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Progression in Student Creativity in School

FIRST STEPS TOWARDS NEW FORMS OF FORMATIVE ASSESSMENTS

Bill Lucas, Guy Claxton, Ellen Spencer

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PROGRESSION IN STUDENT CREATIVITY IN SCHOOL: FIRST STEPS TOWARDS NEW FORMS OF FORMATIVE ASSESSMENTS

OECD Education Working Paper No. 86

Bill Lucas, Guy Claxton and Ellen Spencer

Creativity is widely accepted as being an important outcome of schooling. Yet there are many different views about what it is, how best it can be cultivated in young people and whether or how it should be assessed. And in many national curricula creativity is only implicitly acknowledged and seldom precisely defined. This paper offers a five dimensional definition of creativity which has been trialled by teachers in two field trials in schools in England. The paper suggests a theoretical underpinning for defining and assessing creativity along with a number of practical suggestions as to how creativity can be developed and tracked in schools. Two clear benefits of assessing progress in the development of creativity are identified: 1) teachers are able to be more precise and confident in developing young people's creativity, and 2) learners are better able to understand what it is to be creative (and to use this understanding to record evidence of their progress). The result would seem to be a greater likelihood that learners can display the full range of their creative dispositions in a wide variety of contexts.

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ABSTRACT

Creativity is widely accepted as being an important outcome of schooling. Yet there are many different views about what it is, how best it can be cultivated in young people and whether or how it should be assessed. And in many national curricula creativity is only implicitly acknowledged and seldom precisely defined. This paper offers a five dimensional definition of creativity which has been trialled by teachers in two field trials in schools in England. The paper suggests a theoretical underpinning for defining and assessing creativity along with a number of practical suggestions as to how creativity can be developed and tracked in schools. Two clear benefits of assessing progress in the development of creativity are identified: 1) teachers are able to be more precise and confident in developing young people's creativity, and 2) learners are better able to understand what it is to be creative (and to use this understanding to record evidence of their progress). The result would seem to be a greater likelihood that learners can display the full range of their creative dispositions in a wide variety of contexts.

RÉSUMÉ

La créativité est largement acceptée comme étant un résultat scolaire important. Pourtant il y a beaucoup d'opinions différentes sur ce qu'elle est, comment on peut la cultiver chez les jeunes gens, et si et comment on devrait l'évaluer. De plus, dans beaucoup de programmes scolaires, la créativité n'est reconnue que de manière implicite et rarement définie de manière précise. Ce document offre une définition de la créativité reposant sur cinq dimensions, qui a été testée par des enseignants durant deux expériences de terrain dans des écoles en Angleterre. Le document propose un soubassement théorique pour définir et évaluer la créativité ainsi que nombre de suggestions pratiques sur le développement et le suivi de la créativité à l'école. Deux bénéfices clairs d'évaluer le progrès dans le développement de la créativité sont identifiés : 1) les enseignants peuvent être plus précis et confiants lorsqu'ils développent la créativité des jeunes gens, et 2) les apprenants sont davantage en mesure de comprendre ce que « être créatif » signifie (et à utiliser cette compréhension pour documenter et relater leur progrès). Le résultat semble être une plus grande probabilité que les apprenants témoignent de toute l'étendue de leurs dispositions à la créativité dans un large éventail de contextes.

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PROGRESSION IN STUDENT CREATIVITY IN SCHOOL: FIRST STEPS TOWARDS NEW FORMS OF FORMATIVE ASSESSMENTS

by

Bill Lucas, Guy Claxton and Ellen Spencer*

In Spring 2011, Creativity, Culture and Education (CCE), in partnership with the OECD Centre for Educational Research and Innovation (CERI), commissioned the Centre for Real-World Learning (CRL) at the University of Winchester to undertake research to establish the viability of creating an assessment framework for tracking the development of young people's creativity in schools.

After reviewing the literature on creativity and its assessment, CRL consulted expert practitioners using both structured interviews and adopting an appreciative inquiry approach (Cooperrider and Whitney, 2005). In the light of this preliminary investigative work we created a framework for teachers to assess the development of young people's creativity, and associated processes for trialling this framework in schools. We then ran two field trials in 12 schools, the first as a proof of concept and the second one exploring issues raised in the first trial.

Three overarching questions guided us:

a) Is it possible to create an assessment instrument that is sufficiently comprehensive and sophisticated that teachers would find useful (the proof of concept)?

b) Would any framework be useable across the entire age span of formal education?

c) If a framework is to be useful to teachers and pupils, what approach to assessment should it adopt?

The paper describes the approach adopted by the CRL research team and the conclusions we reached. It includes a highly selective summary of a more extensive literature review (Spencer *et al.*, 2012a) and a description of the assessment tool we developed along with an analysis of its effectiveness.

1. Why assessing creativity in schools matters

'From its modest beginnings in the universities of the eighteenth century and the school systems of the nineteenth century, educational assessment has developed rapidly to become the unquestioned arbitrator of value, whether of pupils' achievements, institutional quality or national educational competitiveness.'
Patricia Broadfoot (2000:xi)

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A creative challenge

Most people agree that schools need to develop creativity in students just as much as they need to produce literate and numerate learners. Yet across the educational world there is no widely used definition of what creativity is, no agreed framework for assessing its development in schools and few assessment tools specifically designed to track learners' progress.

If creativity is to be taken more seriously by educators and educational policy-makers then we need to be clearer about what it is. We also need to develop an approach to assessing it which is both rigorous enough to ensure credibility *and* user-friendly enough to be used by busy teachers. In this way we can add the kind of value referred to in the epigraph above.

In approaching this challenge, our working definition of creativity includes the following elements. Creativity, we believe, is:

- Complex and multi-faceted, occurring in all domains of life (Treffinger *et al.*, 2002);
- Learnable (Csikszentmihalyi, 1996);
- Core to what it is to be successful today (Sternberg, 1996);
- Capable of being analysed at an individual level in terms of dispositions[1] (Guilford, 1950); and
- Strongly influenced by context and by social factors (Lave and Wenger, 1991).

Some pros and cons of assessing creativity

Both assessment and creativity are enormous subjects, each with extensive bodies of literature. Education stakeholders also have strong opinions on both assessment and creativity. An anecdote from early in our project illustrates this. At an appreciative inquiry session with teachers, creative agents[2] and experts, those present strongly agreed with the proposition that it is possible (although not straightforward) to assess progress in the development of creativity in young people and that there are a range of ways in which this could be done. Presented with a circular, bulls-eye like matrix showing a number of levels of creative skill in a number of different areas, the group was entirely comfortable.

But when exactly the same conceptualisation was presented in the form of a table, with progression levels explicitly numbered (as opposed to being implicitly graded in the bull's-eye figure, with 'higher' being shown by a larger wedge of shading), teachers and creative agents expressed anger, hostility and bewilderment.

The only difference was in the presentational format. The circle somehow only hinted at levels of 'progression' while the table looked all too much like the kinds of levels associated by teachers with attainment levels achieved in core subjects such as literacy or numeracy.

Thus we learned early on that the problem we faced was one not only of identifying a number of facets of creativity, each of which could be described in terms of a developmental trajectory; we had also to take into account the practicability, plausibility and acceptability of any such conceptualisation to teachers.

Despite the complexity of the task, the potential advantages of attempting to measure and/or track the development of creativity in schools are easy to see. They include:

- Indicating that creative-mindedness is taken seriously as an important aspect of the formal curriculum in schools;

- Inspiring the development of curricula and teaching activities that foster creativity;

- Providing a way of articulating an applied vision of creativity (Hingel, 2009) that allows teachers and others to understand more about different dimensions of pupils' progression and to support their mental development more effectively (Craft *et al.*, 2007);

- Helping teachers to be more precise in their understanding of creativity;

- Providing formative feedback to pupils to enable them to develop their creativity more effectively (Black and Wiliam 2000);

- Providing feedback to teachers and focus their attention on this dimension;

- Starting a discussion on the nature of creativity and build a consensus; and

- Understanding more about individual progressions and trajectories in creativity learning.

The problem is that there is no consensus on what creativity is. Possible disadvantages or challenges associated with the formative assessment of creativity in schools include, therefore:

- Encouraging overly simplistic interpretations of what creativity is (as indicated by the anecdote earlier in this section);

- Potentially being confused pejoratively with a comment about a pupil's character, for example, being unimaginative[3];

- If we assume that making summative comparisons of individuals' creativity is not an appropriate goal, there is also the risk that assessment 'scores' could be used inappropriately for summative comparisons of performance both between schools and within schools;

- Concerns about assessments being made without due regard to context (Koestler, 1964); and

- The practical difficulties inherent in measuring something which manifests itself in a range of school subjects.

The principles guiding our development of a framework and associated tool

We developed a set of guiding principles to help us balance the inevitable tensions between rigour and useability. These criteria (which we list on the next page) seek to combine scholarship with pragmatic common-sense.

We decided that our framework should be:

- Deliberately identifying those dispositions which the literature suggests are at the core of creativity (Claxton, 2006, Feist, 2010, Kaufman and Sternberg, 2010);

- Explicitly premised on the 'grow-ability' of creative mindedness (Lucas and Claxton, 2010, Perkins, 1995, Sternberg, 1996);

- As comprehensive in terms of existing research as possible; and
- Coherent internally and having distinct elements.

In addition we were determined (and strongly supported in this by our steering group) that we should highlight both the social/contextual component of creativity and learning (Lave and Wenger, 1991) as well as the technical and craft aspects (Berger, 2003; Ericsson *et al.*, 1993). This meant including notions of 'disciplined' and 'collaborative' in our definition of the creative individual. An individual with 'disciplined' dispositions would be likely to devote time and effort to crafting and improving, and to the development of their technique, while one with 'collaborative' dispositions would be likely to work with others as appropriate, and share the results of their creativity – an important output of creativity.

In describing these two 'choices' made, we are explicitly aligning ourselves to a broadly social-constructivist tradition within education, as well as drawing on a literature exploring the acquisition of expert performance and how individuals progress from novice to expert practitioners.

In most countries creativity is not a statutory element of the school curriculum (even if it is highly valued by many teachers and employers). Consequently any assessment activity undertaken by teachers in relation to their students' creative development needs to be seen by them as intrinsically valuable. This was clearly the case in England where, for practical reasons, we undertook the first phase of this project. In terms of principles, it was therefore essential that any assessment tools should be:

- Seen as useful by teachers;
- At the right 'grain' of analysis: neither too abstract to be directly observable, nor too detailed to become unwieldy;
- Clear and accessible in its use of terminology; and
- Applicable to a broad range of types of creativity.

Creativity in schools

In England the status of creativity in schools has waxed and waned. In the first decade of this century, in the years following the report by the influential National Advisory Committee on Creative and Cultural Education (National Advisory Committee on Creative and Cultural Education, 1999)[4], creativity seemed to be in the ascendency. Indeed for a recent period it seemed as if creativity was set to become embedded in the curriculum.

As Jeffrey Smith and Lisa Smith put it: "creativity and education sit and look at one another from a distance, much like the boys and girls at the seventh-grade dance, each one knowing that a foray across the gym floor might bring great rewards but is fraught with peril." (Smith and Smith, 2010:251).

As in most OECD countries, education policy in the United Kingdom officially gives some place to creativity. However, while Personal, Learning and Thinking Skills (PLTS) in England (and their equivalent in Scotland, Wales and Northern Ireland) still exist as a framework, they are rarely referred to by policy makers and education stakeholders. The PLTS framework comprises six groups of cross-curricular skills, of which 'creative thinking' is one.

There are economic and social reasons why creativity might have a place within the school curriculum. Creativity is held as one of the most important competencies by 21st century employers

(Florida, 2002), and when creativity is acknowledged by and promoted through policy it is often in response to employability and competitiveness concerns. Education policy widely positions itself as putting creativity at the centre in order that pupils are able to solve problems and challenges beyond the classroom. For example, The Qualification and Curriculum Authority's understanding of creativity is that it 'improves pupils' self-esteem, motivation and achievement'; it 'prepares pupils for life'; and it 'enriches pupils' lives' (Banaji *et al.*, 2010:23).

From the literature it is clear that creativity can also be seen as a 'social good' (Banaji *et al.*, 2010) and that it is important, therefore, for 'the social and personal development of young people in communities and other social settings'. There is often an 'economic imperative' involved as well. The National Advisory Committee on Creative and Cultural Education (NACCCE) explicitly argued that creativity in education enables a country 'to compete in a global market, having a flexible workforce, facing national economic challenges, feeding the 'creative industries' and enabling youth to adapt to technological change' (Banaji *et al.*, 2010:35).

A central challenge for the cultivation of creativity in schools is their subject-dominated nature. Thus, while creativity spans all subject areas and is not limited to the 'arts', there are inherent conflicts in attempting to ensure assessment of cross-curricular concepts. The degree to which creativity is context-free or domain-specific is ambiguous also. For example, in the United Kingdom, the National Curriculum generally treats creativity as cross-curricular, and yet, in the early years curriculum, creativity is located in a set of specific domains including art, design, music, and play. As Anna Craft (2008b) comments, this makes the decision about what exactly to assess (and indeed what not to assess) problematic. In developing our assessment framework we tried two different approaches, one in each of the field trials, to explore this further.

A further issue for schools in England is the overriding agenda of school accountability grades, assessment systems and their league tables, new pay regimes, a sense of reduced professional freedom in making curriculum choices locally that competes with serious attempts at fostering creativity (Menter, 2010). It may be that a formative assessment valuing creative dispositions is at odds with the performance agenda of national testing, and is therefore subordinated (Looney, 2009). Craft's report for Futurelab notes: 'the powerful drive to raise standards and to make performance judgments about individuals and about schools, can be seen as being in tension with an almost equally powerful commitment to nurturing ingenuity, flexibility, capability' (Craft, 2008b:3).

Yet a closer examination of research, for example into meta-cognitive processes (including mental processes such as 'challenging assumptions' – itself a disposition of the creative individual), reveals clear evidence to suggest that the embedding of creative (and other learning) dispositions into lessons actually raises achievement, with attempts to enhance creativity and develop more powerful learners leading to increases in measured test results (Watkins, 2010). The two agendas need not be mutually exclusive. It is certainly feasible both to cultivate creative dispositions *and* to raise achievement levels in subjects. Indeed, research commissioned by CCE into the impact of Creative Partnerships on attainment found small but significant attainment gains, especially for young people at Key Stages 3 and 4 (Cooper *et al.*, 2011). With the creation of a tool to measure progression in creativity, this relationship would be clearer to see.

Unsurprisingly, many teachers focus more closely on high-stakes state-mandated testing than on tracking the development of dispositions such as creativity (Wiliam *et al.*, 2004). . The lack of any requirement to assess creativity in a national, summative way (or even formatively in class) also contributes to the undervaluing of creativity. But the lack of school-friendly tools to assess creativity is arguably another reason for paying less attention to creativity than to content or procedure knowledge.

Assessing creativity in schools

Despite the difficulties, attempts to assess creativity have a rich history (Hocevar, 1981; Plucker and Makel, 2010). Yet our review found no examples of widely used and credible methods of assessing creativity in schools, although it uncovered some noble attempts and experiments, many stimulated by CCE's work.

The purpose of any assessment activity critically influences the selection of methods. Boud and Falchikov (2006:401) tell us that there are two fundamentally distinct purposes of assessment: one is to provide certification of achievement, the other is to facilitate learning. Assessment can thus be formative, helping pupils and teachers improve, or also summative, enabling comparison. Indeed, one can sometimes make formative use of summative assessments, although it is more dificult the other way around (Looney, 2011). Formative assessment has a view of reality that sees reality as socially constructed rather than objective. Variables assessed formatively are complex, interwoven, and difficult to measure. A summative use of formative data would fall down on its requirement for 'validity' and 'reliability', while formative data uses different criteria: 'trustworthiness' and 'credibility', for example. Approaches to formative assessment in English schools have been shaped significantly by the Assessment for Learning (AfL) movement in recent years[5]. AfL uses a range of feedback methods to help learners achieve mandated levels of examined performance more effectively (see also OECD, 2005, for an overview).

Box 1. Early attempts at assessing creativity in schools

Plucker and Makel (2010) suggest tests for creativity fall into a number of categories:

- Psychometric tests for *divergent thinking;*
- Behaviour or personality tests of *past behaviour* or *personality characteristics;*
- Personality tests of *personality correlates of creative behaviour;*
- Activity checklists of *experience associated with creative production,*
- Scales assessing *attitudes towards important aspects of creativity or divergent thinking;*
- Advanced techniques for the assessment of *creative products;*
- Expert judges to assess *level of creativity in a product or response* (Consensual Assessment Technique);
- Six components to assess *creative design of product* (Consumer Product Design Models): newness, ability to resolve problems, level of pleasure induced, ability to match needs of customer, importance to needs of customer, level of desirability or criticalness.

2. Thinking about creativity and its assessment

'Despite the abundance of definitions of creativity and related terms, few are widely used and many researchers simply avoid defining relevant terms at all.'
Jonathan Plucker and Matthew Makel (2010:48)

This section introduces the theoretical foundations for our assessment framework, building on ideas introduced above and drawing selectively on a much larger review of the literature (Spencer *et al.*, 2012a).

The psychological and social components of creative performance are hard to disentangle. Because our study attempted to develop a framework for assessment of individuals in schools, however, the literature review focused on the characteristics of creative dispositions that might be assessable, rather than on exploring the nature of creative outputs and performances, or of environments that might support creativity more effectively.

This section begins by summarizing some tensions between different views of creativity, then brings together key conceptualisations about the dispositions that make up a creative individual, and considers the challenges presented for anyone seeking to create an assessment framework for creativity.

Inevitably in developing any assessment framework, choices have to be made with regard to earlier thinking about the subject. Informed by our literature review, the decisions we took with regard to assessing creativity can be summarized thus:

a) We describe creativity in terms of individual creative dispositions selecting a cohesive set of dispositions drawn from the literature. We chose consciously to focus directly on what is going on for the learner during acts of creativity, not on the environment in which this takes place nor on any creative products produced per se (although these may well be used by learners to indicate their own sense of progress);

b) While recognizing and valuing the social and collaborative nature of creativity, we focused on assessing creativity within individuals and we deliberately included one disposition which specifically acknowledges the collaborative nature of creativity;

c) We explicitly adopted a view of creativity (and of intelligence) that sees it as largely learnable rather than essentially innate;

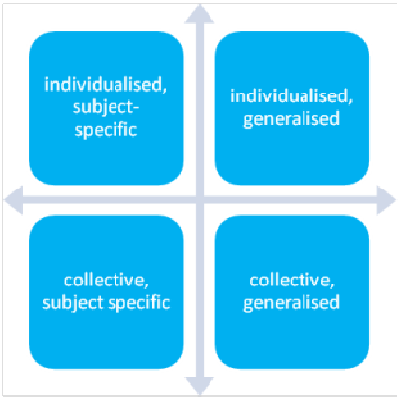
d) We acknowledged the importance of context by valuing both creativity within subjects (in music and in mathematics, for example) as well as creativity in its more generalisable forms (such as being able to have good ideas in a range of domains); and

e) We included an emphasis on the discipline of being creative as well as on the well-documented value of free-thinking.

Differing views of creativity

Craft's (2008a) model (Figure 1) helpfully maps a range of views of creativity. These range from creativity as an *individualised* endeavour to creativity as a *collective* phenomenon. It also serves to point up the tension between creativity as *domain-specific* versus it being *domain-generic*.

Figure 1. Creativity: Person and location



Describing creativity in individuals

Guilford was one of the first researchers to examine creativity from the perspective of creative dispositions, commonly referred to as psychological trait theory. Trait theory focuses on habitual patterns of mind and their associated behaviours to describe and account for different personalities. Guilford's definition of traits linked them with the broad categories of aptitudes, interests, attitudes and temperamental qualities. From his perspective, the 'creative personality is then a matter of those traits that are characteristics of creative persons' (Guilford, 1950).

There is increasing consensus about which dispositions might serve as indicators of the strength of creative-mindedness in individuals. In a comprehensive meta-analytical review of the creativity literature, Treffinger *et al.* (2002) compared 120 definitions of creativity in papers exploring the 'traits', 'characteristics', and other personal 'attributes' distinguishing highly creative individuals from their peers.

From these 120 definitions they compiled a list of creative dispositions (cognitive, personality, and biographical), cited in at least three sources, clustering them into four categories:

- Generating ideas;
- Digging deeper into ideas;
- Openness and courage to explore ideas; and
- Listening to one's 'inner voice'.

There have been several attempts to map the dispositions that underlie creative performance (*e.g.* Kaufman and Sternberg, 2010; Root-Bernstein and Root-Bernstein, 1999). Some lists of creativity-related dispositions were simply too long for teachers to be able to find manageable. Root-Bernstein and Root-Bernstein (1999), for example, list 13 such dispositions, all of which have a degree of both empirical and face validity. They are careful observation; use of sensory imagination; the ability to abstract essentials; recognizing patterns in information; forming new patterns; generating useful analogies; use of intuition and embodied cognition; empathy and shifting perspectives; mapping between different dimensional representations; creating and adapting models; playfulness with material and ideas; transforming ides into different media; and synthesizing elements of thought into a coherent whole.

Individual versus social components of creativity

Treffinger *et al.*'s (2002) list of dispositions, while a helpful starting point, is incomplete as a framework for assessment in so far as manifestations of creativity are, to a degree, almost always the result of complex collaboration across social groups. The challenge of using such a categorisation to create an assessment framework is that such dispositions are not simply located within the individual, they are also a function of what the broader context affords. As the authors note, many definitions of creativity challenge the notion that dispositions alone are sufficient.

Fillis and McAuley (2000:9), for instance, cite the work of Amabile as they assert that 'examining creativity from a trait perspective can have limited impact, given that social surroundings have also been shown to impact upon creative behaviour'.

An early authoritative text on creativity was Arthur Koestler's (1964) *The Act of Creation*, which takes a broad conception of creativity and emphasises its social dependencies. Koestler's general theory of human creativity in art, humour, and scientific discovery pinpointed the role of external influences on an individual's creative thought process. Citing the scientific 'discoveries' of Kepler, Kelvin, Newton, Pasteur, and Fleming, Koestler demonstrated the way all ideas develop through cross-fertilisation and recombination of existing components. Human beings do not, he argued, ever 'create' wholly original thinking.

Regarding the social element many current approaches to creativity stress the social and collaborative nature of the creative process. John-Steiner, for example, tells us that:

> *'The notion of the solitary thinker still appeals to those moulded by the Western belief in individualism. However, a careful scrutiny of how knowledge is constructed and artistic forms are shaped reveals a different reality. Generative ideas emerge from joint thinking, from significant conversations, and from sustained, shared struggles to achieve new insights by partners in thought.'* (John-Steiner, 2006:3).

The challenge for anyone creating an assessment tool exploring individual creativity is to allow sufficient scope for the social element of creativity to be accounted for. This could be achieved by including a 'collaborative' dimension as an important, assessable, element of the creative individual.

Subject-specific versus general creativity

Csikszentmihalyi wrote that the key difference between creative people with a big C and their less creative peers is the 'complexity' of their tendencies of thought and action. Those veering toward creativity 'tend to bring together the entire range of human possibilities within themselves' (1996:57). This is not to say that only a privileged few have capacity for creativity, but that the creative side is nurtured and cultivated in the process of developing maturity and that it is likely to draw on experiences in different contexts.

Looking at the *subject-specific/domain-free* continuum, Craft (2008a:7) comments that:

> *'Whilst some views of creativity argue that at its heart, creativity in one domain is the same as in another, in that it ultimately involves asking 'what if?' in appropriate ways for the domain…, others would argue… that creativity cannot be understood without reference to the domain of application.'*

A tool for assessing creativity needs to allow for assessment of creativity across a range of contexts, which might be subject domains as well as in or outside of the school environment.

Learnable versus innate

Assessment of creativity only has value if we take the view that children can learn to become more creative. We take the well-supported view that creativity is comparable to intelligence in a number of ways, including in its ubiquity and in its 'learnability'. This latter tension is presented graphically in Figure 2 below.

Figure 2. Creativity: Learnable or Innate

It is clear, for example, that every individual is creative to some degree (Csikszentmihalyi, 1996). Creativity also has levels, so that we can ask 'how creative' an individual is (Treffinger *et al.*, 2002). Heindel and Furlong (2000) suggest that while Torrance believed that creativity could be taught like any other skill, Csikszentmihalyi believed that, while children could not be taught creativity, the right combination of personal characteristics and an encouraging environment could produce it. Perkins has made a powerful case for the learnability of intelligence, including many aspects of creativity identified in the creativity literature (Perkins, 1995).

To be of formative use, a framework for assessing creativity should thus include assessable elements of behaviour that represent learnable dispositions over which individuals have a degree of control.

Freeranging versus Disciplined

One important aspect of generalized creativity is 'divergent thinking' – the ability to generate many ideas from a range of perspectives without being limited by preconceived thinking. Divergent thinking is important, but it is not a proxy for creativity. Rather tests of it represent 'estimates of the potential for creative thinking and problem solving'. Being imaginative can be seen as the divergent aspect, while being 'disciplined' is the convergent and important parallel one (Runco, 2010:424).

Our tool for assessing creativity should thus include dispositions that represent both the divergent and convergent aspects of the creative individual. This would include, on the one hand, notions of playfulness and imagination and, on the other, the disposition of reflecting upon a range of choices critically in order to narrow down options.

Assessing Creativity – a specific challenge?

In section 1.5 we noted the difficulties others have found in assessing creativity. Here we briefly consider the specific challenges which assessing creativity in schools may bring as well as the wide issues of the purposes of any assessment.

At a very practical level assessing something like creativity, if reductionist, could give rise to ridicule, as we have observed elsewhere in a review of wider skills: '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' (Lucas and Claxton, 2009:25).

Our quotation illustrates clearly the tension between, on the one hand, providing post hoc comparative data to decision-makers particularly at policy level and, on the other, giving children and young people the information they need in order to develop their thinking.

As we began to explore above, the paradigms within which formative and summative assessment sit become more clearly different (Kaufman *et al.*, 2008).

A summative framework would necessarily have to establish, as a minimum, its validity and reliability. To ensure its reliable implementation it would require the development and trialling of criteria, as well as a system of moderator training and moderation to ensure its consistent application. A formative framework, on the other hand, would require a different approach.

While any assessment can be used summatively (without making a claim for its validity) not all can make the additional claim of serving formative functions. Indeed, Taras (2005:466) argues that 'formative assessment is in fact summative assessment plus feedback which is used by the learner' and, in addition, it may be used by the teacher. A framework of progression can be both summative and formative, although the ability of an assessment to serve both formative and summative functions is a fine balancing act, with many criticising the notion that this is even possible (Wiliam and Black, 1996). Teachers can make use of both formative and summative assessment data in planning lessons. 'In-the-moment' formative assessment might, however, provide more relevant information to help teachers manipulate lessons by focusing on areas of learning or subject knowledge as required.

The evidence for the benefits of using formative assessment is strong. Black and Wiliam's (1998:142) seminal paper *Inside the Black Box: Raising standards through classroom assessment* presented firm evidence that formative assessment can raise standards of achievement. In doing this they drew on more than 250 high-quality published journal articles.

Leahy and Wiliam's address to the American Educational Research Association conference in 2009 similarly suggested that there is a strong case for the use of formative assessment to improve learner outcomes. They observed that over the past 25 years, 'at least 15 substantial reviews of research, synthesizing several thousand research studies, have documented the impact of classroom assessment practices on students' (Leahy and Wiliam, 2009:2). They quantified the 'substantial increases in student achievement – in the order of a 70 to 80 percent increase in the speed of learning' (2009:15).

Wiliam (2006) argues that all activities under the 'assessment for learning' banner can be expressed as one of five key strategies and that anything not fitting into this set of strategies is, in fact, *not* assessment for learning:

- Clarifying and understanding learning intentions and criteria for success;
- Engineering effective classroom discussions, questions and tasks that elicit evidence of learning;
- Providing feedback that moves learners forward;
- Activating students as instructional resources for each other; and
- Activating students as owners of their own learning;

Our review found a variety of assessment instruments assessing the development of traits linked to creativity (Beattie, 2000, Hocevar, 1981). In each case this necessitates an assessment instrument that

captures instances of those dispositions in action. The literature has explored a variety of possible ways forward including:

- Use of descriptive rubrics supported by examples (Lindström, 2006);
- Assessment by peers;
- Assessment using portfolios;
- Assessment using mixed methods (Treffinger *et al.*, 2002); and
- Self-assessment.

Ultimately then, it would appear that if an assessment framework is to be of formative use to teachers and learners, its utility is likely to be in developing shared understanding between teacher and learner, and in shedding light on the necessary steps for progression for each of them rather than in providing individuals with a crude labelling of their creativity. It might be further developed to serve a secondary function as a summative tool. A range of approaches could be taken to gathering data, with the above examples providing a starting point.

3. Our prototype tool for assessing pupils' creativity in schools

'Genius is one percent inspiration and ninety-nine per cent perspiration'
Thomas Edison

Our prototype model of the creative individual resulted directly from what we learned from our interaction with practitioners and from our research literature (Spencer *et al.,* 2012a). It was further informed by the criteria we evolved with our steering group to help us gain maximum value from our two field trials.

The Five Creative Dispositions Model

The five dispositions on which we decided to focus were arrived at after careful weighing up of the pros and cons of existing lists of creative dispositions in the light of our criteria. Our model explored the following five core dispositions of the creative mind:

1. Inquisitive. Clearly creative individuals are good at uncovering and pursing interesting and worthwhile questions in their creative domain.

    - Wondering and questioning – beyond simply being curious about things, the questioning individual poses concrete questions about things. This enables him, and others, to think things through and develop new ideas.
    - Exploring and investigating – questioning things alone does not lead to creativity. The creative individual acts out his curiosity through exploration, and the investigating individual follows up on her questions by actively going out, seeking, and finding out more.
    - Challenging assumptions – a degree of appropriate scepticism is an important trait of the creative individual. This means not taking things at face value without critical examination.

2. Persistent. In line with Thomas Edison's remark above, this section has been repeatedly emphasized.

   - Sticking with difficulty – persistence in the form of tenacity is an important habit of mind enabling an individual to get beyond familiar ideas and come up with new ones.

   - Daring to be different – creativity demands a certain level of self-confidence as a pre-requisite for sensible risk-taking as well as toleration of uncertainty.

   - Tolerating uncertainty – being able to tolerate uncertainty is important if an individual is going to move 'off of the starting blocks' on a project or task where actions or even goals are not fully set out.

3. Imaginative. At the heart of a wide range of analyses of the creative personality is the ability to come up with imaginative solutions and possibilities.

   - Playing with possibilities – developing an idea involves manipulating it, trying it out, improving it.

   - Making connections – this process of synthesising brings together a new amalgam of disparate things.

   - Using intuition – the use of intuition allows individuals to make new connections and arise at thoughts and ideas that would not necessarily materialise given analytical thinking alone.

4. Collaborative. Many current approaches to creativity, such as that of John-Steiner (2006), stress the social and collaborative nature of the creative process.

   - Sharing the product – this is about the creative output itself impacting beyond its creator.

   - Giving and receiving feedback – this is the propensity to want to contribute to the ideas of others, and to hear how one's own ideas might be improved.

   - Cooperating appropriately – the creative individual co-operates appropriately with others. This means working collaboratively as needed, not necessarily all the time.

5. Disciplined. As a counterbalance to the 'dreamy', imaginative side of creativity, there is a need for knowledge and craft in shaping the creative product and in developing expertise.

   - Developing techniques – skills may be established or novel but the creative individual will practise in order to improve. This is about devoting time to a creative endeavour.

   - Reflecting critically – once ideas have been generated, evaluation is important. We could call this 'converging'. It requires decision-making skills.

   - Crafting and improving – this relates to a sense of taking pride in one's work. The individual pays attention to detail, corrects errors, and makes sure the finished article works perfectly, as it should.

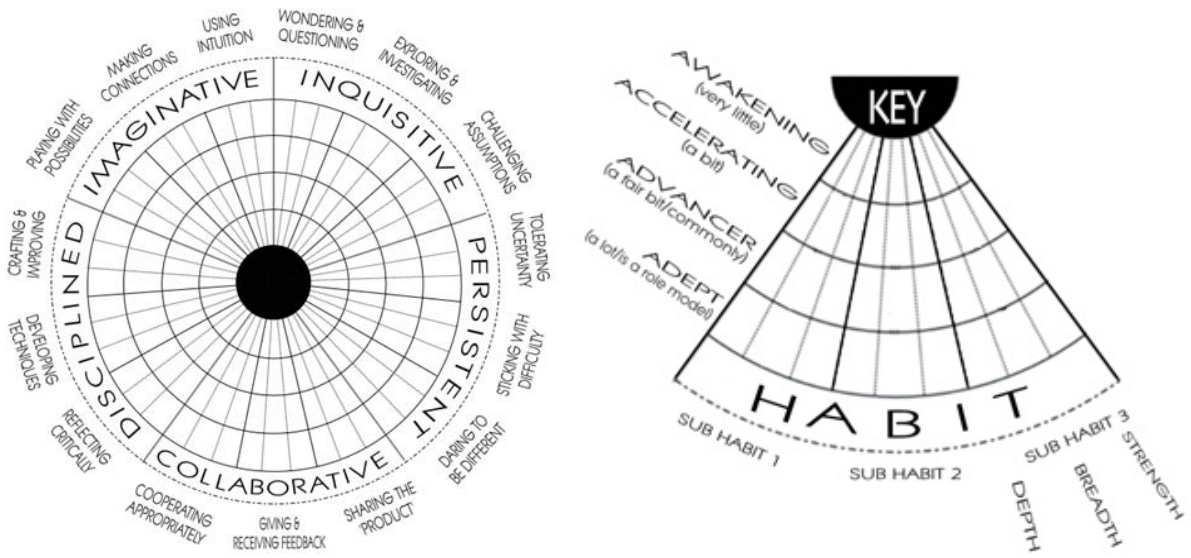
We chose to describe the five dispositions with relatively abstract adjectives, while using the gerund to indicate the sub-dispositions in an attempt to reinforce the action required to 'live' each disposition fully.

In terms of the different approaches to creativity summarized in Figure 1 in section 2.1, we sought to be inclusive, accommodating as many of them as possible within the context of the schools with which we were working. Our prototype, we believe, holds relevance within each area of the school curriculum, while recognizing that the way a particular disposition is expressed may be different depending upon context.

At the outset we assumed that it was at least worth exploring the use of the prototype tool across the age range 4-16. This was not, in fact, possible at Key Stage 4 given the strong performance culture prevalent at this stage[6]. For time reasons, we did not explore the different ways in which learners of different ages demonstrate creative dispositions. Nevertheless, assuming a common definition of creative-mindedness, we explored variations in how the tool was used and understood across age ranges.

Our first field trial was planned as a proof of concept, aiming to show us how easily teachers could understand and use the tool at a moment in time to assess pupils. The second trial focused on self-assessment by individual learners. Throughout the project we have favoured a formative approach to assessment tool design, while remaining agnostic about potential summative uses.

Figure 3. Field Trial 1 Tool



The tool tested initially is shown graphically in Figure 3. It was designed so that development of each of the 15 sub-dispositions could be tracked along three dimensions:

- Strength – this was seen in the level of independence demonstrated by pupils in terms of their need for teacher prompts or scaffolding, or their need for favourable conditions;

- Breadth – this was seen in the tendency of pupils to exercise creative dispositions in new contexts, or in a new domain; and

- Depth – this was seen in the level of sophistication of disposition application and the extent to which application of dispositions was appropriate to the occasion.

Trialling and refining the tool

> *'I have noticed that the children are far more aware of how and when they use their imagination and are now independently identifying this throughout lessons for themselves.'*
> Primary Teacher, Field Trial 2

Two field trials were carried out. The first was designed to show:

- How easily teachers were able to map a pupil onto the framework;
- How easily teachers were able to decide on, and gather, suitable decision-making evidence/data;
- What the sticking points and 'hard parts' were in the process; and
- How we could improve this process.

The second was designed to ascertain:

- The extent to which pupils perceived that they were able to self-assess 'imagination';
- The extent to which pupils were able to provide sufficient supporting evidence; and
- How the tool could be modified, in order to provide direction for development.

Data collection for both trials was situated within a case study design. The case study research design is typically used for qualitative data collection involving a number of groups of participants. Field Trials were teacher-led, involving design, planning and co-ordination from the project team. Both primary and secondary schools were involved: six for the first trial, and 12 for the second. Each school identified a project coordinator who attended our 'train the trainer' session. Coordinators communicated the project to participating teachers at their school. Teachers were each asked to focus on six to 12 pupils in the year groups we specified. For each pupil, they were asked to attempt to map the child's profile at a single moment in time in relation to the three dimensions 'strength', 'breadth', and 'depth' of the habit 'imaginative'. Coordinators finally arranged for teachers to gather for completion of a pre-formatted end-of-project report, which involved responding to 52 questions that probed for respondents' views on every aspect of the tool.

Field Trial 2 was a broader trial, requiring pupil involvement and a longer timeframe than the single snapshot specified for the first. Responsibility for using the tool lay with pupils, with teachers taking a more facilitative role. The broad aims above gave rise to a number of in-depth research questions. Inquiries were made of research participants (both teachers and pupils) through the use of questionnaires as a data collection tool (see Appendixes 2 and 3).

Box 2. Field Trial Methodology

Field Trial 1

School	Year group (number of teachers)	Number of assessment tools completed
3 primary	Nursery (5), Reception (1), Year 3 (2), Year 5 (3).	48
3 secondary	Year 7 (7); Year 8 (1); Year 9 (2); Year 10 (7); Year 11 (1); Year 12/13 (1); Year 13 (1)	161

Field Trial 2

Schools	Year groups	Teacher questionnaires	Pupil questionnaires	Pupil self-reporting tools
5 primary	Nursery; Year 2 (x3); Year 1/2 ; Year 4/5; Year 4 Year 5; Year 5/6 Year 6 (x2)	16	61	98
6 secondary	Year 7; Year 8 (x3); Year 9 (x2)	9	68	90

Findings in more detail

On the evidence of our field trials in twelve schools, the concept of an assessment framework for creativity in schools is valuable and relevant. Its value resides in its use as a prompt to teachers to enable them to maintain focus and as a formative assessment tool to track pupil creativity. The language of the tool provides pupils with a new (and sometimes stretching) vernacular with which to describe their behaviour and monitor different dimensions of their learning and helps teachers consider the opportunities for creative development they provide. Among those we worked with we found no appetite for a summative creativity instrument.

As a proof of concept, this study shows us that it is possible for both teachers and pupils to assess pupils' creativity, and that the five habits have face validity. Our conception of creativity fits teachers' understandings of the creative dispositions that they would wish pupils to develop. The habits are said to be sufficiently distinctive and useful, and there is a strong sense among teachers that our framework encompasses a learnable set of dispositions.

While we had originally speculated that the framework could be of use between the ages of 4 and 16, the trials suggest that we should initially focus on the 5-14 age range, although some practitioners may find it useful with younger and older pupils. In other places than England, years with high stake exams for teachers or students should initially be avoided to pilot the tool.

It is not currently of use at Foundation stage (age 3-5). There are two reasons for this. First, the tool always had a self-assessment element and this made it too complex for very young pupils. Secondly, early years practitioners have a range of useful formative assessment processes already for, in the case of England, a largely play-based curriculum.

The tool is almost at the right grain of analysis: use of five habits appears to be sufficiently comprehensive and not unwieldy. Consolidation of the three sub-habits into one exemplar statement for pupils is too blunt an instrument to ensure they address all three aspects of the statement. To use the three dimensions of strength, breadth, and depth explicitly generates an assessment task that is too burdensome and complex, but by making them more hidden, some of the subtlety is lost. The tool is clear and accessible in its use of terminology and is applicable to a broad range of real-world types of creativity. The tool is sufficiently comprehensive, and internally coherent: no missing habits or sub-habits, or overlap of sub-habits, were identified during the trials.

Benefits of using the assessment tool are broad and relate to:

- The potentially powerful use of feedback material for formative use by pupils as it supports them in harnessing more of their creativity.

- The additional focus and precision which our research-informed synthesis of five dispositions afforded teachers in their classroom activities.

- The influence of the tool on teachers, and its help in refining their practice, helping them to think specifically how they could cultivate the full range of creative dispositions.

- The boost to the status of creativity afforded by our clarification and refining of a practically useful definition of creativity for those trying to argue its case. This is particularly pertinent in the current educational landscape as many 'creative' subjects are not to be found in the coming English Baccalaureate[7]. A more precise, research-led definition could be helpful in countering potentially negative impacts of a narrower curriculum upon creativity.

- The balance of simplicity and rigour. This project has attempted to span the gap between theory and practice, and has found that teachers will only use a tool that obtains this balance.

- The role that this tool, with its vocabulary, could have in structuring a community of practitioners interested in teaching creativity.

- The emergence of an open-ended curriculum for developing creative-mindedness as a result of collecting, tagging, and exchanging teaching and learning materials using the tools' structure.

Reflections on fieldwork in schools

Both field trials took just one of the five dispositions: 'being inquisitive' for the first trial and 'being imaginative' for the second. In the first trial teachers at six schools (3 primary and 3 secondary) were asked to focus on 6 to 12 pupils and attempt to map each child's profile onto a copy of the reporting tool at a single moment in time by shading in the appropriate 'strength', 'breadth', and 'depth'. They were given full instructions. From the first trial we received a report from each of the six schools, and copies of over 200 completed assessment tools. In terms of validating the whole tool, teachers were asked to share their thoughts on the five broad habits, and 15 sub-habits upon which the tool was built. Teachers' feedback provided us with a 'proof of concept' that the habits and sub-habits were useful, and that they could be

monitored and assessed. Teachers perceived the framework to be complete, with all expected aspects of creativity being present.

For the second trial teachers at 11 schools (5 primary and 6 secondary) trialled a modified tool – this time for pupils to self-assess with – in one of their classes for a period of four to six weeks. Teachers implemented the project in a variety of ways, generally following the guidelines given by the project team. Most teachers showed an online presentation and video we had prepared that explained the concept of creativity, why its assessment would be beneficial, and how we planned for them to do this. The presentation and video were received warmly by pupils. Many pupils were given the opportunity to develop their own definitions of imagination, through various means including discussion, mind-mapping, and blogging. Teachers held 2-3 class sessions with the class prompting them to self-assess using the pre-formatted pupil reporting tool. They were asked to consider, from recent examples, how imaginative they had been in comparison with the exemplar statement on the tool. The exemplar statement can be seen on the tool in Appendix 1. They were to justify their self-assessment of how closely they fit the exemplar statement on the reporting tool. We received 25 teacher questionnaires, over 120 pupil questionnaires, and copies of over 180 pupil reporting tools from participants of the second trial.

Some teachers linked their introductory session explicitly to the piece of work the class would tackle that lesson. In one history class, for example, a discussion was held to develop the class' awareness of the role of creativity in history. A religious studies teacher used the introduction as a way of bringing in consideration of thinking skills to a topic containing 'big philosophical ideas'. While these activities do not necessarily cultivate creativity, they show how teachers strive to place sessions on creativity in context.

Teachers' views

The majority of teachers involved with the trial told us that their experiences with it had impacted positively upon their practice. Three teachers talked of how the trial had broadened their awareness of creativity; the different forms it takes and places it emerges; and how it helped them to value and celebrate it. Another told us how she had benefitted from the narrow focus on just one aspect of creativity; planning to continue this focus by looking at a small number of 'skills' on a half-termly basis.

At five schools, teachers talked about impacts of the trial on their practice, such as more listening to (and questioning of) pupils in order to notice imaginative behaviour; more praise and encouragement of pupils; more time for reflection; and more planning for imagination. Planning opportunities for imagination into lessons and into wider schemes-of-work was the most common change teachers mentioned.

Pupils' views

Pupils were asked to return to the tool during 2-3 lessons (at their teacher's discretion) over the course of around six weeks. To test this proof of concept (*i.e.* whether pupils could use the tool) they were asked to think about some concrete examples of when they were being imaginative recently. Teachers were told they could focus pupils' efforts during a particular lesson or project, but also to allow pupils to bring in evidence from lessons taught by their colleagues – whether in primary or secondary. Pupils were asked to compare their own behaviour with the exemplar statement on the tool and decide on the extent to which the behaviour was 'like me' (not at all, a little, quite, very much). They were required to seek evidence. For example, was their evidence in their written work? With such a formative tool, more important than an objective relationship between the box ticked and the evidence provided would be the pupil's justification for their choice of box, and a dialogue with the teacher to help develop the pupil's judgment.

As would be hoped, most pupils developed understanding of the key words and concepts used in the tool. Having used the tool, pupils were overwhelmingly more aware of when they were being imaginative; many were also seeking actively for opportunities to be more so. Those pupils who claimed that the tool had not made them more aware fell broadly into two categories. Some believed that they had sufficient awareness anyway. Others showed that they had held onto their original views that creativity and imagination could not be taught; that they were currently unable to be imaginative; or that creativity had too many meanings for them to try and define it. In one school in particular, pupils' responses indicated a lack of sufficient contact time with the tool, but also that initial input from teachers had not been sufficient to develop their understanding. It is to be expected that these factors would be concurrent with a narrow view of what it means to be imaginative.

The vast majority of pupils told us that they found the tool accessible and evidence easy to gather and that the tool became easier to use as it became more familiar.

The quality of self-assessments varied, for a number of reasons. Some pupils just listed work they had done or, more broadly, lessons they had been present in where they had used their imagination. Detail was generally sparse and insufficient for teachers to give guidance for improvement although some pupils provided significantly more detail than others. On the whole, teachers were satisfied that evidence was reasonably justifiable and appropriate. Evidence tended to be better when it was concrete and sufficiently detailed, although a primary teacher told us that she found verbal evidence easier to agree with because her pupils were able to articulate better orally than in writing. Evidence from lessons other than the teachers' own was harder to judge. We thus advise to use the assessment tool for lessons given or projects led by the teacher who trials it.

Pupils often mentioned how much easier it was to gather evidence in subjects where they felt that their creativity was used more naturally; or where they were familiar with using their imagination in the way they had always understood imagination to mean.

Difficulties some pupils had related to: finding examples of when they had been imaginative; relating their examples to the exemplar statement; finding solid evidence; and deciding which of the 'like me' statements their evidence suggested they should tick. Putting thoughts into writing (particularly if pupils had limited vocabulary) was the most commonly expressed of all these issues, although several of the mentions were by pupils who claimed to find the tool easy to use. This suggests that it was only a minor issue for these pupils. In the school in which it was cited most frequently (by 15 pupils) however, the teacher only considered recording evidence to be an issue for the less able children.

In two schools reflecting and discussing with peers was more popular than noting experiences down while some pupils tried to include too much detail on their reporting sheet. For a formative tool to map progression, however, the question has to be posed regarding how useful this level of detail is. While a certain level of relevant detail is helpful in ensuing teachers understand pupils' evidence, reams of descriptive, uncritical narrative are unlikely to be read and absorbed by teachers with a view to assisting in the formation of deeper levels of creativity; and even less likely to be drawn on by pupils as they hit problems in the future or wish to reflect and decide upon their own personal development targets.

A common theme was that developing creativity in maths lessons posed some challenges. The teaching had to be conducive to pupils using their imagination; they needed confidence to believe they could be imaginative (particularly girls); and they needed hard evidence, which was less easy to obtain from looking at a piece of maths work. Pupils in one maths teacher's class claimed that the class did find it easier with practice.

Refining the second field trial

The first field trial highlighted some aspects of the tool that were burdensome or difficult to use for young students in a limited time. Field trial 2 therefore simplified the tool to make it more friendly and accessible. Key differences from the first trial were:

- Being 'imaginative' was the creativity sub-habit in focus, rather than being 'inquisitive'.
- The assessment tool was simplified in terms of process. The assessment tool was simplified in terms of content.
- Assessment was undertaken by pupils, with teachers taking a facilitative 'signing off' role.
- The assessment process was embarked upon over a period of time rather than carried out at a snapshot moment.
- Having trialled quite a complex approach to mapping creativity using dimensions of 'strength', 'breadth', and 'depth' in the first field trial, the second trial simplified the tool in this regard. Our approach to 'strength' and 'depth' involved the following criteria attached to the exemplar statement, rather than attempting to give separate scores for 'strength', 'breadth', and 'depth' (seen in the tool in Appendix 1):

  'I can do these things without being prompted. I am confident about doing these things'.

- The 'breadth' dimension (intended to reflect the degree to which individuals showed creative tendencies across a range of contexts) was accounted for by pupils considering examples and evidence from various contexts. Pupils were not expected to give themselves a single score for 'breadth', but rather to consider a range of contexts.
- Key Stage 4 (age 14 to 16) was omitted due to potential conflicts of statutory examinations. Schools were asked to focus on Y2, 4, 6, and 8, as well as at Foundation stage.

Following field trial 1, the concept of 'strength' was replaced with the more transparent idea of 'independence'; the idea of being able to do things without being prompted. Confidence was used as a proxy for 'depth'.

This consolidated approach to tracking strength and depth was only apparently successful at those schools where the tool was entirely unproblematic. At three schools, teachers were satisfied that pupils understood the requirement had no problem paying attention to both. At seven of the other schools, teachers themselves did not provide us with feedback relating to this specific question, suggesting strongly that the consolidated approach was too subtle or intangible for them to notice.

Having trialled a more complex approach to assessment of the three sub-habits of 'being imaginative' in field trial 1, for field trial 2 we developed a combined exemplar statement that described what it would look like if an individual was doing all three sub-habits well. Pupils varied in the degree to which they evidenced one, two, or three sub-habits. In some instances pupils did not comprehend the question we asked regarding the number of sub-habits they had attempted to evidence. This suggests the consolidated approach was not sufficiently directive for some.

Of the three sub-habits, if one was given slightly more attention by those telling us what they found difficult, it was using their 'intuition' (being able to carry on even when you cannot fully explain your

reasoning). This said, difficulties with intuition were mentioned only infrequently. Not a familiar word to begin with, it became more so with practice and also with hindsight. Some found it less easy to notice when they themselves were being intuitive, although teachers told us pupils did use their own intuition. It is quite possible that the problem with intuition (if indeed there really was one) may not have been the wording, because teachers would have used different words to explain what it meant, but the concept itself. Intuition is perhaps inherently difficult to notice and, therefore, sometimes hard to evidence. As it is so intangible it is also harder to write about, even when noticed. It is, nevertheless, an important aspect of creativity that appears regularly in other analyses of the traits of creative individuals. Perhaps the difficulties of demonstrating it should not prevent its inclusion in an assessment framework.

Teachers at two schools both expressed a preference to focus on capturing evidence for only one-sub habit at a time.

Our approach to 'breadth' involved asking participating teachers to allow pupils to bring in evidence from other lessons as well as their own. Pupils indicated to us whether they had drawn upon a single subject only; a narrow range of subjects; a broad range; a broad range and out of school examples. The range of subject examples drawn from and the range which exists within subjects helped pupils to establish breadth.

At this stage in the development of the tool, pupils were not led by the research team or teachers to be systematic about collecting their evidence and only around a dozen mentioned out-of-school evidence. This was expected, given the arrangement whereby pupils did this work with only one teacher. The trial was to see whether pupils *could* refer to other subjects. A common theme in this regard was selectivity, with the most overtly 'creative' subjects being considered more readily by some.

Remembering contexts outside of pupils' immediate experience was a problem for a few pupils; for some even recalling what they had done earlier in the lesson in which they were reflecting was a challenge. Subject silos also kept, to some degree, pupils' minds confined to the subject in which they were working. This suggests that a method of capturing thoughts that works on the spot would be best. Note, however, that a teacher at one school believed that not overdoing the reporting was a good approach.

Field Trial 2 findings suggest that it would certainly be worth developing the tool because of the significant impact it had upon pupils' understanding of important learning concepts, upon their vocabulary, and upon teachers' professional practice.

To continue with this work, further development of the tool is needed. Most significantly: accompanying training materials are needed in order to maximise fully the benefits of tracking creativity in classes; and the tool should be more formatively useful. Teachers and pupils need detailed exemplars and clear guidance about how best to utilise the tool to ensure that evidence is always pointing pupils' development on an upward trajectory.

There are remaining issues of incentivisation. For example, how do we ensure the tool becomes part of the schools' data collection, reporting, and reward system? To what extent is this necessary? How could technology assist with this? Issues of moderation remain also. How do we ensure teachers and pupils share a common understanding of the key terms? How might we use moderation to develop some exemplar pieces of evidence?

For future development, however, we believe the tool's most useful direction is as a formative instrument for pupils and teachers to concentrate on action for the future, rather than as a record of past achievement.

4. Conclusion and next steps

'We need innovative practitioner research within the field of curriculum and assessment studies – research that will change assessment policy and creative learning practices within the classroom in different socio-cultural contexts.'
Pamela Burnard (2011:140-149)

The fact that, after recent years of considerable investment in promoting creativity in schools in England, there is no widely used assessment tool or framework has a number of possible explanations.

It could be that assessing creativity is just too difficult in schools. Or it might be a consequence of being in an education system already perceived as over-tested. Or the subject-dominated nature of schools may simply throw up too many logistical barriers. Or, we suspect, as was revealed in the anecdote we cited on page 6, teachers who are interested in creativity may remain wary about assessing it. Or there is no clear understanding and consensus about what creativity means in different contexts.

We started our research and development with three questions:

1. Is it possible to create an assessment instrument sufficiently comprehensive and sophisticated that teachers would find useful (the proof of concept)?

2. Would any framework be useable across the entire age span of formal education?

3. If a framework is to be useful to teachers and pupils, what approach to assessment should it adopt?

Here we give answers to these questions and offer some more finely grained reflections on what we found. Our full report can be found on CCE's website (Spencer *et al*. 2012b)[8].

1. It is possible to create an assessment instrument that teachers find useful and to this extent the concept is proved.

2. The framework seems most useable between the ages of 5 and 14. Post 14 the pressure of examinations and the pull of subjects seems too great. Pre 5 early years teachers already have excellent formative learning tools for use in a curriculum which is much more playful and into which the development of creativity already fits easily.

3. We are clear that the primary use of the tool is in enabling teachers to become more precise and confident in their teaching of creativity and as a formative tool to enable learners to record and better develop their creativity.

The teachers who trialled our tool found the underlying framework both rigorous *and* plausible. They liked the tool and could see how it could be useful in the classroom for formative assessment. On the basis of this small-scale study, there would seem to be an appetite for a tool like ours to help teachers focus more on creative mindedness and to help learners develop their own creativity more effectively. But we are only at the very beginning of a larger process.

The teachers we worked with clearly preferred an approach to assessment which was formative, not summative. We got the strong sense that there is little appetite for the creation of a complex summative matrix against which the creativity of pupils can be compared and cross-checked. This feeling came particularly strongly from feedback at our pre-trial work with teachers and headteachers which demonstrated their aversion to the notion of grading pupils in light of their creativity.

Thus far we have only tried the tool with teachers who declare an interest in creativity and only involved English schools. While the concept seems to be a useful one, the tool has only been used by teachers and pupils over very short periods of time. The assessment tool was a paper one rather than existing in online versions. Its design was simple and not specially tailored to the different ages of the pupils who used it.

We have found that the balance of simplicity and rigour in an assessment tool is key because teachers will only use a tool that obtains this balance. The use of five habits is sufficiently detailed without being too unwieldy, and the five habits we trialed were validated by practitioners and pupils.

In terms of what the assessment tool might look like in light of our findings we recommend the following approaches:

- Maintaining the emphasis upon the learnability of creativity. The steering group was strongly in support of our decision to emphasise this aspect, and also that of sociability.
- Incorporating the tool into the school's data collection, reporting, and reward systems.
- Developing training materials and resources for teachers to demonstrate best practice, making the assessment process more tangible for teachers. Materials might relate to:
    - communicating the purpose
    - linking evidence to the exemplar statement
    - demonstrating the level of detail required
    - preparing very young pupils
- Developing layout to separate back out the three sub-habits of each creativity habit.
- Use of a clear font; easily decipherable by the youngest pupils.
- Scrutinising language to ensure it is sufficiently clear, particularly for younger children and those with special needs, but also those less familiar with creativity or learning vocabulary. This may mean creating different versions of the tool for different age groups, although comments did not justify this as a definitive course of action.
- Developing best practice relating to how teachers might choose to focus on a small aspect of the tool at a time.
- Developing a more formative tool that prompts pupils and teachers to consider how they could improve, rather than just logging past behaviour. From a practical point of view, at present, the tool does not allow room for capturing progression adequately due to lack of space. Some pupils did date their notes, which showed progression to a small degree. Separation of the sub-habits would allow more focused notes on progression.
- Capturing 'breadth' more systematically in the tool, by establishing how it could be used in multiple contexts, and whether there would be any issues of ultimate ownership. This may involve exploring how schools best deal with the issue of coordination to ensure that assessments are undertaken systematically and collated in a useful format for both learners and teachers to use

formatively. For example, schools may need to assign a coordinator role to ensure that assessments are undertaken. This role may fall naturally to the 'assessment coordinator' at primary level.

- Developing a more systematic evidence collection process. Developing materials to tackle teachers' thinking about the opportunities they provide in the curriculum.

- Developing the tool for the virtual environment.

- Trialing the tool with the 'unconverted'. In light of the fact that participating schools were a self-selecting group of 'keen' practitioners, the tool is yet to be exposed to the 'unconverted'. Its introduction to a group of schools unfamiliar with assessment of creativity would further test its practicality and utility. Given its non-statutory status, however, it could be that it would be better to focus on those schools which actively want to explore creativity.

NOTES

[1] The word Guilford actually used was 'trait'. There are many near synonyms of which we are aware, each with slightly different nuances, including 'characteristic', 'quality, 'attribute', 'habits of mind' and 'disposition'. We have chosen largely to use the word 'disposition' throughout this paper except when 'trait' has already become widely associated with a line of thinking. We prefer to refer to creative 'dispositions' because of the unequivocal connection with the idea that such aspects of any individual can be cultivated and learned, becoming stronger and deeper conveyed by 'disposition'.

[2] 'Creative agents' is the term used to describe professionals from a range of disciplines funded to work in schools as part of CCE's Creative Partnerships scheme.

[3] This phenomenon can also be seen in other subjects notably mathematics where poor numeracy levels can be abusively seen as a proxy for being 'stupid'.

[4] In 1999, the National Advisory Committee on Creative and Cultural Education (NACCCE) produced a report to the UK Government: *All Our Futures: Creativity, Culture and Education*. The committee's inquiry coincided with the review of the National Curriculum in England and Wales, and, thus, made recommendations for this review. It also included recommendations for a wider national strategy for creative and cultural education. The NACCCE report was a response to the Government's 1997 White Paper, *Excellence in Schools*, and it highlighted an undervaluing of the arts, humanities, and technology. Our literature review (Spencer *et al.*, 2012) elaborates further on how the NACCCE report shaped the development of creativity within education in the United Kingdom.

[5] In 1999 the Nuffield Foundation funded a piece of research called the *King's-Medway-Oxfordshire Formative Assessment Project* (KMOFAP). As a result of the project, Assessment for Learning (AfL) has become central to education policy in England and Scotland. AfL is any assessment that prioritises pupil learning first and foremost.

[6] In England Key Stages of education sit within the National Curriculum framework of teaching. Key Stage 4 comprises school years 10-11, and children aged 11-14. Pupils are assessed at the end of KS4. This marks the end of compulsory education.

[7] Introduced as a performance measure in the 2010 performance tables, the EBacc is a measure of where pupils have attained a grade C or above in a core of academic subjects (English, maths, history or geography, the sciences and a language). It enables comparison of schools in terms of their provision for the key academic subjects that are preferred or required for entry to degree courses.

[8] www.creativityculturereducation.org/wp-content/uploads/Progression-in-Creativity-Final-Report-April-2012.pdf

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APPENDIX 1: FIELD TRIAL 2 – ASSESSMENT TOOL

Name:

Year group:

Being imaginative means:

...trying things out. It mean combining ideas from different places. It means being able to carry on even when you can't fully explain your reasoning.

Your evidence and notes (don't forget the date)...

Not at all like me	A little like me	Quite a bit like me	Very much like me

If this is 'very much like me' then:

I can show that I can keep my mind open to ideas and that I don't narrow down my ideas too quickly. I can show that I look for links between facts and ideas. I use my own intuitions to come up with ideas. I can do these things without being prompted. I am confident about doing these things.

APPENDIX 2: PUPIL QUESTIONNAIRE, FIELD TRIAL 2

(Question numbering cross-referenced to in-depth research questions)

Please enter the following information	
Today's date	/ / 2011
Your school's name	
Name of the teacher who introduced the pupil recording sheet to you	
Your full name (first name and surname)	

3. ***Thinking about the process of trying to track how imaginative you are, and how it might help you***				
3.3 Now that you've tried out the 'pupil recording sheet' are you <u>more aware</u> of when you are being imaginative? Please tell us why you chose that answer. Please type below and highlight one of the boxes to the right.	☐ It has <u>not</u> really made me more aware	☐ It has made me <u>more</u> aware	☐ I am more aware <u>and</u> I also think <u>more</u> about how I could be more imaginative	
3.5 How easy did you find the pupil recording sheet to use? Please type below and highlight one of the boxes to the right. If difficult, what was hard? Should we change any of the words? Which ones, and why?	☐ Very easy	☐ Easy	☐ Less easy	☐ Very difficult

5. Thinking about how easily you can track your 'imagination' and provide evidence					
5.4 Did you find it easy to decide on and gather 'evidence' to support the box you ticked on the recording sheet? What bits were difficult and why? Please type below and highlight one of the boxes to the right.	☐ Very easy	☐ Easy	☐ Ok	☐ Less easy	☐ Very hard

7. Thinking about how much attention you paid to the three aspects of 'imagination' in the exemplar statement (not narrowing ideas down too quickly, linking facts and ideas, using intuition)			
7.1 There were three parts to 'being imaginative' (see the box above). Please tick one of the boxes, <u>and</u> then write which area(s) you ignored and <u>why</u>. Please type below and highlight one of the boxes to the right.	☐ I tended to evidence <u>one</u> area only	☐ I tended to evidence <u>two</u> areas	☐ I tended to evidence <u>all three</u> elements of being imaginative

8. Thinking about the different places you got evidence from				
8.1 From which subject areas did you draw your evidence? Please tick one of the boxes, <u>and</u> then tell us which subject area(s) you considered and <u>why</u>. Please type below and highlight one of the boxes to the right.	☐ One subject only	☐ A narrow range of subjects	☐ A broad range of subjects	☐ Other subjects <u>and</u> out of school too

9. Thinking about the whole project – from hearing about it, to trying it out, to reflecting in class
For you, what were the two best things about this pupil reporting tool?
What were the two most difficult parts?
What two things have you learned about yourself?

APPENDIX 3: EXAMPLE TEACHER QUESTIONNAIRE, FIELD TRIAL 2

Supporting the Development of Creativity in Schools Assessing Creativity

Field Trial (2) Questionnaire for teacher participants

Dear teacher

Thank you for taking part in this field trial. Your views are really important to us, so:

- Everything you write in the questionnaire will be analyzed thoroughly to help us understand your experiences of the pupil reporting tool.
- Please be as detailed as you can. Text boxes expand as you type.
- Where there are multiple choice answers, please check the box and also add comments to explain.
- We should be grateful if you would complete this form electronically. This means it can then be analyzed without transcription. We can email a paper version (for printing) if necessary.

Please enter the following information	
Today's date	5/ 12 / 2011
Year group of the participating class	Year 8
Date that you first introduced the 'pupil recording sheet' to your class	18 / 11 / 2011
Number of subsequent reflection sessions you held with the same class	3

1. Thinking about your previous experience of tracking creativity in pupils	
1.1 How are you already assessing creativity in your school?	We use a criteria that moves from dependence to independence in Guy Claxton's 4 R's
1.2 In which contexts / subject areas are you assessing creativity in your school?	In the Evolve Curriculum (Year 7), in our days of learning: Perform, Create, Innovate, Communicate, Explore (Year 8)
1.3 How did this project sit within other assessment activities in your school?	It sat really well because we regularly discuss creativity and imagination
1.4 How did pupils understand 'imagination' before the project? (If given the opportunity to come up with their own definitions at the start) *If you have photographs of mind-maps, or similar, prepared by pupils when this project was started please send these to the project co-ordinator along with this questionnaire.*	I will send the mind-maps they created to you as evidence

2. Thinking about how you introduced the project to pupils	
2.1 How did you introduce the project to pupils (the idea of assessing creativity; the idea of learning to get better at noticing 'being imaginative')?	I did a workshop based around the question:" What is creativity?" And then" What does being imaginative mean?"
2.2 What went well, or less well	The students really engaged with the workshop, they seemed to

in introducing the project to pupils?	enjoy our 3 hour discussion around creativity and noticing when they were being imaginative
2.3 You were asked to hold 2-3 reflection sessions with pupils. How did you conduct the reflection sessions? What did you ask pupils to do? How did you ask them to interact with one another?	I asked the pupils to complete the evidence sheets and we discussed these experiences. I also had asked that they peer assess, noticing others imagination and telling them when they see evidence of it.
2.4 What activities or approaches to the reflection sessions did you find worked best / less well, and why?	They preferred to discuss rather than note experiences down

3. Thinking about how the process of trying to assess their own creativity might have affected pupils' behaviour				
3.1 How did pupils respond to the concept of tracking 'imagination' and how did this change (if it did)? Please highlight one of the options to the right and explain below:	Remained positive	Changed to negative	Changed to positive	Remained negative
3.2 How successfully do you believe you were able to guide pupils in tracking the development of their imagination, using this pupil recording sheet, over the duration of the project? Please explain why.	I feel we were quite successful, the students are very independent in this sample and they were able to track their development well, the record sheet was very user friendly.			
3.3 Did you notice a change in the way pupils talked about, and understood, 'being imaginative' as the project progressed? Please	They were able to notice each others imagination and feedback to them, this certainly didn't happen before.			

explain.	
3.4 How did pupils respond to the reflection sessions?	Really positively

4. Thinking about how the process of helping pupils to track their own creativity might have impacted your own practice				
4.1 Were other members of staff (non 'teacher participants') able to support the project? If so, please give details? Please highlight one of the options to the right and explain below:	They dropped examples of being imaginative into their lessons	They knew about the project and we talked about it	They knew but were not supportive	I do not know if they knew about the project
4.2 Now that you have helped pupils track their imagination, what things do you do or think differently and why?	Question them more regularly on when they have been imaginative, encourage them to be more imaginative.			

5. Thinking about how pupils were able to self-assess 'imagination' and provide enough evidence to support the box they ticked					
5.1 Pupils had to select the tick-box that showed how closely they 'fit' with the exemplar statement. Did you find it easy to 'sign off' this evidence? What was difficult? Please highlight one of the options to the right and explain below:	Very easy	Easy	Ok	Less easy	Very hard
5.2 Pupils were encouraged to provide evidence from areas outside of your subject area. Did you find it easy to 'sign off' this evidence? What was	Very easy	Easy	Ok	Less easy	Very hard

difficult? Please highlight one of the options to the right and explain below:					
5.3 Were some sorts of evidence more or less persuasive than others? Please give examples of evidence that was hard to sign off, and evidence that was easy to reach a consensus on with pupils. Please tell us why.	Creative writing was easier to sign off. Maths lessons were far harder				

6. Thinking about how much attention pupils paid to whole exemplar statement. It talked about using imagination 'without being prompted' and 'confidently'					
6.1 Did pupils seem to pay attention to each part of the exemplar statement when supporting their choice of tick-box with evidence, or did they provide evidence for some and ignore other aspects? Which bits were ignored? Please highlight one of the options to the right and explain below:	They tended not to refer to confidence and not needing prompting	They tended to evidence confidence OR not needing prompting	They tended to evidence both evidenced confidence AND not needing prompting		
6.2 Did pupils tend to provide enough evidence for their choice of tick box? Please highlight one of the options to the right and explain below:	Evidence was missing	Evidence was tenuous or ambiguous	Evidence was alright	Evidence was good	They really understood how to make the evidence clear and relevant

7. Thinking about how much attention pupils paid to the definition of 'imagination' with its three aspects (trying things out, combining ideas from different places, being able to carry on even when you can't fully explain your reasoning)			
7.1 Did pupils pay equal attention to all three aspects of being imaginative when they provided evidence? Please select from the right and explain below:	They tended to evidence one area only	They tended to evidence two areas	They tended to evidence all three elements of being imaginative

8. Thinking about the range of learning settings (including out of school contexts) that pupils drew on				
8.1 To what extent did pupils draw on a range of learning contexts, not just your own subject area? Please highlight one of the options to the right and explain below:	Your subject only	A narrow range of subjects	A broad range of subjects	Other subjects and out of school too

9. Thinking about the whole project – from hearing about it, to receiving the materials, to introducing it to pupils, to trying it out and re-visiting it with them
9.1 What three things worked well? 1. The new student record sheet 2. The emphasis on the students to gather evidence 3. The focus on just one element of the model
9.2 What were the three most difficult parts? a. Time b. c.

9.3 What three things have you learned? That students have a really good understanding of what good imagination looks like They are very observant noticing when each other use imagination That there aren't enough hours in the day to really dig deep into the impact of this field study

10. Your additional comments
Please tell us anything else you think might be useful to us.

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