects
	I love learning about what really matters to me
	I draw on my own story in my learning as well as the stories of my community
	I learn at home, in my community and at school

4. Creativity	I like to play with ideas and possibilities
	I trust my intuition and follow hunches
	I use my imagination in learning
	I like to be challenged and stretched
5. Learning relationships	I like sharing thoughts and ideas with people
	I like learning on my own as well
	I learn from adults and people at home
	I like learning with and from other people
	I know how to help others learn
6. Strategic awareness	I know how I learn
	I can manage my feelings of learning
	I plan my learning carefully
	I think about thinking and learning
	I am aware of myself as a learner
	I know what I like and dislike
	I can estimate how long tasks last
7. Resilience	I know that making mistakes is a natural part of learning
	I am not afraid of having a go
	I tend to keep going at a task until it is completed
	I don't fall apart when I fail
	I keep going at my own pace – I know I will get there in the end
	I know that struggling is an important part of learning

Commentary on ELLI

1. World view

ELLI assumes that the development of learning dispositions is a complex process aided by greater learner self-knowledge and awareness. It is 'designed to find out how learners perceive themselves in relation to seven dimensions of learning power'.

2. Cultivation

ELLI offers both a formative and summative assessment tool, and has attempted to develop an overall approach to cultivating wider skills.

3. Measurement

Measurement is undertaken solely through self-report questionnaires. The ELLI instrument has been extensively trialled, and validity and reliability are high.

4. Fitness for purpose

ELLI has attracted significant interest from the EU but some schools have found it cumbersome to administer and use.

38. See www.pz.harvard.edu
39. See Langer, E. (1997) The power of mindful learning, Perseus Books
40. See Ritchhart, R. and Perkins, D. (2000) 'Life in the mindful classroom: Nurturing the disposition of mindfulness' in Journal of Social Sciences, 56 (1) pp27-47
41. See Ritchhart, R. et al (2006) Thinking routines: Establishing patterns of thinking in the classroom for a paper for 2006 AERA conference

B) Project Zero

The research team at Project Zero[38] is based at Harvard University and, among many other distinguished thinkers, includes Professors Howard Gardner, Ellen Langer and David Perkins. Established in 1967, it has, since then, spawned many useful developments in wider skills. Its mission is to 'understand and enhance learning, thinking, and creativity in the arts, as well as humanistic and scientific disciplines, at the individual and institutional levels'.

Its current focus is on the creation of 'communities of reflective, independent learners; to enhance deep understanding within disciplines; and to promote critical and creative thinking'. Mindfulness, visible thinking and multiple intelligences are just three of the frameworks associated with this group of researchers.

Developing the disposition of 'mindfulness'
Drawing on the work of Ellen Langer,[39] Ron Ritchhart and David Perkins[40] have challenged the standards movements across the developed world with their emphasis on skills and knowledge and focused instead on the development of the trait of mindfulness, 'an enabling state in which individuals tend to feel more in control of their lives'.

Three practices seem to be particularly important:

1. Looking closely (developing an openness to new information).

2. Exploring possibilities and perspectives.

3. Introducing ambiguity (especially the use of 'could be' and 'may be' language).

Visible Thinking
Visible Thinking 'is an approach to teaching and learning that emphasises the use of thinking routines and documentation to make thinking more visible in classrooms. Thinking routines support the development of students as self-directed learners and learning for understanding'. The research into Visible Thinking is not expressed in terms of skills but as 'thinking routines'.[41] Some examples of these thinking routines are shown in Table 11.

Table 11

See Think Wonder	What do you see?
	What does it make you think about that?
	What does it make you wonder?
Claim Support Question	Make a claim about the topic
	Identify support for your claim
	Ask a question related to your claim
Connect Extend Challenge	How are the ideas and information connected to what you already know?
	What new ideas did you get that extend your thinking in new directions?
	What is still challenging or confusing for you? What questions or puzzles do you now have?
Think Puzzle Explore	What do you think you know about this topic?
	What questions or puzzles do you have?
	What does the topic make you want to explore?

Multiple Intelligences

Drawing on Howard Gardner's theory of Multiple Intelligences (MI)[42] many schools across the world have explored ways of implementing Gardner's eight intelligences. These intelligences are shown in Table 12.

Table 12

Linguistic	Sensitivity to spoken and written language, the ability to learn languages, and the capacity to use language to accomplish certain goals.
Logical-mathematical	The capacity to analyse problems logically, carry out mathematical operations, and investigate issues scientifically.
Musical	Skill in the performance, composition, and appreciation of musical patterns.
Bodily-kinaesthetic	The potential of using one's whole body or parts of the body to solve problems.
Spatial	The potential to recognise and use the patterns of wide space and more confined areas.
Interpersonal	The capacity to understand the intentions, motivations and desires of other people.
Intrapersonal	The capacity to understand oneself, to appreciate one's feelings, fears and motivations.
Naturalist	Enables human beings to recognise, categorise and draw upon certain features of the environment.

While MI as a scientific theory is contested by some psychologists and educationalists and while the use made of it by some teachers in the classroom has been criticised for being over-simplistic (including by Gardner himself), MI has powerfully helped educators rethink their practice and move away from a narrow definition of intelligence. As with many of the frameworks listed in this paper MI provides a vocabulary for teachers and students to use in developing their learning.

Smart schools

As a result of work undertaken by David Perkins and colleagues at Project Zero, seven core principles[43] have been developed based on the two core beliefs that guide their work on 'teaching for understanding':

1. Learning is a consequence of thinking, and good thinking is learnable by all students.

2. Learning should include deep understanding, which involves the flexible, active use of knowledge.

The seven key principles for Smart Schools are:

1. **Generative knowledge**. Schools must examine carefully what disciplinary and interdisciplinary content will most benefit students. Identifying and structuring content which has the greatest potential for students' development is an important starting point for the Smart Schools model.

42. See Gardner, H. (1983) Frames of mind: The theory of multiple intelligences, Basic Books, New York

43. See The Smart Schools principles for good education: www.pz.harvard.edu/research/SmartSch.htm

53

2. **Learnable intelligence**. Contrary to a psychological tradition that tends to view intelligence as a fixed quantity, much of the research of Project Zero and others indicates that students can and do learn ways of thinking that can boost their performance. The integration of the teaching of higher-order thinking into subject matter instruction and the creation of a school culture that champions and scaffolds such thinking can have a significant effect on students' own views of their abilities and on their learning.

3. **Focus on understanding**. While there are many legitimate goals for students, often a focus on deep understanding gets lost in the day-to-day life of the school. In the Smart Schools model, we place an emphasis on student work that builds and demonstrates deep understanding in contrast to rote or narrowly defined outcomes.

4. **Teaching for mastery and transfer**. A simple but powerful maxim of education is that students learn much of what they have a reasonable opportunity and motivation to learn. Teaching techniques that explicitly model, support, motivate, and help students to bridge what they learn to new contexts (i.e. transfer) greatly enhance the likelihood that students will learn well and actively use what they learn.

5. **Learning-centred assessment**. Assessment at its best functions as a reflective and evaluative tool for learning. It involves students as well as teachers and creates a dynamic in which students take on the ultimate responsibility for the quality of their work and their learning.

6. **Embracing complexity**. Insightful thinking and deep understanding require students to be able to deal with and even thrive on complex situations and problems. The Smart Schools model involves learning situations that help students build skills and tolerance for complexity and begin to develop a sense of excitement in the face of intriguing and difficult problems. It also supports teachers in managing the complexities of new viewpoints and practices.

7. **The school as a learning organisation**. Just as schools are places of growth for children, they should be places of growth for faculty and administrators: places where the pursuit of intellectual interests and professional collaborations are supported and encouraged. In addition, the successful learning organisation institutes structures that enable all members of the school community to collaborate in the processes of direction-setting and self-monitoring, creating a dynamic system that changes as the needs and the vision of the community change.

Commentary on Project Zero

1. World view

The many initiatives spawned by Project Zero demonstrate a subtle and deep understanding of the complexities of becoming effective lifelong learners and offer highly sophisticated thinking tools along with leading-edge thinking about learning transfer.

2. Cultivation

Considerable theoretical exploration and practical trialling is undertaken with richly developed thinking about complex aspects of the cultivation of learning dispositions and wider skills.

3. Measurement

While Project Zero runs a number of assessment research projects, measurement is not central to the initiatives listed here.

4. Fitness for purpose

Project Zero is highly regarded and well evaluated by practitioners and academics, though MI (multiple intelligence) particularly has suffered from uncritical and over-simplified attempts at implementation.

C) European Union (EU) framework for key competences for lifelong learning

In 2005 the Council on Education and the European Parliament, drawing on experts in 31 countries, adopted eight key competences that all citizens should have for a successful life in a knowledge society:

1. Communication in the mother tongue.

2. Communication in a foreign language.

3. Mathematical literacy, basic competence in science and technology.

4. Digital competence.

5. Learning to learn.

6. Interpersonal, intercultural, social and civic competences.

7. Sense of innovation and entrepreneurship.

8. Cultural awareness and expression.

44. See www.oecd.org/
document/17/0,3343,en_2649_392
63238_2669073_1_1_1_1,00.html

45. See www.pisa.oecd.org

> **Commentary on EU framework for key competences**
>
> **1. World view**
>
> Anything from the EU has to be a consensus view and this framework derives from a belief in the knowledge society along with other concerns for cultural identity and equity of provision. It encompasses both specific literacy and symbolic competences, and 'wider skills'.
>
> **2. Cultivation**
>
> While projects in individual countries have explored ways of cultivating these competences, there is no specific recognition of the enormous complexity of cultivating these competences.
>
> **3. Measurement**
>
> Only Finland and Holland (measuring cross-curricular skills) have specifically explored this at a national level. However, a new European Test to measure Learning to Learn is currently being developed.
>
> **4. Fitness for purpose**
>
> Largely a theoretical socio-political wish list of desirable competences at this stage.

D) OECD Definition and Selection of Competences Project (DeSeCo)

The OECD[44] defines competency as 'more than just knowledge and skills'. It involves 'the ability to meet complex demands by drawing on and mobilising psychosocial resources (including skills and attitudes) in a particular context'. It is seen as 'applying equally to the competences that need to be nurtured at school and those that can be developed throughout the course of life'.

The DeSeCo framework was developed by bringing a wide range of experts and stakeholders together. It complements the wider PISA[45] (Programme for International Student Assessment) work.

1. Using tools interactively

    a. The ability to use language, symbols and text interactively.

    b. The ability to use knowledge and information interactively.

    c. The ability to use technology interactively.

2. Interacting in heterogeneous groups

    a. The ability to relate well to others.

    b. The ability to cooperate.

    c. The ability to manage and resolve conflicts.

3. Acting autonomously

    a. The ability to act within the big picture.

b. The ability to form and conduct life plans and personal projects.

c. The ability to assert rights, interests, limits and needs.

Commentary on the DeSeCo framework

1. World view

This framework seeks to broaden an earlier emphasis on developing economic prosperity into one that includes social and personal well-being – the development of human capital in a broader sense.

2. Measurement

It is concerned with the construction of a framework rather than the measurement of competences. The 2003 PISA survey included problem solving as a domain, but this has subsequently been dropped, an indication of the complexity of this task.

3. Cultivation

There is no specific work in this area.

4. Fitness for purpose

Currently, this is very much a work in progress and something of a compromise, being subject to many diverse pressures and influences.

E) Character strengths and virtues

The groundbreaking work[46] of Christopher Peterson and Martin Seligman has attempted to create a framework that is one of the broadest, and perhaps deepest, approaches to wider skills. Nevertheless, we include it in this paper as we think it offers useful insights. Supported by The Mayerson Foundation, their classification was created in an attempt to inform the development of young people using the perspective of positive psychology.

From an extensive trawl of highly diverse cross-cultural literatures, 24 character strengths were identified, which are grouped around six virtues.

Table 12

1. Wisdom and Knowledge	Creativity
	Curiosity
	Open-mindedness
	Love of learning
	Perspective
2. Courage	Bravery
	Persistence
	Integrity
	Vitality

3. Humanity	Love
	Kindness
	Social intelligence
4. Justice	Citizenship
	Fairness
	Leadership
5. Temperance	Forgiveness and mercy
	Humility and modesty
	Prudence
	Self-regulation
6. Transcendence	Appreciation of beauty and excellence
	Gratitude
	Hope
	Humour
	Spirituality

Although broader than wider skills for learning, we have included this framework because it explicitly takes the debate about wider skills into the area of 'character' and because it signals the importance of mindset. The research base draws on new thinking about mindset and its importance in the development of learning strategies and skills. It also provides a useful counterbalance to the skills-deficit model, and the economic perspectives, from which many countries approach the issue of wider skills.

Commentary on Character Strengths and Virtues

1. World view
This is written from the perspective of positive psychology and focused deliberately on strengths to be lauded and cultivated, rather than deficiencies to be remedied.

2. Cultivation
Where available, approaches that foster the development of a specific character strength are described, though the authors acknowledge that research in this area is patchy, and in many cases in its infancy.

3. Measurement
Attempts to measure strengths are described.

4. Fitness for purpose
Highly fit for the purpose of establishing a robust classification; not yet directly aimed at practical implementation in educational settings (though a few schools, such as Wellington College, have based curriculums for 'well-being' on Seligman's research and on the character strengths and virtues).

F) Sheffield Hallam Centre for Science Education Personal Capabilities Framework

47. See www.personalcapabilities.co.uk

Based at Sheffield Hallam University, the Personal Capabilities Framework[47] has, since 1999, sought to encourage opportunities for children to develop a range of generic personal skills and capabilities through imaginative science teaching. The Centre describes its approach:

We know that by being explicit about the skills and capabilities we're developing, using active teaching and learning strategies to truthfully embed the skills through core subjects like Science can have a really positive effect. We also believe that encouraging children to actively self and peer review using verbal, visual and written forms of self and peer assessment, allows them to become more responsible for their learning.

There are ten personal capabilities:

1. Teamwork: working well in groups and teams.

2. Creativity: thinking of, sharing and playing with new or unusual ideas.

3. Communication: communicating opinions and feelings appropriately.

4. Tenacity: sticking at a task in order to meet deadlines.

5. Self-management: taking charge of one's learning.

6. Positive self-image: valuing oneself and one's achievements.

7. Self-motivation: being motivated to do what needs to be done.

8. Critical thinking: critically reviewing and evaluating what you do and how you do it.

9. Problem solving: working towards a solution by analysing a problem and forming strategies.

10. Social intelligence: responding appropriately to different people and situations.

Commentary on Centre for Science Education Personal Capabilities Framework

1. World view

This is an approach to wider skills that sees a specific and important role for science.

2. Cultivation

There are a range of useful materials, some connected to the English PLTS, which seek to embed capabilities in teaching. This is largely a classroom-based set of resources without seeking to explore the complexities of cultivating some of the more complex capabilities.

3. Measurement

The framework makes connections to Assessment for Learning approaches.

4. Fitness for purpose

Specific materials seem to work well in classrooms (e.g. the Smart Science pack) but it is not clear how the broader framework is applicable beyond science or whether science is more or less effective than other subject areas as a means of embedding capabilities.

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48. See McCombs, B. and Whisler, J. (1997) The learner-centred classroom and school, Jossey-Bass

49. See www.futurelab.org.uk/resources/documents/opening_education/Learners_Charter.pdf

We end this survey with two sets of principles that we suggest offer a useful lens through which wider skills can be viewed.

G) McCombs Learner-centred Psychological Principles

Barbara McCombs is an internationally renowned expert in the area of learning and motivational strategies for young people. Her 12 psychological principles[48] offer a view from the learner's perspective.

1. **The nature of the learning process.** Learning is a natural process of pursuing personally meaningful goals. It is a process of discovery, and construction of meaning from experience.

2. **Goals of the learning process.** Learners seek to create meaningful knowledge regardless of the quality or quantity of the data they are working with.

3. **The construction of knowledge.** Learners link new knowledge with existing knowledge.

4. **Higher-order thinking.** Learning about learning facilitates creative thinking and the development of expertise.

5. **Motivation and learning.** Motivation is affected by beliefs about intelligence, saliency of goals, expectations of success or failure and state of mind or emotion.

6. **Intrinsic motivation to learn.** Individuals are naturally curious but sometimes thwarted by negative cognitions or emotions.

7. **Characteristics of motivating tasks.** Authentic, optimally difficult and novel tasks work best.

8. **Developmental constraints and opportunities.** Development stages are a function of genetic and environmental factors.

9. **Social and cultural diversity.** Learning is facilitated by social interaction and communication with others in flexible settings.

10. **Social acceptance, self-esteem and learning.** Learning and self-esteem are heightened when an individual's talents are genuinely appreciated and when they are accepted as individuals.

11. **Individual difference.** Each learner has a different set of capabilities and preferences as a result of environment and heredity.

12. **Cognitive filters.** Personal beliefs, thoughts and understandings from prior experience and learning form the basis of an individual's construction of reality and interpretation of life.

A variation on this theme can be seen in Futurelab's *Charter for a personalised learning environment*,[49] which, although not explicitly research-based, echoes some of the issues raised by McCombs.

50. See ESRC (2007) Principles into Practice; a teacher's guide to research evidence on teaching and learning, TLRP

Commentary on McCombs Learner-centred Psychological Principles

1. World view

This is an explicitly learner-centred, psychological perspective.

2. Cultivation

There is a powerful understanding of the complexities involved in cultivating wider learning skills.

3. Measurement

There is no explicit concern with this, although there is much interest in many formative approaches.

4. Fitness for purpose

It combines both well-researched theoretical positions with understanding of the practicalities of schools, while remaining aspirational and challenging.

H) TLRP Ten Principles for Effective Teaching and Learning

The UK's Teaching and Learning Research Programme (TLRP) recently attempted to synthesise research from 22 different funded projects and distil this into ten principles.[50]

Effective teaching and learning:

1. **Equips learners for life in its broadest sense.** Both by relating what children are learning to the outside world and by helping them develop the skills, strategies and courage they will need in the outside world.

2. **Engages with valued forms of knowledge.** Engaging with the big ideas, key processes, modes of discourse and narratives of subjects.

3. **Recognises the importance of prior experience and learning.** By starting where children are at and moving on.

4. **Requires the teacher to scaffold learning.** By teachers recognising when they should intervene to help a child move to a higher level of understanding.

5. **Needs assessment to be congruent with learning.** Assessment should help advance learning as well as indicating whether learning has taken place.

6. **Promotes the active engagement of the learner.** Encouraging student-initiated activities as well as adult ones.

7. **Fosters both individual as well as social processes and outcomes.** By developing a sense of a learning community where interaction with many other minds is encouraged.

8. **Recognises the significance of informal learning.** And connects into the home lives of young people.

9. **Depends on teacher learning.** Classroom-based enquiry is a crucial part of developing practice.

51. See James, M. et al (2007) Improving learning how to learn, in classrooms, schools and networks, Routledge, London

10. **Demands consistent policy frameworks with support for teaching and learning as their primary focus.** Good pedagogy and student engagement is a more effective way of raising standards than league tables or catch-up classes.

While these principles are useful, they do not rely on an explicit framework of wider skills, nor do they fully address the issues of how the wider skills of learning can be developed.

One project exploring how learning to learn might be promoted using Assessment for Learning as a starting point seeks to share some of the findings in ways which will be accessible to teachers.[51]

Commentary on TLRP Ten Principles of Effective Teaching and Learning

1. World view

Research based and orientated towards a belief in the importance of lifelong learning and learning how to learn.

2. Cultivation

Individual projects explore this but there is, inevitably, a gap between the generality of the principles and the practicalities of classroom implementation.

3. Measurement

Assessment is seen primarily as a means of improving learning (rather than for accountability).

4. Fitness for purpose

A useful development of important principles that provides necessary support for those seeking to cultivate wider skills.

Appendix 3: Third sector approaches

A) Partnership for 21st Century Skills

52. See www.21stcenturyskills.org

The Partnership for 21st Century Skills[52] has become one of the leading bodies in the US seeking to define a new vision for 21st Century education. The Partnership encourages schools, districts and states to advocate for the infusion of 21st Century skills into education and provides tools and resources to help educators do this. Alongside subjects, it outlines three sets of wider skills.

1. Learning and innovation skills

- creativity and innovation
- critical thinking and problem solving
- communication and collaboration

2. Information, media and technology skills

- information literacy
- media literacy
- ICT literacy

3. Life and career skills

- flexibility and adaptability
- initiative and self-direction
- social and cross-cultural skills
- productivity and accountability
- leadership and responsibility

Commentary on Partnership for 21st Century Skills

1. World view

This is overtly seeking to infuse 21st Century skills into education.

2. Cultivation

Some resources are provided, but there is no specific recognition of the complexity of skills.

3. Measurement

There is no specific concern with this.

4. Fitness for purpose

This functions as a platform for advocacy rather than a detailed practical approach.

B) Royal Society for the Encouragement of Arts, Manufactures and Commerce (RSA) Opening Minds

Since 1999, the RSA has pioneered a competence-based approach in secondary schools. The Opening Minds curriculum has five categories of competences – broad areas of capability. Opening Minds is now in use by more than 200 schools.

The five competences are learning, citizenship, relating to people, managing situations and managing information. The list below indicates what students will have learned.

1. Learning

- understood how to learn, taking into account their preferred learning styles, and understood the need to, and how to, manage their own learning throughout life
- learned, systematically, to think
- explored and reached an understanding of their own creative talents, and how best to make use of them
- learned to enjoy and love learning for its own sake and as part of understanding themselves
- achieved high standards in literacy, numeracy, and spatial understanding
- achieved high standards of competence in handling information and communications technology and understood the underlying processes

2. Citizenship

- an understanding of ethics and values, how personal behaviour should be informed by these, and how to contribute to society
- understood how society, government and business works, and the importance of active citizenship
- understood cultural and social diversity, in both national and global contexts, and why these should be respected and valued
- understood the social implications of technology

- understood how to manage aspects of their own lives, and the techniques they might use to do so including managing their own financial affairs

3. Relating to people

- understood how to relate to other people in varying contexts, including those where they manage, or are managed by, others, and how to get things done

- understood how to operate in teams, and their own capacities for filling different team roles

- understood how to develop other people, whether as peer or teacher

- developed a range of techniques for communicating by different means, and understood how and when to use them

- developed competence in managing personal and emotional relationships

- understood, and be able to use, varying means of managing stress and conflict

4. Managing situations

- understood the importance of managing their own time, and developing techniques for doing so

- understood what is meant by managing change, and have developed a range of techniques for use in varying situations

- understood the importance both of celebrating success and managing disappointment, and ways of handling these

- understood what is meant by being entrepreneurial and initiative-taking, and how to develop capacities for these

- understood how to manage risk and uncertainty, the wide range of contexts in which these will be encountered, and techniques for managing them

5. Managing information

- developed a range of techniques for accessing, evaluating and differentiating information and have learned how to analyse, synthesise and apply them

- understood the importance of reflecting and applying critical judgement, and have learned how to do so

RSA's Opening Minds already has an extensive network of schools[53] using some or all of its competence framework.

53. See www.thersa.org/projects/education/future-schools-network

54. See Claxton, G. (2002) Building Learning Power, TLO, Bristol
55. See Lucas, B. (2001) Power up your mind, Nicholas Brealey, London

Commentary on RSA's Opening Minds

1. World view

This asserts that the English National Curriculum's subject-based approach does not work and that 'competences should be used to provide young people with the skills and abilities needed to survive and succeed in their future world'.

2. Cultivation

While there has been real attention on the structural implications of focusing on competences not subjects, an explicit focus on the complexity of cultivating the competences is still developing.

3. Measurement

Apart from existing formative and summative methods, there has been little attempt to do this other than through generic self-assessment templates. A systematic evaluation of the programme is currently being designed.

4. Fitness for purpose

Shortly to be evaluated formally, it is already clear that Opening Minds has skilfully managed to appeal to practitioners, policymakers and the academic community.

C) Campaign for Learning 5Rs

Drawing on work by both Guy Claxton[54] and Bill Lucas,[55] and supported by Newcastle University, the Campaign for Learning has, since its inception in 1999, built a framework for learning to learn around 5Rs – Readiness, Resourcefulness, Resilience, Remembering and Reflectiveness, with Remembering recently being changed to Responsibility.

Readiness

Pupils know how:

- to assess own motivation
- to set goals and connect to the learning
- to achieve a positive learning state, including finding their preferred learning environment
- to use a learning to learn language

Resourcefulness

Pupils know how:

- the mind works and how humans learn
- to assess their own preferred learning style, including how to take in information
- to seek out and use information, including through ICT
- to communicate effectively in different ways
- to use different approaches to learning

Resilience

Pupils know how:

- to apply learned optimism and self-efficacy approaches
- to empathise and use EQ approaches
- to proceed when facing difficulties
- to ask (critical) questions

Remembering

Pupils know how:

- to use different memory approaches
- to make connections
- to apply learning, including in different contexts

Reflectiveness

Pupils know how:

- to ask questions, observe, see patterns, experiment and evaluate learning

Commentary on Campaign for Learning 5Rs

1. World view

'A set of principles and skills which, if understood and used, help learners to learn more effectively and so become learners for life. At its heart is the belief that learning is learnable.'

2. Cultivation

There is no singular view of how dispositions can be cultivated, but there are a range of materials and case study materials.

3. Measurement

Measurement is not explicitly part of the approach, although a range of summative and formative methods are used by participating schools.

4. Fitness for purpose

The 5Rs are readily accessible and intelligible. The framework has stimulated a good deal of action research in schools, which has been systematically evaluated by the Newcastle University team, but theoretical development has lagged behind. A greater focus has been on influencing the policy environment that it is undoubtedly helping to shape.

56. See www.talentfoundation.com

57. See Bill Lucas et al (2007) New kinds of smart: Emerging thinking about what it is to be intelligent today, The Talent Foundation, London

D) Talent Foundation New Kinds of Smart (NKOS)

The Talent Foundation,[56] supported by both the Edge Foundation and the Economic and Social Research Council (ESRC), has developed a framework[57] for thinking about wider skills. This has been trialled in a small number of schools and one hospital trust.

NKOS has sought to approach the issue of wider skills from the perspective of new thinking about the human mind and, in particular, about intelligence. Its framework seeks to promote the cultivation of learning dispositions, which include some areas not common to many of the other frameworks, such as the development of intuition and mindfulness.

The 16 NKOS 'elements' are illustrated in Figure 3.

Figure 3

Commentary on Talent Foundation NKOS framework

1. World view

The NKOS framework believes that to succeed in life we need much more than the narrow range of cognitive IQ-like skills.

2. Cultivation

NKOS only includes those 'wider skills' where there is research evidence to suggest they can be learned (i.e. are not largely 'fixed'), but it does not seek to suggest how this can be done.

3. Measurement

NKOS does not explore this.

4. Fitness for purpose

Already being developed for an academic publisher for use in schools, there seems to be some validity to the NKOS approach worthy of further development.

Appendix 4: Commercial approaches

A) Habits of Mind

Designed by Arthur Costa and Bena Kallick, Habits of Mind[58] is a set of 16 wider skills for learning with materials and pedagogic approaches to cultivate these. There is an extensive international network of schools using these materials and its underlying approach. The 16 habits are:

1. Persisting.

2. Thinking and communicating with clarity and precision.

3. Managing impulsivity.

4. Gathering data through all senses.

5. Listening with understanding and empathy.

6. Creating, imagining, innovating.

7. Thinking flexibly.

8. Responding with wonderment and awe.

9. Thinking about thinking (metacognition).

10. Taking responsible risks.

11. Striving for accuracy.

12. Finding humour.

13. Questioning and posing problems.

14. Thinking interdependently.

15. Applying past knowledge to new situations.

16. Remaining open to continuous learning.

59. See www.buildinglearningpower.co.uk
60. See Claxton, G. (1999), Wise up: The challenge of lifelong learning, Bloomsbury, New York

Commentary on Costa and Kallick's Habits of Mind

1. World view

'Habits of mind' more helpfully than 'skills' describe what young people need to develop if they are to be intelligent in the real world.

2. Cultivation

Much thought is given to creating 'thoughtful' classroom environments and developing strategies for embedding and infusing habits of mind.

3. Measurement

Costa and Kallick have developed a range of indicators of achievement, reflective practices and formative templates.

4. Fitness for purpose

'Habits of mind' combine academic rigour with practical reality and various resources offer a range of believable implementation activities.

B) Building Learning Power (BLP)

Building Learning Power (BLP)[59] was created in the UK by TLO Ltd on the basis of the scientific framework developed by Guy Claxton in his book *Wise up: The challenge of lifelong learning*.[60] BLP seeks to expand student's 'learning capacity' and supports teachers and learners in developing the kinds of habits of mind that are most conducive to effective learning both in school and out. It has been used, in one way or another, in more than 1,000 schools in the UK and internationally, and is one of the largest programmes of its kind on the world.

BLP is based on 4Rs, each of which is differentiated into four or five more specific 'learning capacities', or, informally, 'learning muscles'. These are summarised in the chart below. From many teachers' practical explorations with the framework, BLP has now distilled a broad and detailed set of 'culture change' suggestions for reconfiguring classrooms to more effectively cultivate students 'learning power'.

Table 13

Resilience	**Being ready, willing and able to lock on to learning**
Absorption	Flow, the pleasure of being rapt in learning
Managing distractions	Recognising and reducing distractions
Noticing	Really sensing what's out there
Perseverance	Stickability; tolerating the feelings of learning
Resourcefulness	**Being ready, willing and able to learn in different ways**
Questioning	Getting below the surface; playing with situations
Making links	Seeking coherence, relevance and meaning
Imagining	Using the mind's eye as a learning theatre
Reasoning	Thinking rigorously and methodically
Capitalising	Making good use of resources

61. See www.buildinglearningpower.co.uk/blp/plts.html

Reflectiveness	**Being ready, willing and able to become more strategic about learning**
Planning	Working learning out in advance
Revising	Monitoring and adapting along the way
Distilling	Drawing out the lessons from experience
Meta learning	Understanding learning, and yourself as a learner
Reciprocity	**Being ready, willing and able to learn alone and with others**
Interdependence	Balancing self-reliance and sociability
Collaboration	The skills of learning with others
Empathy and listening	Getting inside others' minds
Imitation	Picking up others' habits and values

Recently TLO has produced a series of useful cards that map the 4Rs onto the 6 PLTSs.[61]

Commentary on BLP

1. World view

BLP offers an overarching model of the powerful lifelong learner, and a set of arguments that cultivating these qualities is both practical and highly desirable.

2. Cultivation

Lifelong learning habits of mind cannot be 'taught' or 'trained' directly, but must be cultivated over time in a conducive atmosphere. 'Split-screen lessons' are designed to achieve both a 'content' objective, and the systematic exercising of a clearly defined 'wider skill'.

3. Measurement

BLP has been the subject of several independent evaluation projects, and evaluated and developed through several hundred action–research projects by teachers. Because it recommends a multi-faceted culture change programme, it is hard to establish clear cause-and-effect relationships, however.

4. Fitness for purpose

In the right hands, BLP seems to offer an appealing, practical and comprehensive approach to the cultivation of wider skills. However, like many of the other approaches, it can easily become stale and formulaic.

About us

The Centre for Real-World Learning

The Centre for Real-World Learning at the University of Winchester aims to unearth the learning secrets behind success in life. By exploring the rich realities of people's learning journeys, we seek to distil and disseminate the habits of mind that enable people to achieve fulfilment in whatever sphere of life they seek it.

In short, we are interested in helping people to get better at getting better at doing the things that really matter to them.

www.winchester.ac.uk/realworldlearning

Authors

Professor Guy Claxton

Since September 2008, Claxton has been Co-Director of the Centre for Real-World Learning and Professor of the Learning Sciences, at the University of Winchester. He previously held the same title at the University of Bristol Graduate School of Education. He has a 'double first' from Cambridge and a DPhil from Oxford, and is a Fellow of the British Psychological Society and the Royal Society of Arts, and an Academician of the Academy of the Social Sciences. His books have been translated into many languages including Japanese, Greek, Italian, German, Spanish and Portuguese.

Some headlines

- Originator of the educational Building Learning Power programme: helping young people become better real-life learners.

- Author (among other things) of *What's the point of school? Rediscovering the heart of education* (Oneworld, 2008), *Creativity, wisdom and trusteeship: The role of education* (edited with Howard Gardner and Anna Craft, Corwin Press 2007), *The Creative Thinking Plan* (with Bill Lucas, BBC Books, 2007), *The wayward mind: An intimate history of the unconscious* (Little Brown, 2005, Abacus, 2006), *Building Learning Power: Helping Young People Become Better Learners* (www.tloshop.co.uk, 2002), *Wise up: Learning to live the learning life* (Bloomsbury 1999, Network Continuum, 2000), *Hare Brain, Tortoise Mind: Why intelligence increases when you think less* (Fourth Estate, 1997, Harper Perennial, 1999).

- Consultant on learning and creativity to, among many others, New Zealand Ministry of Education, South Australian Ministry of Education, HM Treasury, The Football Association and The Royal Albert Hall.

- Worldwide speaker on creativity, learning and the brain, recently lecturing in Australia, New Zealand, Hong Kong, Singapore, Brazil, USA, Sweden, Germany, Spain and Ireland, as well as throughout the UK.

Professor Bill Lucas

Since September 2008, Lucas has been Co-Director of the Centre for Real-World Learning and Professor of Learning at the University of Winchester. He is also Chairman of The UK's Talent Foundation. Lucas is a senior visiting research fellow at the University of Surrey's School of Management, a non-Executive Director of the Live Group, Chairman of the Talent Foundation and, with Philip Pullman, a patron of Pegasus Theatre in Oxford. He currently runs his own learning strategy business, The Bill Lucas Partnership. Previously Lucas was the first CEO of the Campaign for Learning.

Some headlines

- Originator, while at the Campaign for Learning of Family Learning Day (now Family Learning Week).

- Author (among other things) of *The Creative Thinking Plan* (with Guy Claxton, BBC Books, 2007), *Happy families: How to make one, how to keep one* (BBC Active, 2006), *Involving parents in schools* (Network Continuum, 2006), *Boost your mind power week by week* (Duncan Baird, 2006), *Discover your hidden talents: The essential guide to lifelong learning* (Network Educational Press, 2005), *Help your child to succeed* (with Alistair Smith, Network Educational Press, 2002), *Teaching pupils how to learn* (Campaign for Learning, 2002), *Power up your mind: Learn faster, work smarter* (Nicholas Brealey Publishing, 2002).

- Consultant on learning and leadership to, among many others, Australian National Training Authority, Alder Hey, The Health Foundation, The National College for School Leadership, Microsoft and Lloyds TSB.

- Worldwide speaker on learning, creativity and leadership, including appearances on radio and TV (The Moral Maze, Newsnight, Night Waves, BBC Breakfast, The Learning Curve, Start the Week and Woman's Hour.) In 2001, he was the international guest of Australia's Adult Learners' Week.

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