

Creativity in a 21st Century Education¹

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Abstract

The 2006 UNESCO conference *Building Creative Competencies for the 21st Century* was international in its participants and global in its reach. The proclamation of the Director-General that '*Creativity is our hope*' captured the essence of the conference proceedings and the focus on creativity was seen as offering solutions to global problems (UNESCO, 2006: 5). Yet, according to Banaji (2008: 1), while creativity might be seen as a solution to all problems, it is '*neither understood properly nor given more than superficial significance*' in education. A further difficulty is the tendency to see creativity only through Western eyes. There is a need for consideration of other cultural views. Only by doing so might we gain insights that can inform educational practice in the 21st century global community. This paper will discuss some recent studies of creativity, reflecting the growing interest in it globally and comparing it with the established Western perspectives. A more comprehensive, international perspective might support a press for fostering creative thinking in schools and inform practices in our increasingly interconnected world. The training of teachers, however, needs to include an introduction to the diversity of views as well as the expectations of the local contexts.

Introduction

Azzam (2009: 22) suggests that creativity has been '*maligned, neglected, and misunderstood but is finally coming into its own*'. In her discussion with Sir Ken Robinson, chair of the UK government's report on creative and cultural education (NACCCE, 1999), he identifies creativity as *the crucial 21st century skill needed to solve pressing contemporary problems*.

Creativity is nothing new. At least 40,000 years ago, creative activity flourished as people, with the help of language, used the creative process in their art and technology, making it '*one of the most striking features of the human species*' (Carruthers, 2002: 226). The

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evolution of humans through the various ages of stone, bronze and iron to the modern technological digital age rests on creative thinking and problem solving. These are highly valued processes, largely for material reasons (Beghetto, 2007). At the personal level, creativity offers a kind of empowerment which may help people cope with and lead fulfilling lives and is personally satisfying (Shaw, 1989; Kind & Kind, 2007; Newton, 2014). Most of us can respond to needs with a degree of imagination and creativity (Boden, 2004).

Creativity is complex, vague and elusive, evading definition and categorisation (Burnard, 2006; Pedersen and Burton, 2009; Rowlands, 2011). Yet research has generated a plentiful supply of descriptions of creative thinking in different contexts. For example, Carruthers (2002: 226) suggested that, *'anyone who is imagining how things could be other than they are will be thinking creatively'*. Compton (2007) identifies six components as essential for creativity: enquiry, evaluation, ideation, imagination, innovation and problem solving. Lin (2010) notes the use of imagination, independent thinking and risk taking. However, Runco (2008: 96) argues persuasively that focusing on performance misleads us and suggests that educators should define creativity literally as, *'... thinking or problem solving that involves the construction of new meaning.'* For him, the construction of understanding is a creative process since understanding involves the construction of new ideas and explanations. A more consensual view is provided by NACCCE (1999: 29): creativity is *'... imaginative activity fashioned so as to produce outcomes that are original and of value.'*

The problem is that degree to which novelty or originality as opposed to usefulness or appropriateness is prioritised seems to vary between cultures. While novelty and appropriateness are looked for in solutions to problems, novelty is prioritised in the West, while appropriateness is particularly valued in the East (Morris and Leung, 2010). In Eastern contexts Lin (2011) discusses the emphasis on product-orientated creativity while Kimbell (2000) suggests that in the West the focus is on process-orientated creativity. This reminds us of the need to be open to other cultural perspectives when thinking about creativity and educational practice.

The Press for Creativity: Economic, Cultural and Personal Perspectives

Craft (2006) describes how in the 1990s there was increasing interest by policy makers worldwide that shifted creativity as a topic from the periphery to the core of debate. Numerous research studies, official reports, government publications and reviews of policies

and practices summarize thinking about creativity and promote it (e.g. NACCCE, 1999; Loveless *et al*, 2002; Ferrari *et al*, 2009). Creativity is now a concern in the political, social and educational agendas of many countries. For example, in Europe and North America ‘...identity, society and culture [require] new types of teaching and learning ... focused on fostering cultural identity, creativity and social cohesion’ (UNESCO 2006: 29; 39). In Asia and Pacific Rim countries, one of the challenges is the ‘...need for imagination, creativity and collaboration as societies become more knowledge-based’ (UNESCO, 2006: 13).

Economic and Cultural Perspectives

The start of the 21st century has seen the world population more than double in the previous 50 years, with no indication of the rate slowing down (Bandarin, 2011). Rapid advances in technologies have resulted in changes in how people work and in their values and aspirations. These changes generate problems which will need ‘every ounce of ingenuity, imagination and creativity’ (Robinson in Azzam, 2009: 22). Increasing pressures on limited world resources generate economic challenges and this has stimulated interest in creativity worldwide (Shaheen, 2010). The intellectual products of creativity are seen as a source of economic wealth and a panacea for financial ills (Banaji, 2011). The creative capacity of the workforce is now seen as critical for the economy of many countries who are all encouraging its development through education (e.g. Bell & Jayne, 2010 [UK]; Faggian *et al*, 2011 [USA]; Ho, 2009 [Singapore]; McWilliam and Haukka, 2008 [Australia]; Oral, 2006 [Turkey]; Phan *et al*, 2010 [China]). Burnard (2006: 313) describes how there has been:

‘... an unprecedented resurgence of activity in the field of creativity in education as an area of scholarship, as a key element of the shifting policy context, and official agenda in relation to efforts to improve our schools. The creativity agenda is recognized in many countries – not as a transient fad, but as having an explicit role in the economy.’

This instrumentalist view, with a political focus on the economy, is also stressed by Beghetto (2007: 1) who argued that creativity is ‘*the ultimate resource and an essential for addressing complex individual and societal issues.*’

Past studies of creativity was mainly Western in origin, particularly from the USA. More recently a wider perspective has been taken by researchers. The notion of creativity as being value-laden and culture specific has been discussed by a number of researchers (e.g. Craft, 2003; Chiu and Kwan, 2010; Erez and Nouri, 2010). Examining the effect of culture on

national innovation and prosperity in 63 different countries worldwide, Williams and McGuire (2010) note the significant influence of culture on economic creativity. Kharkhurin and Motelleebi (2005) compared the impact of culture on the creative potential of students from the USA, Russia and Iran. Using divergent thinking measures to make judgements, they found that while originality and innovation were valued as creative behaviours in the West, this was less the case in the East. They argue, however, that studies showing superior creative performance in Western students could be attributed to the differences in how the concept of creativity is perceived in East and West and the fact that the tests, developed in the West, are culturally biased in favour of Western values and beliefs. Recent work by Niu and Kaufman (2013) generate similar conclusions. They compared beliefs about creativity in Chinese and North American (US) cultures, describing these as the two most studied cultural groups in the field of creativity. They looked particularly at how creativity is conceived, evaluated and nurtured. From their findings they note the stereotypical view that Chinese cultures are less creative than American cultures but challenge this by arguing that the measurements and theories were developed in Western countries (mainly the USA) and are, therefore, culturally biased.

Fleith (2011) describes the press for creativity in South America (Brazil) as a socio-cultural and contextually embedded phenomenon, with the effects of cultural factors paralleling those manifested worldwide. In India, the potential of creativity to contribute to economic growth is increasingly recognised, although schools still favour rote learning (Singh & Singh, 2012). Yet, this is in a thriving culture of *jugaad*, the frugal, creative improvisation of solutions to practical problems (Singh, 2012). For example, Radjou *et al* (2012) describe an affordable refrigerator of fired clay, cooled by evaporating water, and invented for the poor living in hot climates. *Jugaad*'s six principles (find opportunities in difficult situations; do more with less; be flexible; keep things simple; include society's margins; use intuition) form a mind-set which has attracted attention elsewhere as an approach to the business of innovation (Bobel, 2102; Radjou *et al*, 2012). Nevertheless, some Indian politicians are ambivalent about *jugaad*, doubting that its creativity can have economic value (Sheikh, 2012). At the personal level, however, it offers self-reliance and has survival value and is finding favour in other parts of the world.

Social and Personal Perspectives

Collective and individual perspectives are important. Robinson (in Azzam, 2009) highlights the social dimension of creativity and the need for educationists to take this into account when addressing the challenges of the 21st century. Schools are social experiences. We all draw upon the inherited cultures into which we were born and social contexts in which we live. Some societies which value high levels of personal freedom see fostering creative thinking as a means of propagating their ideologies. This is of particular significance for educators where the focus is on the value of creativity in supporting and fostering the well-being of individuals through the development of their problem solving and other thinking skills, enriching their lives and engendering a capacity to cope, develop and grow in response to change in their own society.

Fostering Creativity: the Education Perspective

When thinking about creativity in classrooms, it is necessary to distinguish between teaching creatively and teaching for creativity (NACCCE Report, 1999). The former emphasises a teacher's ability to construct engaging lessons that interest and motivate the learners. While this is important, there is no guarantee that amongst the many positive outcomes of such lessons the students' creative thinking is in any way exercised. With teaching for creativity, the focus shifts to thinking about how to foster the learners' own creative thinking. Jeffrey and Craft (2004) suggest the term *creative learning* is more appropriate than *teaching for creativity*, since the former is wider than the latter, allowing for learning which necessarily employs creative thinking.

According to Walberg (1988), it is by developing students' creativity during their school years that the building blocks of creative capital are laid. Yet there seem to be problems in achieving this, with misconceptions associated with creativity that are widely held (Boden, 1994).

Creativity in all students

One problem relates to a popular view that creativity is the preserve of special people. Early research focused on the notion that only people with special abilities, gifts or talents could be creative and links between creativity and intelligence were sought. In the case of creative products that change the world this might be so, something which researchers like Gardner (1993) and Richards (1993) describe as 'big C' creativity which has historic or global consequences. However, everyone has the potential to be creative in the sense of creating

something new to themselves and solving the problems of everyday life (Boden, 2004; Runco, 2008; Newton, 2012b). This democratic, psychological or ‘little c’ creativity generates something new for the individual. The difference lies in originality being of value at the personal level as opposed to the historical level. When an individual constructs an understanding for the first time or develops new ways of approaching a problem, s/he is being creative, usually in the sense of ‘little c’ creativity. Runco (2008: 96) argues that:

Virtually every individual has the mental capacity to construct personal interpretations ... creativity is something we can find in every child, not just the gifted or highly intelligent.

Glăveanu (2011) addresses the question of whether young children can be creative from four different perspectives:

- Product: the outcomes of creativity (*e.g. paintings in art, inventions in technology*);
- Process: the internal and external processes used to create the product (*e.g. comprehension, exploration of ideas*);
- Person: the extent to which creativity is personal (*e.g. day dreaming, exploring ideas*);
- Press: social or cultural influences (*e.g. interaction with others, sharing ideas*).

She concludes that young students are active, interactive and creative individuals whose creativity can be fostered and emphasizes the importance of social contexts to stimulate goal - directed creative thinking.

Nor is there evidence of racial or gender differences in potential to be creative (Baer and Kaufman, 2008; Kaufman *et al*, 2010). However, as Bowkett (2007) points out, although most of us have this mental capacity to be creative, for many it is never realised. Often, this is because teachers have difficulty recognizing creativity and they miss classroom opportunities, what Chien and Hui (2010) call the unexpected micro-moments of creativity. A study by Kim (2008) in the USA showed that the worrying underachievement of gifted high school students was linked to their inherent yet unrecognised creativity, resulting in large numbers dropping out of school at an early stage.

More able learners are often identified by their ability to use higher level thinking skills, usually described in terms of Bloom’s (1956) higher levels: analysis, synthesis and evaluation, replaced by Anderson and Krathwohl (2001) with analyse, evaluate and create. But surely these kinds of thinking are not the preserve of gifted or more able students? All learners can be encouraged to do this. Teachers, therefore, need to provide opportunities for

all students to develop and use creative thinking (e.g. adapting ideas, suggesting alternatives, using analogies), problem solving (e.g. raising questions, searching for solutions, generating ideas) and critical thinking (e.g. weighing evidence, justifying choices, challenging assumptions).

The need to think about both cognitive and affective dimensions when fostering creativity was considered by Eckhoff and Urbach (2008). From their work with very young children, they discuss the effect of informal and formal learning environments on the children's creative thinking endeavours. They argue that while teachers are aware of the need to construct classroom environments and practices that reflect children's physical, intellectual, social and emotional development needs, they are less aware of how to consider these when nurturing and supporting students' creative thinking. The effect of moods and emotions on the creative process is an area that has tended to be neglected until relatively recently (Newton, D., 2013). Feeling moderately happy signals that a situation is free from threat and it is safe to take risks without a concern for unwelcome consequences, which broadens thinking (Fredrickson, 2004; Fredrickson & Branigan, 2005). Feeling anxious, however, can make the student cautious, curtail wide-ranging thought and inhibit idea generation. There is also the possibility of tensions during a task as the thinking needs move from idea generation to critical evaluation. Moods which foster one kind of thought are not always right for the other (Newton, D., 2014).

Creativity in all subjects of the curriculum

A second problem seems to be the tying of creativity and the arts. Historically, creativity is regularly discussed in the context of art, music and poetry and described by reference to them. The archetypical creative person is an artist or dramatist or musician. When UNESCO launched its Creative Cities Network in 2004 it categorised them under seven headings: Literature; Film and Cinema; Music; Crafts and Folk Art; Design; Media Arts; and, Gastronomy (Bandarin (2011). Just like the Creative Partnership initiative in the UK (Creative Partnerships, 2004) that encouraged artists (broadly defined) to collaborate with educational establishments to develop students' artistic creativity, the emphasis on the arts in such initiatives only serves to reinforce existing misconceptions that other knowledge domains do not involve or encourage creative thinking. Working in universities, McWilliams and Dawson (2008) point to the need to focus not only on the creative arts but also creativity

in the sciences and other disciplines, challenging the popular belief that creativity is only about the arts.

Creativity is polymorphic – its form depends on the discipline and context, although these forms have some common attributes. Boden (1994: 519) describes how '*Creativity surrounds us on all sides, from composers to chemists, cartoonists to choreographers.*' The NACCCE (1999: 76) report argues for a balance between science and technology and the arts and humanities, a proposal reiterated by Robinson (in Azzam, 2009). He describes creativity as a function of everything we do in schools, so fostering creativity is about the whole curriculum, not just part of it. Its attributes in different curricular areas have been explored (Newton, L., 2012). This leads to a further problem: the teacher has a vital role in fostering creativity in particular subject areas but if they are insecure in their own skills, knowledge and understanding of the subjects they teach and not clear about what counts as creative learning in that subject (Newton & Newton, 2009; 2010), they are likely to miss opportunities to promote creative thinking.

While teachers cannot order individuals to be creative, they can stimulate students' creative thinking. Fryer (1996) proposed that creative thinking skills could be taught by providing opportunities for learners to become problem solvers. Encouraging them to solve problems for themselves, rather than giving them the answers, fosters creative thought. Teachers, therefore, can provide an environment in which creativity can be encouraged, nurtured, supported and valued, an environment that encourages students to think differently, explore alternative possibilities, use imagination, experiment, problem solve, explain, be innovative, take risks, but at the same time feel secure. Such environments foster creativity, regardless of age, ability or subject.

Creativity in crisis?

Kimbell (2000) reviewed the literature on creativity in education from the 1960s to the 1990s and described how, at the start of the 21st century, creativity in the UK curriculum was in a state of deep crisis. Over a decade later, research indicates that little has changed. Political rhetoric and classroom reality are very different. Nor is the problem restricted to Western contexts. In Asia, Chien and Hui (2010), Hui and Yuen (2010) and Lin (2011) identify a lack of consistent rhetoric and practice in fostering creativity. It is a worldwide problem.

One reason relates to the pressure on teachers. Some education systems are dominated by a performance-oriented culture which, according to Craft (2010), generates real tensions and dilemmas for teachers. In England, teachers are constrained by government controlled curricula tied into centrally managed assessment mechanisms. Test results generate school league tables and inspection regimes lead to performance management and target setting. Nor are such pressures unique to teachers in England. Countries in Europe and further afield have prescribed curricula (e.g., France and New Zealand) and the USA has developed a core knowledge curriculum, encouraged in all states. A press to raise standards in literacy, more testing of students and making teachers more accountable to their managers (school boards and senior staff) and their customers (students and their parents) are consequences. Many teachers are unwilling to risk deviation from the expected since it is possible to meet expectations without exercising the students' creativity.

Troman *et al* (2007) found cultures with mechanisms and systems that require teachers to perform to expectations and hold them accountable for outcomes leads to them favouring approaches that support rote learning, memorisation and comprehension over those that foster creative and critical thinking and problem solving. Research by Besançon and Lubart (2008) in France noted teachers affected by pressures of the kind described above often feel compelled to resort to traditional, teaching methods and avoid the classroom contexts that encourage creative thinking and problem solving.

Comparing the UK and Australia, Burnard and White (2008) argue that there is real conflict between the demands of politicians and governments on teachers to perform and at the same time teach for creativity. Freedom and control generate insurmountable tensions and are antagonistic to the development of creative learning communities. Similar tensions and dilemmas were noted by Cheng (2010) in Asian contexts when trying to introduce creative thinking into the curriculum. They describe situations in which teachers were unsuccessful and give a variety of reasons such as lack of time, poor student performance, tightly controlled curricula and lack of resources. They also identify discrepancies between teachers fostering creativity and knowledge acquisition; creativity culture and Chinese culture; and, creativity reformers and traditionalists that must be addressed.

Teacher Perceptions of Students' Creativity

A starting point might be ensuring that all teachers, regardless of where they are in the world and what and who they teach, understand what counts as creativity in different contexts. Studies of pre-service and experienced teachers' conceptions of creativity have generally shown that they see fostering creativity as worthwhile. Nevertheless, worldwide teachers tend to see it as being associated more with the arts than the sciences. Trainee and experienced teachers lack confidence when thinking about creativity, confuse it with the reproduction of objects and ideas, have little confidence in their ability to assess it, and feel a need for training in fostering it (e.g. Kamylyis *et al*, 2009 [Greece]; Newton & Newton, 2009; 2010 [UK]; Chien and Hiu, 2010; Hui and Yuen, 2010 [China]). In Shanghai, Hong Kong and Taiwan, Chien and Hiu (2010) note that early years teachers, who they see as crucial in fostering creative development, highlighted the importance of what they describe as ecological factors: parenting style; financial status; curriculum approaches; teaching methods; innate abilities; and, experience. From their research with Chinese students in different countries, Hui and Yuen (2010) note that educators believe creativity is beneficial to learning and recognize it can be developed across various domains of knowledge, but they are challenged by how to foster it.

Some Principles into Practice

Lin (2011) argues that research has placed insufficient emphasis on the supportive ethos for nurturing creativity and suggests that this neglect contributes to difficulties in fostering creativity. If we want teachers to foster creativity routinely in their classrooms they will need not only to know what creativity means in different contexts but also how to foster it (Newton, L., 2012). Teachers need to stand back and create time and space according to Cremin *et al* (2006). By doing so, teachers give students the opportunity to daydream, play, imagine, experiment, take risks and problem solve. In addition, social interaction becomes a possible stimulant to creativity. In a study in Hong Kong, Cheng (2010) looked at how teachers of young children were attempting to incorporate creativity into their primary science classrooms. He found the approach mainly comprised playful learning activities and noted that this produced improvements in students' attitudes, behaviours and abilities, a better understanding of science concepts and more positive attitude towards learning science. However, other higher level attributes of creative thinking (such as meta-cognition, risk-taking, and innovative thinking) were still considered to be weak, perhaps reflecting cultural perceptions and values in some Eastern cultures.

In the USA, Maker *et al* (2008) describe the DISCOVER project, a cross-curricular approach which requires problem solving to support creativity. They provide problems with varying degrees of structure for learners in different school grades. Observing the pupils at work, they noted a number of characteristics of the lessons which seemed to encourage creative thinking and problems solving. Students:

- had freedom of choice;
- set their own goals and decided how to meet them;
- had opportunities for open discussion of possibilities;
- experienced the challenge of creating something;
- had the opportunity to work alone or with peers; and,
- helped to define expectations of the outcome.

Throughout, teachers supported the creative thinking processes with probing questions, encouraging justification and explanation. On completion of projects, presentations of the products were made in which students interacted with each other. Although working in elementary schools, DISCOVER is an approach that could be used with older students.

Contexts and tasks are important elements in thinking about creativity. Erez and Nouri (2010), working in Israel but reviewing research from around the world, focused on what they describe as the two dimensions of creativity (novelty and usefulness) and the nature of the tasks used (tight or loose) for generating creative thinking and concluded that context was the crucial component for success. Although his work was done in the context of design and technology, is possible to translate Kimbell's (2000) ideas about the processes underpinning creativity into any classroom context. Students are engaged in some creative task (whether self-generated or generated by the teacher), and need support from someone they value (the teacher). They are then supported by feedback from the teacher in a learning environment that has engendered trust so the learners feel confident and can take cognitive and emotional risks. Haddon & Lytton (1968), in a study of early years' children, discuss what they call school effect. They explored the effect of formal as opposed to informal contexts on convergent and divergent thinking (although, as noted by Runco (2008), divergent thinking is not the same as creative thinking). Informal contexts, with open tasks and freedom resulted in more divergent thinking. In the context of design work, Pedersen and Burton (2009) analyse the concept of creativity to determine its conceptual components. They put forward

the notion of creativity antecedents – what do students need to know, understand and be able to do before they can be asked to engage in a creative enterprise? They identify three elements: relevant prior knowledge, relevant prior experience, and a readiness for new ideas. They argue that:

Helping students learn to generate ideas is important, but equally important is preparing them to recognize ideas and use ideas from a variety of sources.

(Pedersen & Burton, 2009: 29)

At the very least, the features that emerge from such research include opportunities to play (encourage curiosity and risk taking) and use imagination (to generate ideas and possibility thinking), both in a positive and supportive context. However, societal and cultural norms and expectations may inhibit these activities.

Much of the work on creativity in schools has been in the context of early years and primary/elementary schools. Omenyi *et al* (2009) carried out a study of creativity in secondary schools in Nigeria where government perceptions of creativity as the driver for innovation and advancement in society sits behind a push for institutions at all levels to foster students' creative abilities. Their research shows that the secondary teachers, as in elementary schools, were finding this goal a challenge. Providing experiences in which students can use their imaginations, play with and develop ideas, and reflect on the processes and outcomes is necessary but not always easy.

Recognizing Creativity

Some deny that it is possible to assess creativity although Treffinger (2009) dismisses this as a myth. Others argue that assessing it threatens the exploratory and risk-taking nature of the creative process itself. However, teachers still need to recognize and evaluate their students' creativity in order to help them improve or, at least, make the most of their creative abilities. In some situations, teachers may also be required to make summative judgements of their students' work (Cowdroy & Williams, 2007).

Psychologists, seeking to identify general creative traits and tendencies have devised tests for this purpose (e.g. Torrance, 1966; Urban, 2004), often using divergent thinking. Runco (2008) points out that measures of divergent thinking are not measures of creativity, and tests of general creative traits, if they indicate anything at all (Pfiffer, 2012), have little to say about the variability of students' creativity in diverse classroom contexts (Silvia *et al*, 2008).

Nevertheless, some educators have attempted to adapt these to specific contexts (e.g. Haylock, 1987 [mathematics]) although their relevance in the classroom is not always clear. In the confusion, teachers feel a need for a simple and easy way to assess students' creativity (e.g. Hui & Yuen, 2010; Wu & Albanese, 2010). Generally, teachers are advised to consider what creativity means in particular contexts and judge how well students measure up to it, using diverse sources of evidence. For instance, a teacher might evaluate a student's product, performance or accomplishment, observe the processes which generated it, and ask the student to comment on the product and how he or she arrived at it (Newton, D., 2012a).

Largely due to Amabile (1983; 1996), this approach has the potential for wide application in the classroom where two or more teachers can collaborate in their judgments of students' work. The teachers' expertise, however, must extend over both the subject and the kinds of creative product typical for the students concerned (Newton, D., 2010). The approach rests on a shared, if implicit, understanding of creativity and of the aspects of it believed to be of particular value (Hunsaker & Callahan, 1995; Craft, 2002). In the absence of this, teachers' evaluations reflect the diversity of their conceptions (Eason et al., 2009). Furthermore, performance on one task alone may not provide conclusive evidence of a student's creative ability (Baer & McKool, 2009). Training which addresses such matters and highlights components of creativity, like, novelty and appropriateness (Besemer & O'Quin, 1987; Pfiffer, 2012), can improve a teacher's ability to recognize creativity in a particular subject (e.g. Newton, D., 2010).

Other sources of information are the students' own thoughts about their creativity endeavours (Silvia *et al*, 2011). Some more or less observable behaviour, or self-report of it, may also correlate with on-going, successful creative processes. For instance, a feeling of flow – an engrossed, productive engagement with a task, without self-consciousness – has been found to indicate engagement in productive thought and action (Csikszentmihalyi, 1996; Byrne et al, 2003). Such sources of information, however, seem more open to teachers of older or articulate students. The sum of such information, accumulated over time, can suggest a student's level of subject-specific creativity. Treffinger *et al* (2002: 49) recommend a scale ranging from creativity that is Not Yet Evident, through Emerging and Expressing, to Excelling. This can be applied to the components of creativity seen as important on a specific occasion and it recognizes the uncertainties of assessment. This is not to say, however, that such an approach guarantees agreement in assessment everywhere. For instance, Paletz and

Peng (2008) found that while novelty was valued equally in Japan and the USA, appropriateness seemed to be more highly valued in Japan. In addition, in the West, there is a culture of measurable outcomes exists in education systems, *'if you can't count it, it doesn't count'* (see Robinson, in Azzam, 2009: 23). This is likely to be at variance with such an approach.

Conclusion

This paper had three goals: first, to explore current literature that shows creativity being considered from different cultural perspectives; second, to compare the messages from this research with existing established views, many of which are Western in origin; and, finally, to consider the implications for fostering creativity in curricula of schools worldwide.

It is clear that there is widespread interest in fostering creativity in education. In particular, governments generally recognise the value of creative abilities for their economic potential. There is also a deeper and more systematic study of the way cultures express and value creativity (Niu & Kaufman, 2013). Importantly, the dominant notion of creativity can vary from culture to culture. While there is probably variety in notions of creativity in most cultures, governing notions vary and when they seem the same, what is valued in its elements may be different (Kimbell, 2000; Morris & Lueng, 2010; Lin, 2011).

With the internationalisation of economies and increased mobility of people, variations in views of creativity need to be recognised, both in businesses and, of particular relevance here, in education. In a highly interconnected 21st century world, viewing creativity only from one perspective, conceivably Eastern or Western, is not enough. Amongst others, teachers will need to allow for variety in notions of creativity and the value placed on them (UNESCO 2006). They will need to know what counts as creativity not only in their culture but also in the variety of cultures represented in their student population. They will be expected to prepare their students to be creative in the society in which they will grow and live but students also need an awareness of other perspectives and values.

With increased mobility of people and access to digital information, it seems likely that notions and values will change more quickly than before. Given widespread perceptions of the role of novelty in supporting economic growth, prevailing Western notions directed at this may spread, supported by attempts to foster Western ideologies because of the freedom and

independence associated with being creativity (Siegesmund,). When Western notions of creativity are supported in schools it has been found to increase motivation, improved self-esteem and enhanced achievement (QCA, 2004; Moore, 2008). While governments may see creativity as a means of achieving economic growth, the self-reliance and empowerment which creative skills may also bring could set up tensions which find their way into education and determine programmes of study. It cannot be routinely assumed, therefore, that the attendant benefits experienced in the West will always follow elsewhere.

More immediately, however, is the evidence from around the world which suggests that teachers need guidance on what counts as creativity and how to support and nurture the creative processes in their students. Cheng (2010) argues that teachers are caught in a causal loop in which system, culture, and individual barriers all inhibit the fostering of creativity. He argues that a top down model for introducing creativity into the curriculum does not work; what is needed is to start with training the teachers, both on pre-service and continuing professional development courses. Training needs to cover the nature of creativity and how it varies with context, that most students should practice and develop whatever creative abilities they have, and strategies which foster creative thinking processes and problem solving. How teachers are to acquire this knowledge and skill when training varies around the world from none to formally accredited courses is problematic. The provision of adequate training is an issue which will need to be addressed.

References

- Amabile, T.M. (1983). *The Social Psychology of Creativity*. New York: Springer-Verlag.
- Amabile, T.M. (1996). *Creativity in context*. Boulder: Westview.
- Anderson, L.W. and Krathwohl, D.R., Eds. (2001). *A Taxonomy for Learning, Teaching and Assessment*. New York: Longman.
- Azzam, A.M. (2009). Why Creativity Now? A Conversation with Sir Ken Robinson. *Educational Leadership*. 67(1), 22-26.
- Baer, J. & Kaufman, J.C. (2008). Gender Differences in Creativity. *Journal of Creative Behavior*. 42(2), 75-105.
- Baer, J., & McKool, S.S. (2009). Assessing Creativity Using the Consensual Assessment Technique. In C. Schreiner (Ed.). *Handbook of Research on Assessment Technologies, Methods, and Applications in Higher Education* (pp. 65-77). Hershey, PA: IGI Global.

- Banaji, S. (2008). Creativity: exploring the rhetorics and the realities. In R. Willet, M. Robinson & J. Marsh (Eds.). *Play, creativity and digital cultures*. Chapter 9. Routledge Research in Education. London: Routledge. Retrieved October 2013, from: <<http://eprints.lse.ac.uk/27362/>>
- Bandarin, F. (2011). The Creative Power of Cities. *City, Culture and Society*, 2, 121-122.
- Beghetto, R.A. (2007). Does creativity have a place in classroom discussions? Teachers' response preferences. *Thinking Skills and Creativity*, 2(1): 1–9.
- Bell, D. & Jayne, M. (2010). The Creative Countryside: Policy and practice in the UK rural cultural economy. *Journal of Rural Studies*, 26, 209-218.
- Besançon, M. & Lubart, T. (2008). Differences in the development of creative competencies of children schooled in diverse learning environments, *Learning and Individual Differences*, 18, 381-389.
- Besemer, S.P., and K. O'Quin. (1987). Creative product analysis. In S.G. Isaksen (Ed.). *Frontiers of creativity research* (pp. 341–57). Buffalo: Bearly.
- Bloom, B.S. (Ed.) (1956). *Taxonomy of Educational Objectives: the classification of educational goals. Handbook 1: Cognitive Domain*. New York: McKay.
- Bobel, I. (2012). Jugaad: A new innovation market. *Journal of Business and Financial Affairs*, 1(4), 1.
- Boden, M.A. (1994). Precis of the Creative Mind: Myths and mechanisms. *Brain and Behavioural Science*, 17, 519-531.
- Boden, M.A. (2004). *The Creative Mind - Myths and Mechanisms*. London: Routledge.
- Bowkett, S. (2007). *100+ Ideas for Teaching Creativity*. London: Continuum.
- Burnard, P. (2006). Editorial: Reflecting on the creativity agenda in education. *Cambridge Journal of Education*, 36(3), 313-318.
- Burnard, P. & White, J. (2008). Creativity and performativity: counterpoints in British and Australian education. *British Educational Research Journal*, 34(5), 667-682.
- Byrne, C., MacDonald, R. & Carlton, L. (2003). Assessing creativity in musical compositions: flow as an assessment tool. *British Journal of Music Education*, 20(3), 277—90.
- Carruthers, P. (2002). Human creativity. *British Journal of the Philosophy of Science*, 53, 225–249.
- Cheng, V.M.Y. (2010). Tensions and dilemmas of teachers in creativity reform in a Chinese context. *Thinking Skills and Creativity*, 5, 120-137.

- Chien, C-Y. & Hui, A. N-N. (2010). Creativity in early childhood education: Teachers' perceptions in three Chinese societies. *Thinking Skills and Creativity*. 5, 49-60.
- Chiu, C-Y. & Kwan, L. Y-Y. (2010). Culture and Creativity. *Management and Organization Review*, 6(3), 447-461.
- Clegg, P. (2008). Creativity and critical thinking in the global university. *Innovations in Education and Teaching International*. 45(3), 219-226.
- Compton, A. (2007). What does creativity mean in English education? *Education 3-13*, 35(2), May 2007, 109-116.
- Cowdroy, R. & Williams, A. (2007). Assessing creativity in the creative arts. *Art, Design & Communication in Higher Education*, 5(2), 97—117.
- Craft, A. (2002). *Creativity and Early Years Education*. London: Continuum.
- Craft, A. (2003). The limits to creativity in education. *British Journal of Educational Studies*, 51(2), 113-127.
- Craft, A. (2006). Fostering creativity with wisdom. *Cambridge Journal of Education*, 36, 337-350.
- Craft, A. (2010). Possibility Thinking and Wise Creativity: Educational Futures in England? In R.A. Beghetto and J.C. Kaufman, J.C. (Eds). *Nurturing Creativity in the Classroom* (pp. 289-312). Cambridge: Cambridge University Press.
- Creative Partnerships (2004). *Catalyst: this is how education should be, isn't it?* London: Creative Partnerships.
- Cremin, T., Burnard, P. & Craft, A. (2006). Pedagogy and possibility thinking in the early years. *International Journal of Thinking Skills and Creativity*. 1, 108-119.
- Csikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention*. New York: Harper Collins.
- Eason, R., Giannangelo, D.M. & Franceshini III, L.A. (2009). A look at creativity in public and private schools. *Thinking Skills and Creativity*. 4, 130-137.
- Eckhoff, A. & Urbach, J. (2008). Understanding Imaginative Thinking During Childhood. *Early Childhood Education Journal*. 36, 179-185.
- Erez, M. & Nouri, R. (2010). Creativity: The Influence of Cultural, Social, and Work Contexts. *Management and Organization Review*. 6(3), 351-370.
- Faggian, A., Partridge, M. & Malecki, E. (2011). Creating an environment for economic growth: creativity, entrepreneurship or human capital? Retrieved October 2013, from: <http://aede.osu.edu/sites/aede/files/publication_files/Creating%20an%20Environment.pdf>

- Ferrari, A., Cachia, R. & Punie, Y. (2009). *Creativity in Education and Training in EU Member States*. European Union: JRC technical notes.
- Fleith, D. (2011). Creativity in the Brazilian Culture. *Online Readings in Psychology and Culture*, 4(3). Retrieved October 2013, from:
<<http://dx.doi.org/10.9707/2307.0919.1037>>
- Fredrickson, B.L. (2004). The broaden-and-build theory of positive emotions. *Philosophical Transactions of the Royal Society: Biological Sciences*, 359, 1367–1377.
- Fredrickson, B.L. and Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition & Emotion*, 19(3), 313–332.
- Fryer, M. (1996). *Creative Teaching and Learning*. London: Paul Chapman Publishing Ltd.
- Gardner, H. (1993). *Creating Minds*. NY: Basic Books.
- Glăveanu, V.P. (2011). Children and creativity: A most (un)likely pair. *Thinking Skills and Creativity*. 6, 122-131.
- Haddon, F.A. & Lytton, H. (1968). Teaching Approaches and the Development of Divergent Thinking Abilities in Primary Schools. *British Journal of Educational Psychology*, 38, 171-180.
- Haylock, D.W. (1987). A framework for assessing mathematical creativity in schoolchildren. *Educational Studies in Mathematics*, 18, 59-74.
- Ho, K.C. (2009). The Neighbourhood in the Creative Economy: Policy, Practice and Place in Singapore. *Urban Studies*, 5&6, 1187-1201.
- Hui, A.N.N. & Yuen, C.M. (2010). The blossoming of creativity in education in Asia: Changing views and challenging practices. *Thinking Skills and Creativity*. 5, 155-158.
- Hunsaker, S.L. & Callahan, C.M. (1995). Creativity and giftedness: Published instruments uses and abuses, *Gifted Child Quarterly*, 39, 110-114.
- Jeffrey, B. & Craft, A. (2004). Teaching creatively and teaching for creativity: distinctions and relationships. *Educational Studies*. 30(1), 77-87.
- Kampylis, P., Berki, E. & Saarilouma, P. (2009). In-service and prospective teachers' conceptions of creativity. *Thinking Skills and Creativity*. 4, 15-29.
- Kaufman, J.C., Baer, J., Agars, M.D. & Loomis, D. (2010). Creativity Stereotypes and the Consensual Assessment Technique. *Creativity Research Journal*, 22(2), 200-205.
- Kim, K.H. (2008). Underachievement and Creativity: Are Gifted Underachievers Highly Creative? *Creativity Reserach Journal*. 20(2), 234-242.
- Kimbell, R. (2000). Creativity in Crisis. *The Journal of Design and Technology Education*. 5(3), 206-211.

- Kind, P.M. & Kind, V. (2007). Creativity in science education: Perspectives and challenges for developing school science. *Studies in Science Education*. 43, 1-37.
- Kharkhurin, A.V. & Motelleebi, S.N.S. (2005). The Impact of Culture on the Creative Potential of American, Russian, and Iranian College Students. *Creativity Research Journal*. 20(4), 404-411.
- Lin, Y-S. (2010). Drama and possibility thinking – Taiwanese pupils’ perspectives regarding creative pedagogy in drama. *Thinking Skills and Creativity*. 5, 108-119.
- Lin, Y-S. (2011). Fostering Creativity through Education – A Conceptual Framework of Creative Pedagogy. *Creative Education*, 2(3), 149-155.
- Loveless, A.M. (2002). *Literature Review in Creativity, New Technologies and Learning* (Futurelab Series Report 4). Retrieved October 2013, from:
<www.futurelab.org/research/lit_reviees.htm>
- Maker, C.J., Sonmi, J. and Muammar, O.M. (2008). Development of creativity. *Learning and Individual Differences*, 18, 402-17. [The DISCOVER Project (Discovering Intellectual Strengths and Capabilities while Observing Varied Ethnic Responses)].
- McLaren, R.B. (1999). Dark side of creativity. In M.A. Runco & S.R. Pritzer (Eds), *Encyclopedia of creativity*, 483-492, San Diego: Academic Press.
- McWilliam, E. & Dawson, S. (2008). Teaching for creativity: towards sustainable and replicable pedagogical practice. *Higher Education*, 56, 633-643.
- McWilliam, E. & Haukka, S. (2008). Educating the creative workforce: new directions for twenty-first century schooling. *British Educational Research Journal*, 34(5), 651-666.
- Moore, K. D. (2008). *Effective Instructional Strategies from Theory to Practice*. London: Sage Publications.
- Morris, M.W. & Lueng, K. (2010). Creativity East and West. *Management and Organization Review*, 6(3), 313-327.
- NACCCE [National Advisory Committee on Creative and Cultural Education] (1999). *All Our Futures: Creativity, culture and education*. London: DfEE.
- Newton, D.P. (2010). Assessing the creativity of scientific explanations in elementary science: an insider-outsider view of intuitive assessment in the hypothesis space. *Research in Science an Technological Education*, 28(3), 187-201.
- Newton, D.P. (2012a) Recognizing creativity, in L.D. Newton, *Creativity for a New Curriculum*, London, Fulton, pp. 108-119.
- Newton, D.P. (2012b, 2nd edition). *Teaching for Understanding*. London: Routledge.

- Newton, D.P. (2013). Moods, emotions and creative thinking. *Thinking Skills and Creativity*, 8, 34–44.
- Newton, D.P. (2014). *Thinking with Feeling: Fostering productive thought in the classroom*. London: Routledge.
- Newton, D. P. & Newton, L.D. (2009). Some student teachers' conceptions of creativity in school science. *Research in Science and Technological Education*, 27(1), 45-60.
- Newton, L.D., ed. (2012). *Creativity for a New Curriculum: 5-11*. London: Routledge/David Fulton.
- Newton, L.D. & Newton, D.P. (2010). What Teachers See as Creative Incidents in Elementary Science Lessons. *International Journal of Science Education*, 32(1), 1989-2005.
- Niu, W. & Kaufman, J.C. (2013). Creativity of Chinese and American Cultures. *Journal of Creative Behavior*. 47(1), 77-87.
- Omenyi, A.S., Ngozi, A. & Odimegwu, C.O. (2009). An Assessment of the Climate for Creativity in Secondary Schools in Akwa South Local Government Area. From the Selected Works of Prof. Ada Sam Omenyi. Retrieved October 2013, from: <http://bepress.com/professorada_omenyi/1>
- Oral, G. (2006). Creativity of Turkish prospective teachers. *Creativity Research Journal*. 18, 65-73.
- Paletz, S.B.F. & Peng, K. (2008). Implicit Theories about Creativity Across Cultures. *Journal of Cross-Cultural Psychology*, 39(3), 286-302.
- Pedersen, E.L. & Burton, K.L. (2009). A Concept Analysis of Creativity: Uses of Creativity in Selected Design Journals. *Journal of Interior Design*, 35(1), 15-32.
- Pfiffer, D. (2012). Can creativity be measured? *Thinking Skills and Creativity*, 7, 258-264.
- Phan, P., Zhou, J. & Abrahamson, E. (2010). Creativity, Innovation, and Entrepreneurship in China. *Management and Organization Review*, 6(2), 175-194.
- QCA [Qualifications and Curriculum Authority] (2004). *Creativity: Find it, promote it!* Sudbury: QCA Publications.
- Radjou, N., Prabhu, J. & Ahuja, S. (2012). *Jugaad Innovation*. New York: Jossey-Bass.
- Richards, R. (1993). Everyday creativity. *Psychological Inquiry*, 4(3), 212-217.
- Rowlands, S. (2011). Discussion Article: Disciplinary Boundaries for Creativity. *Creative Education*, 2(1), 47-55.
- Runco, M.A. (2008). Creativity and Education. *New Horizons in Education*. 56(1), 96-104.

- Shaheen, R. (2010). Creativity and Education. *Creative Education*, 1(3), 166-169.
- Shaw, M.P. (1989). The eureka process. *Creativity Research Journal*, 2, 286-298.
- Sheikh, F.A. (2012). Jugaad innovation. *African Journal of Science, Technology, Innovation and Development*, 4(4), 294-7.
- Siegemund, R. (1998). Why do we teach art today? *Studies in Art Education*, 39(3), 197-214.
- Silvia, P.J., Wigert, B., Reitner-Palmon, R. & Kaufman, J.C. (2011). Assessing creativity with self-report scales, *Psychology of Aesthetics, and the Arts*, Retrieved November 2013, from: <doi: 10.1037/a0024071>
- Silvia, P.J., Winterstein, B.P., Willse, J.T., Barona, C.M., Cram, J.T., Hess, K.I., Martinez, J.L. & Richard, C.A. (2008). Assessing creativity with divergent thinking tasks, *Psychology of Aesthetics, Creativity, and the Arts*, 2(2), 68—85.
- Singh, M. & Singh, V.J. (2012). Where there is jugaad, there is a way, *International Journal of Electronic Engineering*, 4(2), 187-9.
- Singh, R. (2012) *Jugaad* – From ‘Making Do’ and ‘Quick Fix’ to innovate, sustainable and low-cost survival at the bottom of the pyramid, *International Journal of Rural Management*, 8(1–2), 87—105.
- Torrance, E.P. (1966). *Torrance Tests of Creative Thinking*. New Jersey: Personnel Press.
- Treffinger, D.J. (2009). Myth 5: Creativity is too difficult to measure. *Gifted Child Quarterly*. Retrieved November 2013, from: <doi: 10.1177/0016986209346829>
- Treffinger, D.J., Young, G.C., Selby, E.C. & Shepardson, C. (2002). *Assessing Creativity: A guide for educators*. Storrs: University of Connecticut.
- Troman, G., Jeffrey, B. & Raggl, A. (2007). Creativity and performativity policies in primary school cultures. *Journal of Educational Policy*, 22(5), 549-572.
- UNESCO [United Nations Educational, Scientific and Cultural Organization] (2006). *World Conference on Arts Education “Building Creative Capacities for the 21st Century” Lisbon, Portugal, 6-9 March 2006 Working Document*. Lisbon: UNESCO.
- Urban, K.K. (2004). Assessing creativity. *Psychology Science*, 46(3), 387—97.
- Walberg, H. (1988). Creativity and talent as learning. In R. Sternberg (Ed.). *The nature of creativity: Contemporary psychological perspectives* (pp. 340-361). Cambridge: Cambridge University Press.
- Williams, L.K. & McGuire, S.J. (2010). Economic creativity and innovation implementation: Evidence from 63 countries. *Small Business and Economics*, 34, 391-412.
- Wu, J-J. & Albanese, D. (2010). Asian creativity, chapter one: Creativity across three Chinese societies. *Thinking Skills and Creativity*, 5, 150-154.

