

# Creative Teachers for Creative Learners – a literature review

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## ***Introduction***

The purpose of this review is to provide a theoretical framework for the Teacher Training Agency (TTA)-sponsored research and development project *Creative Teachers – Creative Learners*, jointly undertaken by education tutors at Bath Spa University College, Goldsmiths' University of London and Manchester Metropolitan University from 2003-5. The aim of this project are to develop primary trainees' understanding and pedagogy in relation to the following issues:

1. The nature of creativity and its potential throughout the primary curriculum
2. Children's creative development and how to support it
3. The pedagogy of creative teaching strategies
4. The values and practice underpinning 'creative' primary schools

The key research question for the project is as follows:

- How can Initial Teacher Education (ITT) support the development of primary trainees' understanding of – and teaching for -children's creativity?

The recent upsurge in UK government interest in educational creativity (DfES 2003, OfSTED 2003b) reflects concerns that the National Curriculum has been taught in a way that is unlikely to make the most of the creative potential of all children (NACCCE 1999, Craft *et al* 2001, Howe *et al* 2001). One potential outcome of this is that trainee teachers have fewer opportunities to observe creative practice, teach creatively themselves and come to understand the nature of children's creativity. Recent research commissioned by NESTA (2002) indicates that the UK education system is one of the main barriers to releasing creative potential in the economy, and that the training of teachers is a key inhibiting factor. This review will therefore examine literature related to the above four aims and underpin the involvement of ITT in promoting creativity.

## ***The nature of creativity and its potential throughout the primary curriculum***

Creativity is a slippery concept which many have endeavoured to define, and it is not our purpose here to exhaustively chart the plethora of such definitions from the psychological and educational literature. It has variously been described as 'imaginativeness or ingenuity manifested in any valued pursuit' (Elliot 1975: 139); a process leading to 'cultural production' (Sefton-Green and Sinker 2000), 'a function of intelligence' (Robinson, 2001), a 'state of mind' (Lucas in Craft *et al* 2001) or 'going beyond the conventional agreed' (Craft 2000). Craft, a significant writer on creativity within an educational context, stresses the importance of three factors - people, processes and domains, echoing earlier work by Gardner (1983). She defines a domain as "a body of organised knowledge about a specific topic" and uses the term *post-conventionality* to describe situations in which conventions are understood, but where the creative individual has chosen to go beyond them (though not so far as to move out of the domain concerned). Willings (1980: 25) identifies three kinds of 'creative thinking':

- Adaptive thinking ('the ability to relate what is observed to something to which it is not obviously relatable' – making links between apparently unconnected areas)

- Elaborative thinking ('researching, refining and often beautifying the ideas of some other thinker')
- Developmental thinking ('enables the individual to enlarge his (*sic*) concept of himself and the world around him')

Psychologists refer to creativity as one of the 'higher cognitive functions' (Gardner 1999). In the field of cognitive neuroscience, Pfenninger (2001) places creativity at the top of a cognitive hierarchy of brain functions, and draws the analogy between stereoscopic vision and the simultaneous processing and novel combination of seemingly unrelated information which he claims is central to creative thought (see figure 1 below).

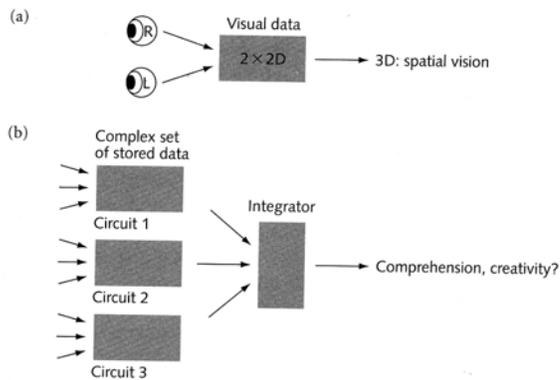


Figure 1: Pfenninger's (2001) comparison between the brain processes involved in seeing and generating creative ideas

The model above echoes Koestler's (1999) definition of creativity as 'the ability to make connections between previously unconnected ideas'. Dimasio (2001) identifies preconditions for such a process of integration as:

1. strong generation of representational diversity in the pre-frontal cortices
2. a working memory with a large capacity, able to operate on representations 'online'
3. the ability to recognise novel representations

Gardner (1999a) however warns us that brain science has a long way to go before it is able fully to model creativity. He relates his theory of multiple intelligences (1983) to different types of creativity:

"I suspect there is a connection between intellectual strength and mode of creativity. For example, those with an affinity for interpersonal intelligence are more likely to become influencers or performers. Those with strong logical-mathematical intelligence are more likely to become... theory builders." (Gardner 1999b: 124)

The neuroscientific literature, such as that above, has tended to focus on *exceptional* creativity exhibited by rare individuals whose ideas are recognised globally as original. However, in an educational context this could be regarded as an elitist model which ignores the personal originality accessible to all. "Is re-inventing the wheel creative? It is if you have never seen a wheel before" (Howe *et al* 2001). Craft (2000: 149) has coined the term '*little c creativity*' as more relevant to the primary classroom:

"I use the term '*little c creativity*' to encompass personal effectiveness, a life-wide resourcefulness which is effective in successfully enabling the individual to chart a course of action by seeing opportunities as well as overcoming obstacles. Implied in '*little c creativity*' is the notion that it is essentially a practical matter ... in that it is concerned with the skills involved in manoeuvring and operating with concepts, ideas and the physical and social world."

The emphasis upon production in this model is echoed in the oft-quoted definition from a highly influential report *All Our Futures* (NACCCE 1999): 'imaginative activity fashioned so as to produce outcomes that are both original and of value'. Originality here is a relative term, as

is the concept of 'value' which is both domain and context-specific (value in a primary classroom may be different from value in a design office). Csikszentmihalyi (1990) uses the term *gatekeepers* to denote those members of a 'creative' field that make judgements about work claiming to be of value. In educational contexts we consider it desirable for these judgements to be agreed upon through negotiation between the gatekeepers and those being judged – in school this will be teachers and perhaps, children's peers, making judgements about children's work based on shared values. Such a shared approach to creativity further challenges the brain-based model above; it is increasingly argued that creativity actually belongs in 'communities', residing in the 'spaces' between individual minds, rather than being sited entirely in the individual (Craft 2000: 149).

Dust [1999] summarises a body of literature that has break down the 'creative process' into stages or phases. She suggests that at least four such phases are commonly identified:

1. Preparation – investigating the problem and gathering of data (e.g. The long and detailed research undertaken by James Dyson before developing a novel approach to domestic vacuum cleaners)
2. Incubation – usually an unconscious/subconscious phase (e.g. Darwin's 25 year gap between data-gathering and publication)
3. Illumination/revelation – the insight, the moment of creation (e.g. Mendeleyev's insights in the periodic table of elements)
4. Verification/re-framing – the 'testing', usually through communicating the outcome to peers or 'gatekeepers' or 'field' of the domain (e.g. art critics would be co-gatekeepers or members of the 'field', fine art the domain)

National Grid for Learning (Scotland) (2003) identifies a similar set of phases - Stimulus, exploration, planning, activity, review - whilst acknowledging that they 'do not generally occur in a tidy linear path: they often overlap and the process can be entered and left at any stage'. Craft (2000) too describes a model with some of the same features, though choosing to represent it as a spiral (see figure 2 below) to represent the growth of the idea from its inception to production – 'creativity grows and multiplies' - and imply some degree of non-linearity.

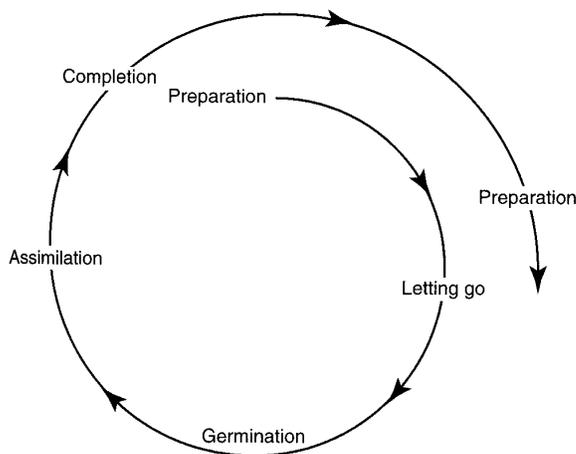


Figure 2: Craft's (2000) model of a creative process.

Craft (2000: 32-33) describes the phases of this process as follows:

First is 'preparation' – getting into an appropriate place for being creative. What this means is very personal. It can mean a physical space, also an emotional space, it can mean making time, or being with other people who stimulate or support or both.

Preparation can also mean reaching a point of frustration with an issue where one feels the need to make change happen... Then there is 'letting go'. In other words, a period of passivity, emptiness, lack of direction and loss, where the main activity is about letting go and surrendering control... Assimilation 'is the least visible, and is an internal stage, which requires time to take root... The last stage, completion, involves the bringing to fruition of the idea which involves the capacity to 'receive' as well as to 'create'

Csikszentmihalyi (1997, 2002) has coined the phrase 'in the flow' to describe the most productive and fulfilling phases of the creative process; a state he characterises by intense concentration, absorption, pleasure and lack of awareness of time passing. Through interviewing hundreds of people he points to a universal recognition of such a peak state, whilst acknowledging that it is seldom experienced in school settings! However, the similarity of models of creative process to those proposed for Design and Technology (e.g. Kimbell *et al* 1991) has been noted by Howe *et al* (2001) providing a strong rationale for the development of creative thinking skills through D&T. Other areas of the school curriculum not generally associated with creativity – such as mathematics, science and ICT – have been championed by Craft (2000) on this basis, together with the opportunities they provide for what she describes as 'conjecture thinking' – an open-minded, generative style of thought characterised by the question "What if...?" For example, in the case of science she suggests the following approach to investigative processes:

"Adopting an atmosphere of conjecture, and by valuing more than one possibility at any stage, whether it is deciding on a way of both testing a hypothesis and interpreting the results of a test, is a way of maintaining creativity throughout a scientific investigation."  
(Craft 2000: 81)

Similarly, she suggests that the use of 'possibility language' (again "What if...?") can be encouraged within mathematical investigations, enabling children to perceive new relationships and patterns in number and shape, provided that the starting point for such investigations is within the parameters of their conceptual knowledge. In the case of ICT, Craft considers the non-linearity of the way in which information can be presented and accessed (in web-sites and CD-ROMs for example) to offer greater scope for creative connections being made between such information by intuitive and divergent thinkers, together with the open-endedness of activities such as adventure games, simulations and control activities which offer children the possibility of becoming immersed in an imaginary world. Loveless (2002) identifies the following characteristics of ICT as contributing to the NACCCE (1999) framework for creativity:

- Provisionality
- Using imagination
- Interactivity
- A fashioning process
- Capacity
- Pursuing purpose
- Range
- Being original
- Speed
- Judging value
- Automatic Functions

Such arguments seem gradually to be influencing government thinking about the creative possibilities in all areas of the primary curriculum (e.g. DfEE 2003), replacing a narrower perspective associated primarily with 'the Arts' (e.g. NACCCE 1999).

### ***Children's creative development and how to support it***

Cropley (2001), drawing upon the work of Taylor (1975) links the development of children's creativity to their cognitive development, on a broadly Piagetian model:

“When thinking is based on simple, concrete information, creativity is limited to simple departures from the usual. Thinking based on abstract, complex properties, on the other hand, allows higher levels of generalization and abstraction...” (Cropley 2001: 90).

Rosenblatt and Winner (1988) distinguish three phases of children’s creativity: the preconventional phase (up to the age of about 6-8 years), the conventional phase (from age 6-8 to about 10-12) and the postconventional phase (from about 12 years of age and extending into adulthood. The assumption that postconventionality is inherently superior to preconventionality (since it involves awareness of constraints and the ability to transcend them) could be regarded as deriving from a deficit model of childhood – casual observation might lead one to a view children as more creative than adults. This appearance, argues Root-Bernstein (1991) may be due to the ‘novice effect’ – creative adults are often characterized by shifting fields or focuses of attention at regular intervals in their careers, avoiding ‘staleness’ by putting themselves in the role of novices. Most children are relative novices by comparison with adults – hence the frequent ‘freshness’ of their responses. At a neurological level this may correspond to greater plasticity and capacity for making connections between neurons in a child’s brain (Greenfield 2000) by comparison with a ‘creatively exhausted’ adults. Another study ( ) reported evidence of creativity in 97% of 4-year-olds but only 3% of those aged 30!

Concern with ways in which primary teachers could foster creativity in children surfaced significantly during the 1960s, with the recognition that the ‘white heat of technological revolution’ would require more flexible thinkers than had hitherto been the products of British schools. The highly influential Plowden report (1967) suggested that a child’s creativity was:

- benign;
- that it lay at the heart of all teaching and learning arrangements; and
- was primarily associated with play. (Craft 2003a)

Widely misunderstood as promoting a ‘laissez-faire’ attitude towards creative development, the ‘Plowden approach’ became increasingly vilified by politicians (e.g. Callaghan’s Ruskin College speech in 1976) and the popular press in the context of industrial decline during the ‘70s and ‘80s. This culminated in the Education Reform Act (1988) establishing a National Curriculum in which creativity was scarcely visible. The legacy of a decade (the 1990s) of teaching focusing upon basic skills and knowledge acquisition has been the gradual realization (NACCCE 1999, DfEE/QCA 1999, OfSTED 2003a, DfES 2003) that primary education is stifling the creative thinking processes required by citizens living through another, information-driven ‘technological revolution’. The ways in which children’s creativity is conceived by the current raft of legislation and guidance are, however, quite different from Plowden’s definition above. For example, the National Curriculum Handbook for Primary Teachers (DfEE/QCA 1999) describes creativity as a cross-curricular thinking skill, which by implication can be taught directly, rather than merely ‘fostered’ through the provision of a stimulating learning environment. This is not, however, to suggest that we are about to see the development of a national scheme of work or imposition of a ‘creativity hour’ (the newly published Primary Strategy – ‘Excellence and Enjoyment’ (DfES 2003) actually makes little reference to it). Government agencies, including OfSTED, have recognized that teaching for creativity cannot be so easily codified or reduced to a set of technical competencies, but are much more dependent upon context and relationships:

“...this report indicates (that) the creativity observed in children is not associated with a radical new pedagogy – though some teachers feel it might be, if only they can find what it is.. but a willingness to observe, listen and work closely with children to help them develop their ideas in a purposeful way. While the stimulus and structures which enable creativity to happen differ somewhat from subject to subject, this focused engagement with the individual pupil – even within a group situation – is common to all the creative work which HMI observed, and is of course common to all good teaching..’ (OfSTED 2003b: para 7)

This appears to leave the question of whether we can ‘teach’ creativity unanswered. Certainly, most of the writers in this area prefer the terms ‘foster’ or ‘support’ (e.g. Woods 1996 who suggests creativity is associated with less ‘heavy handed control’). This perhaps

reflects a narrow view of what it is to 'teach' – we have perhaps become used to a transmission pedagogy that neglects the wider role of the teacher. For example, Harrington [1990] brings the factors of process, people and physical environment together within a theoretical framework of the '*Creative Ecosystem*'. The components of Harrington's 'ecosystem' in which creativity may flourish are:

- An atmosphere or 'ambience' of creativity
- Stimulation
- Opportunities for 'play'
- Easy access to resources
- Mentors and role models
- Permission/support
- Motivation/Encouragement
- Information
- Open-ended assignments

Whilst we may wish to question what each of these conditions looks like in practice, this list reflects closely research into essential pre-cursors for 'high-level' creativity (Freeman 1998):

- Motivation & Encouragement
- Knowledge
- Opportunity
- Courage to be different
- Creative teaching style

By 'high-level' we may assume Freeman means 'post-conventional' (see above), towards which Craft (2000: 5) has made the following suggestions for a pedagogical approach:

- Teachers stimulating and encouraging non-conventionality, whilst also
- Encouraging children to understand the nature of conventions so that when they are being original in either their own or wider terms, they can identify this.

Another feature of teaching for creativity emerging from research appears to be the use of 'intrinsic' rewards and motivation – the activity is undertaken for its own sake – rather than 'extrinsic' incentives such as stickers or prizes (Hennessey and Amibile 1988). Davies (1999) emphasizes the need for safety in allowing children to make mistakes and take risks, whilst Boden (2001) acknowledges the importance of making links between knowledge domains in different curriculum areas to help children draw ideas together from different parts of their school experience. This is where 'direct teaching' seems to have the greatest role to play – National Grid for Learning (NGfL Scotland) (2003) urges teachers to go beyond the 'creative ecosystem' to a more directive role in children's capability:

"Although a creative climate and an encouraging adult are essential they are not enough to develop creativity. The teacher's role, beyond encouragement, involves intervening; actively teaching creative techniques and strategies." (NGFL Scotland 2003)

The tension between a skills-based approach to developing creativity (what Gardner (1999a) identifies as deriving from an Eastern, Confucian tradition with an emphasis upon 'mastery') and one that is more 'constructive' with an emphasis on process was highlighted in our own work with 11-year-olds and 'design-related professionals' (Davies and Howe 2003). Those with more skills-input produced outcomes of higher quality, though children who had been encouraged to reflect upon their own creativity and 'follow their own path' were less conventional. This reflects research by DATA/Nuffield (2003) who advocate an approach combining skills input with 'surprise' activities to stimulate unusual solutions.

Perhaps the most significant steps towards developing a pedagogy for creativity have been undertaken in the field of early years education, reflected in the inclusion of 'Creative Development' as one of six key learning areas in the *Curriculum Guidance for the Foundation Stage* (QCA/DfEE 2000). In Reggio Emilia, a city in Northern Italy, a model of early childhood education has developed which has attracted worldwide attention and admiration. Running through the practice of a network of pre-schools and infant-toddler centres in the city, serving the needs of children from three months to six years of age, is the concept of a 'rich' child:

...a child rich in potential and competence and closely connected to the adults and children around. The child is seen as autonomously capable of making meaning from experience, and it is the adult's role to activate this in the child. (Mortimer 2001: 27)

This leads to practice in which activities are built around individual children's interests, focusing on creative expression. The keys to this approach, according to Gardner (1999a) are that children's ideas and actions are taken seriously, that the surrounding culture is used as starting points and that:

"Children and teachers are continually reflecting on the meaning of an activity, which issues it raises, how its depths and range can be productively probed"

A contrast with this environmental and cultural approach may be found in the current movement within English primary schools of teaching thinking skills explicitly. Writers such as Alistair Smith ('Accelerated Learning') and Guy Claxton ('Building Learning Power') suggest a range of 'brain-based' classroom strategies claiming to originate from neurological research such as that outlined above. Although techniques such as 'six hats thinking' (de Bono), 'break state activities' (to refresh the brain periodically and make it more receptive), VAK (visual, auditory, kinaesthetic) learning (Smith 1999) and an emphasis on meta-cognition are not explicitly aimed at increasing children's creativity *per se*, they may contribute to the development of 'creative thinking' within the National Curriculum definition (DfEE 1999).

### ***The pedagogy of creative teaching strategies***

Whilst the literature (e.g. NACCCE 1999) makes a clear distinction between 'teaching for creativity' (associated with children's creative development) and 'teaching creatively' (associated with teacher attributes) it becomes clear that the two are closely related.

"Teaching for creativity involves teaching creatively...to put it another way, teachers cannot develop the creative abilities of their pupils if their own creative abilities are suppressed". (NACCCE 1999: 90)

Creative teaching is a high-risk strategy requiring self-confidence and an investment of time and energy (Yeomans 1996, Davies 1999). Creative teachers have been described as 'planning geniuses, innovators and experimenters' (Woods 1996). Halliwell (1993) assures us that creative teaching is not about being extraordinary, 'dazzling' or 'arty' but suggests that four qualities are required:

- A clear sense of need
- The ability to read the situation
- The willingness to take risks
- The ability to monitor and evaluate events.

*A sense of need* derives from knowing the learners' needs, knowledge of the curriculum and subject. *The ability to read the situation* is about 'knowing what to do next' once the need has been identified and is again related to the curriculum, pedagogic knowledge and understanding of how children learn. In considering *willingness to take risks*, Ashcroft and James (1999: 25), warn that:

"Professional creativity should not be taken as suggesting some sort of runaway experimentation with what we do together. Rather, it asserts that responsible experimentation and innovation, planned and monitored with the help of colleagues as well as relevant theoretical notions, are desirable activities. Furthermore, they are the proper concern of the professional teacher who wishes to keep the door open to improvement of their practice."

Keeping such risks within bounds may require an *ability to monitor and evaluate events*. Perhaps missing from this list is 'non-conformity', which several authors (e.g. Sternberg and Lubart 1995) have identified as one of the characteristics of 'creative' teachers, who may be 'resistant to socialisation'. Within the current 'culture of conformity' in primary education, there

is the danger that many such practitioners have been driven out, deterred from entering the profession or suppressed. Craft (2000: 3) acknowledges the frequently adverse conditions within which teachers seek to innovate, and points to the value of 'possibility thinking' (see above) in transcending limitations, whilst maintaining a realistic view of events in and surrounding the classroom. OfSTED (2003b) have urged teachers to see connections across the curriculum, yet many may feel unable to start thinking in this way because of the weight of curriculum legislation over recent years that has dictated increasing separation. Craft (2003b) identifies a number of constraints on teachers' creativity:

1. Limitations of terminology (lack of understanding or agreement about what 'creativity' means in an educational context)
2. Conflicts in policy and practice (the dissonance between what we espouse as educators and what we actually do in the classroom, identified by Schon (1983))
3. Limitations in curriculum organisation (a traditional subject-bound primary curriculum)
4. Limitations stemming from centrally controlled pedagogy (e.g. the orthodoxy of literacy and numeracy teaching in England).

There may also be numerous internal 'blocks' to teachers' creativity. Shallcross (1981) identified the following potential inhibitors:

- Assumed expectations of other people
- Failure to be aware of all available information
- Lack of effort
- Assumed or self-imposed boundaries or limitations
- Mind sets
- Rigidity or inflexibility
- Fear of failure
- Conformity
- Fear of ridicule
- Reliance on authority
- Routine
- Comfort
- Familiarity
- A need for things to be orderly all the time
- Superstition and acceptance of fate, heredity or one's station in life

Craft (2003b) recommends that teachers build a 'compost heap' of such negative factors and leave them behind, whilst acknowledging that this is very difficult to achieve in isolation, without the support of a like-minded group of professionals, preferably working within an institution with the appropriate culture and ethos – a 'creative school'

## ***The values and practice underpinning 'creative' primary schools***

To the sociologist Ivan Illich ('deschooling society' 1971) the idea of a creative school is a contradiction in terms – by their nature as rigidly controlled institutions schools must produce conformity and suppress individuality. However this extreme position has been challenged:

"To Illich creativity is latent in all human beings and will come to the fore if it is not suppressed by the institutionalisation of learning and values. There is remarkably little evidence for this supposition." (Willings 1980: 92)

So, taking Willings' view that schools can be creative places, what might a 'creative' primary school look like? We might reasonably expect that creativity would be manifested in the following aspects:

- The physical environment, both inside and outside
- The leadership and management of the school, leading to a 'creative ethos'

- The curriculum and its organisation
- Teaching styles and relationships between adults and children
- Learning outcomes for all concerned

Barnes (2003) suggests that the physical environment of the school is a primary source of inspiration for creative teachers and learners, since they are 'owned' by them, 'safe', 'multi-faceted' and 'concrete yet plastic'. Superficially, a bright, stimulating environment which prompts activity and enquiry, offering choice for the learner in the way in which they choose to interact with it is likely to provide several elements of Harrington's 'creative ecosystem' (see above). Our own research in this area (Davies and Howe 2003) has pointed to the ways in which environments can both directly stimulate creative ideas and provide the space and tools by which these ideas are further explored and realised. However, even seemingly (to adult eyes) 'barren' environments such as temporary mobile classrooms and bleak playgrounds can offer children considerable scope for creativity provided they are given a sense of ownership and permission to exercise their imagination. Barnes (2003) goes further to suggest that the physical environment of the school is also a repository for what Perkins (1992) calls 'distributed intelligence' (c.f. Craft's idea of creativity existing in the spaces between minds), where the 'community, technologies and potentially the environment itself is easily at hand to aid our thinking and understanding.' (p. 16).

Leadership appears from the literature to be crucial to the development of a 'creative school'. The National Standards for Headteachers (TTA 1998a) identify as a key aspect of headship, the requirement to 'provide inspiration and motivation' (p. 9). OfSTED (2003b) in their review of 'creative' primary schools point to the strong personal vision of headteachers who place creativity near the top of their agendas:

While in some cases a commitment to creativity was enshrined in a policy statement and a documented strategy, more often than not it was the personal advocacy and energy of the headteacher which drove the school in this direction. (para 51)

At other levels of management, deputy heads and subject leaders also have responsibilities to:

"Create a climate which enables other staff to develop and maintain positive attitudes towards the subject and confidence in teaching it" (TTA 1998b: 10)

The ways in which these leaders influence the creativity of their schools include developing the skills and expertise of every member of staff, helping them to see themselves as creative and creativity as an essential part of their role – not just 'another thing to be fitted in' (DfES 2003). However, they also look beyond the school to make best use of the resources of the local community and beyond:

Schools which promote creativity effectively are outward-looking, welcoming the perspectives that external agencies and individuals bring to them (OfSTED 2003: 5)

They try to free their staff from unnecessary bureaucracy and repetitive tasks, freeing their time and energy to innovate:

They did not usually copy out the learning objectives that were already published in their own or QCA schemes of work: they simply highlighted them. This had the advantage of reducing the teachers' planning load, freeing them to spend more time thinking creatively about their teaching and preparation. Reducing the amount of written planning was a priority for many of the headteachers. (OfSTED 2002: para 51)

Headteachers and other managers also have a crucial role to play in curriculum leadership. This includes helping staff to see creativity as transcending subject boundaries and innovating with the timetable to combine areas in new ways and 'free up' time for other activities (OfSTED 2002). This derives from a strong and shared belief in the value of creativity:

The headteachers and staff have a passion for a curriculum which is rich, demanding and develops the imagination of their pupils and the creative use of

media and materials. They share a belief that a curriculum with these qualities is the key to the growth of pupils' self-esteem and confidence and that this leads to higher standards. (OfSTED 2002: 34)

The rhetoric of 'standards' is still present in such 'official' guidance on and it is apparent from other government documentation that the timetable and statutory curriculum are not 'up for grabs' in the name of creativity:

The best primary schools have developed timetables and teaching plans that combine creativity with strong teaching in the basics. (DfES 2003: para 2.11)

The 'skills base' of pupils remains a priority in this model, indicating that there will be no return to the 'laissez-faire' emphasis upon 'creative expression' of the 1960s and 70s. This belief that creativity requires a structure to 'break out' from (rebel against?) is reflected in the new National Primary Strategy – *Excellence and Enjoyment* (DfES 2003), which builds upon existing statutory curriculum and strategies. The emphasis remains upon 'direct teaching' within the pedagogy of creativity being promoted. However, the relationship between adults and pupils – leading to the 'growth of pupils' self-esteem and confidence' referred to above – is also of paramount importance. Our research (Davies and Howe 2003) points towards an 'apprenticeship' or 'co-worker' relationship in which adults act as permission givers rather than teachers as conducive to the unlocking of children's creative potential. Since this research was conducted in an out-of-school context it is debatable whether it could realistically be maintained within the power structures and institutional constraints of a primary school. It is clear, nevertheless, from the literature cited earlier that the less hierarchical, more informal and 'playful' the relationship between teachers and pupils is, the more potential it offers for creativity. Such a relationship is clearly risky for some, particularly those working within challenging classroom environments, since it inevitable involves some 'loosening of control' over the situation.

Learning outcomes from a 'creative school' need to include the traditional skills and knowledge valued by government, parents and society, but the recognition in *both children and teachers* of their own creativity, how it works, what helps and hinders it (Davies and Howe 2003). Such 'creative metacognition' involves conceptual knowledge, cognitive skills but perhaps most crucially positive attitudes towards ourselves as creative individuals.

## ***Creativity in Teacher Education***

The most striking aspect of the literature on creativity in teacher education is its sheer scarcity. The words 'creative' and 'creativity' hardly appear in the last ten years' volumes of the major teacher education journals, nor is there a single book title bringing the terms together. This is despite claims that teacher training is one of the key factors inhibiting creativity in the workforce (NESTA 2002) and repeated recommendations that

"...We should also encourage individual TT institutions to develop initial training and CPD courses in creative teaching and learning" (Joubert in Craft et al 2001:33)

The lack of attention to creativity in teacher education is not a recent phenomenon. Demetrulias (1989) noted a lack of congruency between the universally accepted belief that creativity is an important characteristic of a teacher and its lack of development and/or nurturing in teacher education programmes. OfSTED (2003c) in their review of quality and standards in primary initial teacher training, make no mention of creativity whatsoever. It might well be expected that:

Prospective teachers who are trained in thinking and teaching creatively and in creative problem-solving will be better prepared to value and nurture the same creative characteristics in their classrooms. (Abdallah 1996: 52)

What might such training consist of? Pesut (1990) defines creativity as a self-regulatory metacognitive process. He believes that most creativity training programs are successful because they provide the participants with metacognitive experiences, knowledge, and strategies. A focus on understanding and nurturing one's own creativity would find resonances with the literature on creative schools and teachers cited above:

Teachers cannot develop the creative abilities of their pupils if their own creative abilities are suppressed...there are risks of de-skilling teachers and of encouraging conformity and passivity in some..." (NACCCE 1999)

"knowing and nourishing oneself as an educator in any domain is critical to being able to provide for others. This is because genuine relationship, with oneself and others, is at the heart of the process of creativity." (Craft 2000: 105)

Craft (2000) suggests a number of prerequisites for a course of training to provide the 'self knowing' referred to above:

- Emotional support
- Being part of a student network
- Getting feedback on their skills and general personal presentation away from but linked with their normal teaching and learning situation

OfSTED (2003) suggests that some features of contemporary teacher training in England may contribute towards the confidence in trainees to teach creatively by emphasising mastery of subject knowledge, freeing them to 'take risks' in the classroom:

For some teachers, there is unwillingness, perhaps based on shaky subject knowledge, to let pupils find their own solution to problems. (OfSTED 2003: 18)

However, secure subject knowledge on its own is clearly not enough to change trainees' attitudes towards themselves as creative individuals and their understanding of creativity in children and schools. What is needed is a more fundamental shift in attitude or self-belief – an approach which has come to be known as a 'conceptual change' model of teacher education (Smith and Neale 1989). This is based on the premise that:

"Prospective teachers...bring their implicit institutional biographies - the cumulative experience of school lives - which, in turn inform their knowledge of ...curriculum." Britzman (1986, p. 443)

This assertion finds support in much of the teacher education literature. John (1991) working with trainee teachers of mathematics, found that their experiences of the subject at school had a marked effect upon their attitudes towards it:

"The importance of their own particular past experiences in the creation of their early beliefs, was especially evident in the case of the mathematicians. Here their positive experiences as pupils heavily influenced their own vision of how they would plan and teach their subject." (p. 313).

Other studies have suggested that, for secondary trainees, a substantial part of their motivation has come from their enjoyment of the subject at school. The situation is slightly different for primary student teachers since they may well be required to teach subjects for which their learning experience was negative. This may lead them to regard certain subjects – such as mathematics – as devoid of creative potential. Attempts to 'restructure' such beliefs seem from the literature to be relatively unsuccessful (Haugustiane-Charlier 1997, Kennedy 1991), yet Tillema (1997), working within the conceptual change model, suggests that effective presentation of new information to trainee teachers (such as the creativity of mathematics) requires that the information fulfils three conditions:

- (1) the new information must offer a better explanation, that is, make things more understandable (intelligence),

(2) the new information must offer efficient solutions to problems and be consistent with knowledge in other domains (plausibility),

(3) the new information must be useful, promising and relevant, in the sense that it creates new possibilities (fruitfulness).

She suggests the following process for effecting desired conceptual change in teacher education programmes:

Stage one: attention to the beliefs of student teachers by diagnosing their experiences and conceptions.

The beliefs and perspectives student teachers have are not necessarily explicit in nature. If conceptual change is to be achieved these beliefs have to be made explicit; it must be revealed which beliefs are most cherished and how emotionally attached the student teacher is to these beliefs (that is, their position in the beliefs structure must be clarified). This can be accomplished through a number of strategies, for example, introducing a 'bad' example, using a realistic case, listening to a story or annotating notes from a log-book.

Stage two: evaluating the worth of new information (subject matter) in relation to one's beliefs.

The best way to decide whether new ideas are plausible, fruitful and intelligent is to experiment and inquire, to investigate. Creating opportunities for student teachers to get acquainted with new information, to try out new ideas (in a non-manipulative, non-threatening way), is a task to which teacher-education institutions are perfectly suited. This is sometimes characterized in terms of the attitude of the researcher, an attitude that favours discovery and inquiry. Strategies to accomplish this entail study activities such as comparing new information with the available knowledge, looking for applications and uses, testing the value of new information, making new lesson designs or materials...

Stage three: decision to change through representing for understanding

In this stage new information is perceived as fulfilling the conditions of intelligence, plausibility and fruitfulness. During this stage, the student teacher might experience or come to the conclusion that the newly presented information is (or is not) worth incorporating. It is up to the student teachers to make this decision and thus allow for reconstructions of their knowledge base. This can be supported by strategies such as giving an overview, challenging existing views and summarizing what has been done or collected so far.

Stage four: reconstruction and building up a revised knowledge structure

New information can stir up the existing knowledge structure, perhaps making it obsolete. Acceptance of new information in this stage is also a matter of attachment and feeling comfortable with the new information. An individual's search for a fit between new and old information, or else doing the integration by oneself, may be perceived as being hazardous or too drastic, and as a consequence be rejected. Co-operative discussion and embedding new information in a shared knowledge base is the last objective in the process of conceptual change, thereby making the accomplishments open and communicative.

Whilst not designed with the development of creative teachers for creative learners explicitly in mind, the above process could inform the development of the materials and approach to their use in our institutions as part of the research project.

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