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Bridging Theory and Practice

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Teaching Creatively

in Higher Education

Bridging Theory and Practice

Tatiana Chemi
Chunfang Zhou

Higher Education
Practices Series

*Teaching Creatively in Higher Education
Bridging Theory and Practice*

By Tatiana Chemi and Chunfang Zhou

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Teaching Creatively

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Series Preface

This publication about teaching creatively in higher education has been prepared for inclusion in the Higher Education Practices Series developed by the Higher Education Research Unit in the Department for Learning and Philosophy at Aalborg University. It is part our intention with this series, to produce timely syntheses of research on higher education topics of interna-

tional importance. This publication is based on a synthesis of research evidence on creativity in teaching and learning.

This synthesis, is intended to be a stimulating catalyst for systemic improvement and sustainable development in higher education. It is electronically available at aauforlag.dk/Shop/e-boeger/teaching-creatively-in-higher-education-bridg.aspx. To ensure that this material is

of relevance and use to other University teachers and researchers, each booklet in this series has been reviewed first internally by the members of the Higher Education Research Unit to provide feedback before being sent for external review. The authors of this publication are Associate Professor Tatiana Chemi, who has been involved in research projects relating to higher education teaching, involving creativity and art based teaching and Associate Professor Chunfang Zhou, who is expert in engineering and scientific creativity, learning environment design, technology innovation, and Problem-Based Learning.

In this series we are mindful that suggestions and guidelines for practice need to be responsive to educational settings and contexts. The booklet is therefore presented in a way that readers can consider the suggestions for their own practices and find suggestions for further reading.

Lone Krogh and Kathrin Otrell-Cass,
Series Editors

Fostering creative ideas

by:

- 1 keeping an open mind;
- 2 acknowledging ambiguity;
- 3 iterative idea incubation;
- 4 rewarding creativity;
- 5 leading by example;
- 6 learning to fail;
- 7 encouraging risk;
- 8 searching for multiple answers;
- 9 internal motivation;
- 10 ownership of learning.

Introduction

This booklet is a synthesis of relevant research in the field of creativity in higher education, with focus on creative teaching methods. The topic is addressed by means of literature review and research findings that describe a wide range of contexts and effects on student learning and development, together with teacher motivation and overall satisfaction. The role of creativity in learning, development and well-being is central to policy discourses all over the world (Sawyer, 2012) and at all levels of formal and informal education, as well as in work environments (Amabile, 1998, Amabile & Kramer, 2011). Even though higher education constantly encounters the need for renewal and creation in order to address the challenges of the future, research on the benefits of teaching creatively at higher education level still lacks systematic studies and findings that are able to demonstrate the contribution of creativity. This does not necessarily mean that higher education lacks creative tools, but that knowledge about the impact of creative approaches still needs specific studies. The challenges of such studies are many: the lack of agreement on definitional issues, methodological diversity, the issue of evaluating a complex phenomenon and the actual link between creativity and learning itself. Studies on creativity in educational settings cover principally primary and secondary school levels (Starko, 2010).

Creativity in adult education is mostly considered within the fields of organizational learn-

ing, management and leadership. This leaves a knowledge gap at higher educational level that only sporadically and recently has been seriously addressed (Craft, Hall & Costello, 2014, Peters & Besley, 2013). This booklet aims to address both this gap and the policy discourses extolling creativity. We distinguish teaching creatively from teaching for creativity. The former is the application of creative principles to educational design while the latter regards educational forms whose purpose is to stimulate student creativity. Creativity studies in the classroom have shown that these two educational perspectives are not necessarily consequential to each other (Starko, 2010). For both perspectives, the paradox of creativity in education is that, although creativity is acclaimed as the means for economic and psychological survival for the future, little attention is given to developing easily approachable information materials for educators. This is partly due to the obstacles that pedagogical innovations generally encounter in higher education when curricular and systemic changes are involved (Thompson & Purdy, 2009), but also to specific attitudes towards creativity. Does higher education value creativity to the extent of committing to experimental and potentially disruptive activities?

This booklet is primarily addressed to a target group of professional educators in higher education, regardless of their institutional tasks (lecturer, supervisor, workshop facilitator and so on) or teaching program (university colleges, teachers' colleges, undergraduate or graduate,

master). This is for those who are interested in teaching creatively and are looking for research-based evidence that can support their practices or hands-on experiments in the classroom. For those who need inspiration and knowledge on best practices, this booklet will provide a summary on research findings, real-life examples and models. Last but not least, further readings are suggested for each topic. The findings presented in this booklet have been selected through a thorough literature review from different countries with a wide scope of interests in the field of teaching creatively in higher education. Several educational fields are represented. The critical selection of the research contributions was aimed at elucidating the following:

1. An understanding of fundamental conceptualizations within creativity studies: definitions, history of concept, taxonomies
2. Knowledge about applications of creativity concepts and methods in higher educational teaching
3. An understanding of the implications of teaching creatively in higher education (students' and teachers' perspectives)
4. Knowledge about creative teaching methods, approaches and techniques in higher education
5. Awareness of advantages and disadvantages when teaching creatively in higher education
6. Awareness of policy rhetoric in higher education and creativity.

The booklet is structured in three main chapters addressing theoretical and conceptual topics, practice-oriented inspiration and information on policies. The concluding chapter addresses the barriers and opportunities of teaching creatively in higher education.

Suggested readings: Kleiman, 2008, Sawyer, 2012.

Theories on creativity*

Creativity has been defined differently in various contexts, as Kaufman and Sternberg (2010) point out in their discussion of definitional issues in creativity studies. While consensus is lacking, the various definitions fall into two distinctive semantic fields: novelty and appropriateness or usefulness (Feist, 2010, p. 114). The novelty of a creative product can either be defined against the background of its differentiation from other standards or models (being exceptional or original in a given context), or its innovation (bringing something new or novel in a given context). The appropriateness of a creative product can be assessed on standards of goodness, usefulness,

* The present chapter is an elaborated and revised version of various materials appeared in Chemi, T., Jensen, J. & Hersted, L. (2015). *Behind the Scenes of Artistic Creativity. Creating, Learning and Organising*. New York & Frankfurt am Main: Peter Lange and in Chemi, T. (2016). Distributed Problem-Solving: How Artists' Participatory Strategies Can Inspire Creativity in Higher Education. In Zhou, C. (Ed.). *Handbook of Research on Creative Problem-Solving Skill Development in Higher Education*. IGI Global Publishers.

adaptiveness, value, significance and relevance (Mayer, 1999, p. 450). Cropley and Cropley (2010) claim that the lack of any one of these elements would result in fundamental conceptual consequences: novelty without usefulness is nothing but “pseudo-creativity” and usefulness without novelty is nothing but an approximation of creativity, which they call “quasi-creativity” (Cropley & Cropley, 2010, p. 303). Another set of definitions of creativity gives special attention to quality - high quality being a characteristic of a creative product or person or process or environment, whether at Nobel prize or everyday life level, whether constituting an incremental or a radical change (Kaufman & Sternberg, 2010). A comprehensive review of several theoretical approaches to creativity can be retrieved in Kaufman and Sternberg (2010), in Sawyer (2012) and in Sternberg (1999).

More recent definitions of creativity include the cultural-historical and systemic, and the collaborative-distributed approaches. For the former, creativity cannot be defined without an awareness of cultural and historical conditions and values. Definitions of creativity vary across cultures and historical periods to such an extent that it would be impossible to ignore this diversity in any attempt at definition. Approaches that acknowledge system perspectives on creativity tend to be consensual and to look at creativity as the “interaction among *aptitude, process, and environment* by which an individual or group produces a *perceptible product* that is

both novel and useful as defined within a *social context*” (Plucker, Beghetto & Dow, 2004, p. 90). In other words, creativity is a social negotiation that occurs in given cultural spaces. Accepting the system perspective (Csikszentmihalyi, 1999) and the socio-cultural approach to creativity implies seeing it as consensual and negotiable. This means that there is no such phenomenon as creativity *per se*. Judgments about what and who is creative -and when and how this occurs- are socially negotiable on the basis of culturally shared understanding, knowledge and values. How individuals negotiate and share their understanding of creativity, managing to reach consensus on definitions about practices and concepts, has been investigated in several studies (Feldman, Csikszentmihalyi & Gardner, 1994). The second group of definitions - the most recent in creativity studies - emphasizes the collaborative (Sawyer, 2007) and distributed nature of creative processes (Glaveanu, 2014). According to Glaveanu (2014) “our cultural experience in the world is thus defined by interactions with other people and the use of tools and signs, regulating our actions. In this sense, the person never thinks or acts outside of this intricate and dynamic system of social, material and institutional relations that make up human society” (p. 21). Studies on distributed creativity explain exchanges of ideas, information or inspiration as occurring in synchronous (here and now) or asynchronous (far away in time and space) trajectories. In other words, creative individuals might not be onto-

logically or psychologically creative *per se*, but their negotiations and interactions with one another make them perform creatively.

If the definition of creativity is problematic, the history of the concept is not an easy matter either. The concept of creativity in Western cultures has undergone a long and troubled development. Etymologically, the word 'creativity' can be located in the Sanskrit root *kar-* to be found in the verb *kar-oti*, to do, to make, and the nouns *kar-tr*, creator, and *kri-ja*, action. The same semantic core is identified in the ancient Greek *kraino*, to create, to produce, to fulfill, and in the Latin *creare*, which means to create out of nothing, to generate, to produce or perform. Chemi, Jensen and Hersted (2015) look at the semantic descent of the word in the naming - referencing the root *kar-* - of ancient deities. Such gods and goddesses are powerful and central to the family of the gods and are always associated with meanings deriving from a sense of agency (doing, action) and of fulfillment. There is Cronus (Gr. *Kronos*), son of Uranus and Gaia (mother earth), who, in the Greek Olympus, was the father of Zeus, the father of the gods, or Ceres who in Latin mythology was the goddess of Harvest. Such gods are always involved in the practical generation, production or performance of "something". These are the gods who bridge chaos with creation and order or celebrate the marvel of human survival through the earth's fertile cycles.

Albeit strictly linked to ancient Western cultures and languages, the word 'creativity' did

not inspire any connotation of creation and practical making before Christian times. In English, the word *create* is traced back to Chaucer (1340?-1400), who used it in 1393 (Runco & Albert, 2010, p. 6) but its use at that time was not followed by any conceptual debate about creativity. Mostly, the ancient Western cultures shared a common disinterest in human creation, believed to be solely a side effect of the gods' will and deeds. Creativity as we usually define it today did not exist as a concept in pre-Christian cultures, where artists and poets (and also scientists and philosophers) were seen simply as conduits of divine inspiration and the concept of genius was strictly related to divine protection, or to a *daimon*, a guardian spirit (Runco & Albert, 2010).

Probably "the earliest Western conception of creativity was the Biblical story of creation given in *Genesis*, from which followed the idea of the artisan doing God's work on earth" (Runco & Albert, 2010, p. 5). Of course, in *Genesis* the metaphor of a single God creating the whole world from nothing is powerful and well attuned to the Western perception of creation, as opposed, for instance, to the Buddhist view of creation as generation out of something already existing, within an organic system of natural cycles. Early Christian understanding of artistic creation (and some later versions throughout the seventeenth, eighteenth and nineteenth centuries) was still that of mediation of God's voice and will. This approach lies behind a religious and moralistic

interpretation of artistic processes and performances and, in general, of creative deeds.

A first prominent use of the word 'creativity' in an actual reflection about the concept of creativity as we intend it today is to be found in Thomas Hobbes (1588-1679), who claims that creativity is a matter of imagination. Nevertheless, Hobbes' view on creativity was dark and gloomy, affected by his political determinism. In *Leviathan*, published for the first time in 1651, he defines creativity as the ability of producing mental images, independently from stimulation of the senses:

For after the object is removed, or the eye shut, we still retain an image of the thing seen, though more obscure than when we see it. And this is it the Latins call imagination, from the image made in seeing, and apply the same, though improperly, to all the other senses. But the Greeks call it fancy, which signifies appearance, and is as proper to one sense as to another. Imagination, therefore, is nothing but decaying sense; and is found in men and many other living creatures, as well sleeping as waking (Hobbes, 1914).

Clearly, Hobbes does not value creative imagination as a trustworthy means of understanding and enquiring, it being nothing but an imper-

fect sensory tool. In terms of available records, the eighteenth and nineteenth centuries are the most prolific for creativity studies, as shown in the analyses of Adam Smith (1723-1790), Thomas Malthus (1766-1834), Charles Darwin (1809-1882), William James (1842-1910) and Francis Galton (1822-1911). Smith recognized in economics the fundamental need for a science of human behavior, Malthus connected human behavior with socio-political actions, Darwin developed his evolution theory with focus on the role of adaptation in the survival of species, James foresaw the concept of divergent thinking in understanding "the rarity of ideational complexity" (Runco & Albert, 2010, p. 13) and Galton accomplished longitudinal studies on hereditary genius. This large corpus of contributions from these centuries tends to cluster into just a few research questions (Becker, 1995, p. 220) still debated today: What is creativity? Who has creativity? What are the characteristics of creative people? Who should benefit from creativity? Can creativity be increased through conscious effort?

Milestones for contemporary understanding of creativity and creativity research have been the IQ measurements of Binet and colleagues looking at the relationships between "factor g" (the general factor of psychometrics) and intelligence, Torrance's (1962) insights into the apprehension of creativity in education and Guilford's (1956) conceptual distinction between divergent and convergent thinking. The latter's Presidential Address for the American Psycho-

logical Association marks, for many researchers, the starting point of the contemporary scientific approach to creativity research (Plucker & Makel, 2010, p. 50).

By means of diverse methodologies and a large variety of approaches (economic, psychometric, evolutionary, systemic and so on), creativity studies have proposed several taxonomies. Modern and contemporary studies tend to focus on either one or a combination of several of the following areas, also called the creativity Four (or Six) P's: person, process, product, place (or press), and the more recent P's, persuasion and potentials. Some explanations and some examples of these follow.

Person: these studies look at the characteristics of the creative person, frequently assessed by psychometric measures. This is the area that has so far received most attention from researchers, mostly psychologists. A number of approaches to creativity emphasize talent and individual processes as the basis for the generation of creative output, and creativity as a fundamentally cognitive phenomenon. Guilford (1956) and Torrance (1962), for instance, come to the conclusion that individual talent is essential to creativity and understand creativity as a matter of intelligence. In other words, creativity is measured by means of intelligence and intelligence exclusively consists of logical and verbal reasoning. The talent-approach to creativity has essentially two ontological consequences for education: first of all, creativity is something individuals are born

with, a psychological trait that individuals do or do not "have"; secondly, creativity occurs at individual level. Boden (2004) addresses the novelty concept as fundamental for the definition of creativity and interprets it as a psychological trait, and therefore refers to such creativity as being "psychological" or P-creative. According to Boden (2004) individuals can formulate game-changing ideas that are new to themselves and to their personal life (P-creative), but persons can also have a strong impact on other individuals. In this case, the individual psychological dimension broadens out to historical changes (H-creative): the ones "that are new to the society in general", which can be the novelties "that have never existed before, and thus these are historical or H-creative" (Craft, Hall & Costello, 2014, p. 92).

Process: domain-specific studies often look at the characteristics and steps of the creative process. According to Guilford (1956), stages of the creative process may vary in definitions and number, but he conceptualizes the dialectic between divergent (open and original) and convergent (closed and selective), which seems to be fundamental to processual theories. Research on how creative individuals unfold their actions shows a number of different strategies and a few commonalities, such as the ability of finding problems, of testing several solutions, of persisting in spite of failures (Sawyer, 2012). In education, the fundamental distinction in this perspective is between teaching and learning creatively. According to Starko (2010) teaching

creatively does not necessarily transfer to students' learning outputs. The task of designing education in order to enhance students' creativity probably does not correlate with teachers' own creativity, even though creative educators can be inspiring role models. Processes of creative teaching and learning may follow separate (but related) trajectories.

Product: these studies, often deriving from cultural analysis, look at the characteristics and qualities of the creative product (Zhou, 2012). In the arts, this translates into the analysis and exegesis of artworks and the instrumental use of artworks as cultural documents. In education, methodologies and findings from this set of studies might be used as inspiration for the assessment of creativity, where the creative product is the visible artifact of the creative process.

Place (or press from pressures): these studies look at the characteristics of the environments that nurture creative persons or allow creative processes to occur. 'Place' indicates the psychological and physical environments that foster the flourishing of creative individuals, processes or products. Rather than a physical place, the concept of place/press designates mutual relationships and interactions between individuals or groups and milieu. Awareness of this aspect of creativity is quite recent and derives from the belief that "creativity tends to flourish when there are opportunities for exploration and independent work, and when originality is supported and valued" (Kozbelt, Beghetto & Runco 2010, p. 25).

When applied to education, this area of studies takes an unfortunate turn - it tends to interpret place as physical space, missing in this way the cutting-edge potential of the concept, with its potentially large impact on development and learning. Practices of creative educational design tend to emphasize shallow solutions not sustained by knowledge about creativity or end users. For instance, in order to design creative environments educators might simply furnish a room with large colorful pillows, instead of recognizing the potential of individual-environment connections and exploiting it fully. Davies et al. (2013) reviewed contributions that describe the core characteristics of creative learning environments. Even though not specific to higher education, we believe that their findings can inspire similar studies and hints as to the probable influence of environment in higher education learning. This broad review points to the "specific conditions that are most effective in promoting creative skills in children and young people. These include the physical environment, availability of resources/materials, use of the outdoor environment, pedagogical environment, use of other environments beyond the school, play based learning, effective and flexible use of time, and relationships between teachers and learners" (Davies et al., 2013, p. 88).

Persuasion: this concept has been brought to researchers' attention by Simonton (1990). It focuses on the influences that a creative person can exert in a domain, in order to change the domain

and society's view of a domain. This perspective assumes that creativity is associated with change and has a social impact. Therefore, creative people must be persuasive in order to change a domain and be recognized as groundbreaking. Traditionally, this research area draws data from historiometric studies, looking at exemplary cases of creative achievements. In education, any groundbreaking idea can be studied in this perspective. The concept of persuasion is also present in sociological (Bourdieu, 1993) and systemic (Csikszentmihalyi, 1999) approaches, where extraordinarily prominent individuals or groups can influence large groups' views on creativity.

Potential: according to Runco (2003) the area of creative potential endeavors to look at human potential, rather than at already exploited and fulfilled creative performance. This perspective has great possibilities especially in developmental and educational areas. More broadly, studies in this direction can lead to investigation of the sociological identity of learners in an ever-changing educational environment: when is someone to be defined as a learner or a teacher? What is relevant to the definition of creativity, the finished product (artifact, test scores) or the idea and potential for original creation?

Another kind of taxonomy defines creativity according to its magnitude. While the P's offer a taxonomy of the creative *locus* (where is creativity and who is doing what, how and where?), the C's of creativity answer the question: how

much creativity? This idea is already implicit in Runco's definition of potential (2003), as potentials can be exploited or can remain unexploited. However, the C's of creativity also contribute to the *locus* perspective, by moving our attention from a definitional issue (what is creativity?) to a systemic view: where is creativity? According to Csikszentmihalyi (1996), to raise the question about where creativity is means to theorize a systemic perspective that closely relates person, process, product and places, with the purpose of approaching creativity not only as a psychological but also as a socio-cultural phenomenon. According to this theory, creativity is a negotiation that happens amongst individuals in a given field who share the values and rules of a given domain.

Csikszentmihalyi (1996) distinguishes between Big C and little c creativity. For him, not all individual expressions of creativity can or should win a Nobel prize, as Big Creators do. Much of the creativity experienced by individuals is in fact happening in everyday life settings. Kaufman and Beghetto (2009) extended the two C's to a four C model, adding mini-c and Pro-c creativity. Finally, Simonton (2010, pp. 174- 175) suggested distinguishing Big C, the eminent expression of human creativity, from **Boldface-C**, the level of creativity perception that extends to the non-expert fields. Chemi, Jensen and Hersted (2015) suggested an extra level: the "skilled c" of creativity, which makes room for creativity from skilled amateurs or connoisseurs. This may

prove relevant in differentiating professional creative practice from the spare-time, passionate, but not identity-based version. The full six C taxonomy may be summarized as follows, going from what, in the literature, is understood as the biggest or most influential (top), to the smaller or less influential (bottom):

1. **Boldface-C**: at this level, creators and creative products are well known beyond the limits of a domain-specific knowledge and field association. In other words, a creator or a creative product is known and acknowledged broadly even in fields of non-experts. Examples could be Einstein and Pasteur, or in the arts Shakespeare and Mozart, creators that are familiar to a large number of people, across cultures and professional interests. Simonton (2010, p. 175) proposes a “Google test” in order to locate **Boldface** Creators: how many hits does he/she get?
2. **Big C**: both **Boldface-C** and Big C individuals can be defined as extraordinary creators that are also recognized as such. Simonton defines them as creative geniuses. They “become highly eminent because they have contributed at least one product that is widely viewed as a masterwork in an established domain of creative achievement” (Simonton 2010, p. 175). The difference between **Boldface-C** and Big C individuals is the magnitude of their being known in other domains than their own. An example might be Rus-

sian actor and theatre director Konstantin Stanislavski (1863-1938) whose acting and directing method has transformed the way we think of acting performances in Western cultures. Perhaps his name is renowned in domains close to cultural production and theatre, but it might not be well known in other domains. This does not change the huge impact that his system has had and still has, for instance, on acting styles such as those of De Niro, Pacino, Brando and many other Hollywood stars. But beyond the domain of acting, the Russian theatre-maker might not be known and credited as creative.

3. **Pro-c**: besides the extremely widely acknowledged **Boldface-C** creators and the widely recognized Big C individuals, there is a large group of creators who work professionally with creativity but are neither high-scorers in Google-hits nor Nobel prize winners. These individuals, though, are professionals in the domain of creativity. All professions that include the generation of novel products, processes or the design of novel environments that are valuable for someone, or that include the expression of creativity can be listed in this category. In addition to artists, who are daily expected to deliver new and meaningful quality creations, other examples might be scientists or engineers or business and IT developers and so on.
4. **Skilled c**: the definition skilled c is an oxymoron combining the levels of little “c” and

the concept of expertise (“skilled”). Chemi, Jensen and Hersted (2015) propose it in order to include the until-now ignored field of skilled amateurs or connoisseurs. This group of individuals tends to cultivate a specific interest that is not necessarily relevant to their profession or main work tasks, but they do it in a way that cannot confine them to the category of leisure amateurs, within the little c creativity. This field, very flourishing within the arts and design or in technology and engineering, comprises domain-specific connoisseurs with high skills and high sensitivity to the field of interest. An example of this might be the growing phenomenon of the Maker Movement: amateurs, who dismantle technological artifacts and rebuild them with other creative functions, combining them with other non-technological artifacts. From time to time, skilled c creators make their creations public, following their own field’s needs and domain’s procedures, and can rise to a professional level (see the many talent shows currently popular). In education, knowledge about this level of involvement can be fundamental for designing future learning environments that connect formal and informal learning opportunities.

5. **Little c:** the concept of everyday creativity emancipates the creativity discourse from any myth or assumption that creativity is – exclusively- a matter of high achievements and public recognition. In this perspective,

all individuals can be creative everywhere, in all situations and by all means. As liberating as the thought of everyday creativity might be, the creative praxis in everyday life can also be misunderstood. For instance, in educational environments the easy assumption can be that “everything is creative” or that creativity is equal to a simple making of “things”. Everyday creativity celebrates the human disposition towards originality, novelty and change in work and leisure activities. This level is less fixated than the previous three levels with the generation of creative products and includes processes in its assessment. Novelty in everyday life can arise from a new way of doing something, a new procedure or approach. In education, this can give educators the confidence for trying new approaches and experimenting with creativity in the classroom. One fundamental question to be answered is: if creativity is the novel and the appropriate, to whom should it be new to and to which context should it be appropriate?

6. **Mini-c:** the level of mini-c creativity has been variously defined as more subjective and personal, internal, mental or emotional (Kozbelt, Beghetto & Runco, 2010). This is the less tangible level of creativity and the one that still needs operationalization, according to Richards (2010). This personal creativity is self-referenced and is related to the individual’s potential. At this level, creativity is more

a handful of creative seeds than a completed end product or process. In educational environments these seeds are extremely valuable as the starting point for stimulating creativity in individuals.

Lastly, it should be pointed out that, during the twentieth century, few relevant conceptualizations emerged as particularly influential. Craft, Hall and Costello (2014) single out three of them: “the cognitive (concerned with modelling the nature of human creativity), the humanistic (concerned with human potential) and the psychometric (focussing on the measurement of human creativity)” (p. 92). The most recent studies on creativity concentrate on understanding the everyday creativity of people rather than on talent and genius, and on the collaborative, relational and distributed side of creative processes. Focus has thus been on the social and cultural context of creativity, together with the application of these studies to education. The interconnection of individual and groups, but also of cognition and emotions, has brought new insights to education. The implications of these studies are closer attention to topics of emotionality (Amabile, Barsade, Mueller & Staw, 2005), motivation (Amabile, 1996) and sensory expression, for instance, with a specific look at the arts (Chemi, Jensen & Hersted, 2015). Creativity in the classroom is increasingly studied (Starko, 2010) with, recently, attention to higher education (Craft, Hall & Costello, 2014, Cropley, 2001, Peters & Besley, 2013).

Suggested readings: Craft, Hall & Costello, 2014, Cropley, 1999, Kaufman & Sternberg, 2010, Peters & Besley, 2013.

Practices in higher education

Educational creativity is probably more a practice than a theory. Different approaches to this practice depend on and influence different educational strategies. Historically, its development has followed that of theories on teaching and learning. Psychology, cultural psychology and philosophy have supported educational developments, finding theoretical evidence for the consequences of creativity in the classroom.

In an earlier study, Ripple (1999) suggested that there are two fundamentally different models among strategies employed to improve creativity. One set of strategies aims to add something; the other, to subtract something. Both strategies are included in methods, techniques, materials, programs and procedures. The deficit model assumes that creative skills and abilities are not present in the individual’s behavioral repertoire. They must be learned through instruction and training. Efforts are made to directly teach cognitive abilities and processes. This involves identifying components of creative ability (e.g. fluency, flexibility, and originality in thinking), and then packaging techniques to improve these skills in instructional programs, exercises, and the like (Ripple, 1999). Related to the different techniques of creative thinking used in the classrooms, examples include brainstorming (Osborn, 1953),

the six thinking hats (de Bono, 1985) and the vast quantity of creativity consultancy offers on the market. These educational approaches answer to what Weisberg (1993) defines as a whole “creativity training industry” (p. 58) that promises to produce more creative workers and therefore more creative products and therefore more revenue. As Ripple (1999) emphasized, after using these instructional sequences, individuals will have abilities and skills they did not previously possess; abilities and skills will have been added. Of a similar tradition, but with different purposes and solutions, is design thinking, a set of practical tools borrowed from designers that made its way through educational and organizational practices in management and leadership (Ogilvie & Liedtka, 2011). Design thinking combines methods from the deficit and the barrier model. John Arnold and Robert McKim, who pioneered design thinking methods at Stanford University from the 1950s onwards, discuss in detail how to remove factors that block creativity (Katz & Maeda, 2015). This approach is still important in design thinking education (see, for instance, Roth, 2015).

The barrier model assumes that the potential for creativity is inherent in the individual’s behavioral arsenal. Procedures are targeted at sensitizing persons to their own creativity, and at removing barriers to the expression of their creative nature. More often than not, instructional procedures are aimed at elements in the affective domain (e.g., attitudes, interests, or motivation), attempting to

remove factors that might be blocking or inhibiting the expression of their creativity (Ripple, 1999). For example, Liu and Schoenwetter (2004) pointed out that obstacles to creativity include: fear of the unknown, fear of failure, reluctance to exert influence and frustration avoidance. Accordingly, solutions for removing those blocks in the classroom include teaching students efficient means of information gathering skills to clarify a situation, providing students with opportunities of failure with the intent of using these opportunities as teachable moments, incorporating stories of inventors with persistent belief in their innovations and telling stories about great inventors, such as Edison, who survived thousands of failed experiments. Sadly, education and organizations have too often exclusively focused on creative problem solving, interpreting creative education as simply training in these techniques (Weisberg, 1993) and in the idea-generation stage. In this rush to acquire the easy tools for creativity, complex approaches such as design thinking (Liedtka, King & Bennett, 2013) can be reduced to means of quick fixes. However, creativity studies suggest that creative processes are more diverse than the individual’s logical-rational view on creativity can explain. Moreover, focusing exclusively on problem solving and idea generation might not be the appropriate answer for the higher education of the future.

Recent research shows that, surprisingly, professional creators like artists practically ignore the stage of idea-generation that seems so es-

essential to the problem-solving industry (Chemi, 2016). According to Sefton-Green (2008) “creative thinking basically consists of ways to improve thinking or cognitive skills often through exercises and drills. These cognitive capacities are broken down into discrete elements, memory, cognitive processing, logic, intuition, problem solving, brainstorming and so on” (p. 23). In this sense, Gero (1996) suggested that creativity involves the production of an unexpected result through the confluence of two schemas. The first schema provides a set of routine expectations; the second schema is needed to understand the unexpected result. Gero’s idea is also related to the concept of “emergence of creativity” discussed by Sawyer (2004). In the case of creative design, Gero (1996) described how emergence allows for the introduction of new behaviors and new functions and is the equivalent of designers refocusing their attention and/or reinterpreting the results of their actions so far. In the light of this, a more integrated approach towards designing an imaginative curriculum for creativity development in higher education has been outlined (Jackson, Oliver, Shaw & Wisdom, 2005). It searches for an appropriate pedagogy that enables higher education to prepare students for learning that is complex and it associates creativity with extended abstract-thinking skills like hypothesizing, synthesizing, reflecting, generating ideas, applying known to “far” domains and working with problems that do not have unique solutions (Jackson & Sinclair, 2005).

So teaching for creativity should focus on a systematic view of creativity that involves interactions between Four (or Six) P’s (Zhou, 2012) and on constructing teaching and learning environments that facilitate the development and expression of creativity (Zhou, 2014). For example, a three-element framework of creative pedagogy proposed by Lin (2011) offers a more holistic view of enhancing creativity through interplay between creative teaching, teaching for creativity, and creative learning. Similarly, Tanggaard (2014) proposed a situated model of creative learning that is based on three key concepts: 1) immersion in the topic of interest, in traditions and in the subject matter, 2) experimentation and inquiry learning and 3) resistance from the material of interests. There are also discussions on a series of factors influencing students’ creativity (Liu & Schoenwetter, 2004). A typical discussion on those factors is found in Kazerounian and Foley (2007). They propose a list of ten factors called the Maxims of Creativity in Education, which constitute an educational environment conducive to fostering creative ideas: 1) keep an open mind; 2) ambiguity is good; 3) iterative process that includes idea incubation; 4) reward for creativity; 5) lead by example; 6) learning to fail; 7) encouraging risk; 8) search for multiple answers; 9) internal motivation; and 10) ownership of learning. Cropley (1999) discusses various learning methods that can be applied in the classroom in all disciplines and at all age levels and that fo-

cus not only on thinking skills but also on motivation, attitudes and personal characteristics. These methods include:

1. **Discovery learning.** Working alone or in small groups, students examine contents to discover hidden or unexpected connections or structures, either physically or, more usually, in the form of recurring regularities, categories, rules, or irregularities, problems and the like.
2. **Play learning.** Play is free of constraints of the strictly logical. Risks can be taken without fear of real-life consequences, rules can be broken, the impossible can be tried out and fantasy can be given free rein.
3. **Learning via problem solving.** A gap, difficulty, or open question is the starting point for the learning. The problem has to be defined, relevant information collected and solutions suggested. The suggestions can be developed in a play-like atmosphere with the advantages listed above, or they may be required to be strictly reality-oriented.
4. **Learning via structural analysis.** A given situation has to be broken down into its constituent elements (in some ways the opposite of discovery learning) and the rules or principles of its structure identified. Suggestions, including fanciful ones, can then be made for ways of changing elements or their connections with each other.

McWilliam and Dawson (2008) discussed the shift of teaching for creativity towards sustainable and replicable pedagogical practice. They explored the pedagogical significance of recent shifts in scholarly attention away from first generation and towards second-generation understandings of creativity. First generation or big “C” creativity locates the creative enterprise as a complex set of behaviors and ideas exhibited by an individual, while second generation or small “c” creativity locates the creative enterprise in the processes and products of collaborative and purposeful activity. Second generation creativity is gaining importance for a number of reasons: its acknowledged significance as a driver in the new or digital economy; recent clarification of the notion of creative capital; the stated commitment of a growing number of universities to “more creativity” as part of their declared vision for their staff and students; and the recognition that the creative arts do not have a monopoly on creative capability. Thus, the following set of principles for sustaining a replicable pedagogical environment for creative learning outcomes has been compiled (McWilliam & Dawson, 2008):

1. **Connectivity with diversity** – an environment in which it is important for students to be “plugged into” and mindful of a “local neighborhood” and of a larger world containing potential team members with simi-

lar interests or passions – one that allows members to pursue their passions and to contribute to fast-moving flows of information, on behalf of others and themselves.

2. **Co-invention/co-creation with separation** – an environment in which the nature, purpose and rules of self-management are understood and internalized, so that members can be both separate from, and attentive to, those they work with and rely on for their “high flying” outcomes. The products of learning are authentic productions of the synergies that exist between the individual member and the team, not merely what is “required” by external others.
3. **Leading and following** – an environment in which all team members share collective responsibility for timely and appropriate leadership, looking beyond the horizon for relevant information to share with others, while at the same time following the “steering” of those close by, i.e. exercising “three-dimensional” attention towards the local and the global, the present and the future.
4. **“Enhancing” constraints and removal of inhibitors** – an environment that minimizes command and control, while providing scaffolded opportunities for members to conduct themselves in ways that optimize team (and thereby their own) performance – one in which there are “good constraints to action”.

5. **Explaining less and welcoming error** – an environment in which “command and control” instruction is sparingly used and it is anticipated that all members will make mistakes – the aim is to learn from the instructive complications of error not attempt to disguise it.

Besides diverse models, approaches and methods of developing creativity, some study programs also have been established in practice. For example, Drexel University’s College of Education offers the online Creativity and Innovation Masters and Ed.D. programs (<http://drexel.edu/soe/academics/graduate/creativity-and-innovation>). At State University of New York (SUNY), the International Center for Studies in Creativity (<http://creativity.buffalostate.edu>) offers four distinct academic programs in creativity: an undergraduate Minor in Creativity Studies, an undergraduate Minor in Leadership, a SUNY Certificate in Creativity and Change Leadership, and a Master of Science in Creative Studies.

Suggested readings: Starko, 2010.

Policy support for creativity

We wish now to shift our focus to the macro-level of policies that attempt to embrace and regulate issues of creativity in higher education strategies. The importance of developing a more creative workforce is a familiar catch-cry in pub-

lic and social policy and is evidenced in a growing body of scholarship about creative work in digitally enhanced environments (Hartley, 2004). It is also a theme of post-millennial research about the future of employment (ACER, 2005). In broad terms, the message is that many of our current undergraduate students will be working in digitally enhanced environments where there will be few transportable templates for project design and implementation. University graduates, as potential future “creatives” (Pink 2005), will be performing work that is less focused on routine problem-solving and more focused on creative outcomes that involve new social relationships, novel challenges and the synthesizing of “big picture” scenarios (McWilliam, 2007). The inclusion of creativity in educational policy documents is evidence of the fact that the focus on creativity is not merely a matter of paying “lip service” to the concept, but rather, that action is being taken (Shaheen, 2010).

In spring 2008, the European Council stated that European citizens’ potential for creativity and innovation was essential for future growth. In its conclusions, the Council asked Member States and the Commission to develop evidence-based education policy relating to creative and innovative skills; to support research into the promotion of those skills; and to foster creativity and innovation at all levels of education. In addition, the European Parliament gave its support, in September 2008, to the Commission proposal to designate 2009 as the “Euro-

pean Year of Creativity and Innovation” (Ferrari, Cachia & Punie, 2009). This European Year aimed to raise public awareness, spread information and promote public debate on creativity and the capacity for innovation. It also aimed to stimulate research into how to develop creative and innovative attitudes and entrepreneurship for personal and professional development. The Council of Europe emphasizes the importance of creativity, knowledge, flexibility and innovation in a time of rapid technological change, as these enhance citizens’ wellbeing and provide career opportunities. The European Commission (EC, 2008) links creativity and innovation to knowledge and sees them as essential skills to be developed in the context of lifelong learning. Creativity concerns all fields of human activity and can be developed at all levels of education (EC, 2008). In the framework of lifelong learning, eight key competences have been identified as being particularly necessary for personal fulfillment and development, social inclusion, active citizenship and employment. These are:

- Communication in the mother tongue;
- Communication in foreign languages;
- Mathematical competence and basic competences in science and technology;
- Digital competence;
- Social and civic competences;
- Sense of initiative and entrepreneurship;
- Cultural awareness and expression;
- Learning to learn.

These competences are interdependent and creativity is one of the transversal skills needed to enhance them. Moreover, creativity, innovation and entrepreneurship are the foundation of the knowledge and education triangles (EC, 2008). In order to achieve this, learner-centered pedagogies and teacher empowerment and support are seen as key enabling factors for groundbreaking schools to promote creativity, innovation and entrepreneurship. The paper also recognizes the potential that ICT has for fostering change (Ferrari, Cachia & Punie, 2009). Governments are taking part in the debate about education and training to meet the challenges of the 21st century, though member states are tackling the issue in different ways.

In Australia, too, 2009 was labeled as the Year of Creativity in Queensland. This was a project linked to the Queensland Government's Smart State vision, which aims to strengthen the state economy through investment in knowledge, creativity and innovation. From its inception in 1998, Smart State funding focused on investing in: reforms in education and training; research and development jobs and infrastructure; and diversifying state industries beyond primary industries. Another emphasis in the funding is "Creative Industries" which are seen as "big business", a key driver in Queensland's economy that will assist the state to become competitive in the global climate (Queensland Government, 2008). So the goals of the Year of Creativity were to provide opportunities for students to ex-

plore and develop their creative skills and support teachers to embed creativity in their teaching practice. Within the education system, one initiative to attract and encourage bright, creative minds to work together is the Queensland Academies, which offer enrichment programs and links with university and industry partners, in order to provide students with opportunities to engage authentically and creatively in their specialty areas (Lassig, 2009).

In the UK, the Government is interested in four areas of creativity: the ability of the education system to turn out a large supply of creative people; the UK's ability to turn innovative ideas into successful companies; the implications of the need for organizational diversity on government policy; the need for the UK to work with other creative industries across the world and not to try to close its borders to outside innovation (Smith-Bingham, 2006). One initiative focused on creativity is the UK's National Endowment for Science, Technology and the Arts (NESTA). NESTA has a pluralistic view of creativity (and innovation), and its investment strategy is responsive to the different aspects of its agenda. In other words, it has worked with creativity in a developmental context, offering three- to five- year awards to talented individuals for their self-directed personal development; in a commercial context, investing in very early stage business ideas (taking a stake in the companies); and in an educational context, supporting action research projects that seek to improve

engagement with the learning process and new forms of pedagogy. It also has set up residential “labs” for talented 10-15 year olds, and project-based partnerships for 16-21 year olds, enabling them to express and enhance their creativity, both individually and in small teams. It has instituted an Academy that has helped art and design graduates to set up businesses around their ideas, through a combination of inspirational and instructive sessions, presenting business needs and processes in a way that chimes with creative mindsets. It has gathered together representatives of diverse groups (including teachers, software designers, educational researchers and the games industry) to develop and test prototypes for projects that might bring about more imaginative uses of ICT in education (Smith-Bingham, 2006).

Besides the above specific cases, as quoted by Shaheen (2010), O'Donnell and Micklethwaite (1999) reviewed the curriculum documents of 16 countries (American, European and East Asian), identifying the place of arts and creativity in education. Some examples follow. In Canada “creative thinking” is outlined as one of the common essential learning(s). In Kentucky, USA, one of the learning goals is to enable students to use creative thinking skills to develop or invent novel, constructive ideas or products. In Korea, the National Curriculum defines an educated person as healthy, independent, creative and moral. In Japan, the Japanese National Council on Education Reform (NCER) has outlined the

development of creativity as the most important objective of education for the 21st century. In Singapore, the aim of new initiatives, launched by the Ministry of Education, was to foster enquiring minds and the ability to think critically and creatively. The Singapore Ministry of Education website states that they expect their young to be creative and imaginative. In China creativity has been an important component of education since 2001 and its development has become a “priority”. In Hong Kong the education policy proposal includes creativity as “higher order thinking skills”. In Turkish education the concept of creativity is being discussed more and more, however attempts to enhance it through education are limited. In Ireland a strategy paper was developed called “Unlocking Creativity” for developing creativity in education (Shaheen, 2010).

Suggested readings: Roberts, P. (2006)

Opportunities of teaching creatively

Undoubtedly, encouraging and enabling the development of students’ creativity requires more than writing policies, although this is a starting point. To establish a new experiential paradigm centered on cultivating creativity requires nothing less than institutional intervention (Livingston, 2010). The need for creativity has never been greater as the role of a higher education teacher becomes more complex in its demands and challenges, and notions of professionalism

in higher education become far more extensive (Wisdom, 2006).

However, lack of teacher training in creativity has been identified in the research as a reason why more teachers do not employ creative activities in the classroom (Fleith 2000; Kim 2008). Livingston (2010) stresses the need for more creativity training in teacher preparation programs, which serves as a likely starting point for creative teaching. Kim (2008) recommended teacher training in nonconforming behaviors, which aids in valuing student creativity, while Fleith (2000) recommended creativity training involving instructional planning, discussions and follow-up observations. In light of the research, expanding the role of creativity in education should seem obvious and logical. However, on observing many current and pre-service teachers, it is clear that imaginative thought is not encouraged. In fact, studies have found that classroom creativity is often actually discouraged (Beghetto 2007; Freund & Holling 2008; Scott 1999). Makel (2009) termed this discrepancy between the perceived value of creativity and its absence in schools the “creativity gap” and research indicates many reasons as to why this is a common occurrence. One reason found throughout the literature is that although teachers claim to value creativity, they do not value creative behaviors or those seen as nonconforming (Beghetto 2006; Freund & Holling 2008; Scott 1999). This idea is supported by studies indicating that teachers feel pressured by the system, standards and unman-

ageable class sizes (Kim 2008). Beghetto (2007) also found that teachers viewed creativity as one more responsibility or as something “extra.” Although standards and accountability are often used as excuses for the lack of teacher creativity, this view is not accepted by some researchers. In fact, Schacter, Thum, and Zifkin (2006) actually found accountability and creative teaching to be complementary. The authors recommended focusing on standards while adding more creative teaching techniques to one’s instructional strategies. Therefore, standards validate creativity, while creativity makes teaching with accountability more interesting and meaningful to students (Livingston, 2010).

After identifying both the benefits of and roadblocks to creative teaching, it is worthwhile to review studies of those who have been categorized as creative teachers. Horng, Hong, ChanLin, Chang, and Chu (2005) identified certain personality traits of creative teachers, including persistence, self-confidence and a sense of humor. Oreck (2006), in a study of New York City public school teachers, also found key characteristics of those teachers who specifically employed the arts in teaching and in turn taught more creatively. The author found that a willingness to push boundaries and take risks is what defined this specific group of teachers. Anderson (2002) strongly supported this finding and also indicated that another characteristic of creative teachers is the ability to adapt - specifically in regard to sensing and responding to the differ-

ent moods of students from class to class (Livingston, 2010). In certain circumstances, teacher characteristics and the school structure itself can mimic and/or support one another. For example, Anderson (2002) indicated that autonomy is necessary for creative teaching. Autonomy can be a teacher quality, as well as a feature of the school system in the form of teacher control of curriculum design. Teacher characteristics can be examined along with the benefits and barriers associated with creative teaching in order to make suggestions for increasing levels of creative teaching (Livingston, 2010). Cropley (1999) suggested teachers should establish a classroom atmosphere that is supportive of creativity and that those who do so:

1. encourage students to learn independently,
2. have a cooperative, socially integrative style of teaching,
3. motivate their students to master factual knowledge, so that they have a solid base for divergent thinking,
4. delay judging students' ideas until they have been thoroughly worked out and clearly formulated,
5. encourage flexible thinking in students,
6. promote self-evaluation in students,
7. take students' suggestions and questions seriously,
8. offer students opportunities to work with a wide variety of materials and under many different conditions,
9. help students to learn to cope with frustration and failure, so that they have the courage to try the new and unusual, and
10. develop a classroom atmosphere that is tolerant of unexpected answers, questions, suggestions and so forth.

Jackson and Sinclair (2006) suggested developing effective teaching and learning systems by considering the complexity of factors and interactions that influence students' creativity. They therefore highlight the complex interactions and interdependencies between teacher, learner and task. In terms of teacher activity in such an effective teaching and learning system, this may take any approach or motivation towards a task or learning in general that is dependent on the teacher's mode of presentation of the academic tasks/learning processes/reflective approaches, and consolidation through the following:

- Appropriate structuring of knowledge bases, dependent on a detailed knowledge of academic content to be learned.
- Attention to appropriate learning strategies for students, dependent on a knowledge of cognitive and metacognitive processes and how learners can be encouraged to use these.
- Ability to predict and deal with the variety of student cognitive abilities, motivation, etc.
- Ability to demonstrate and model approaches to required outcomes.

- Ability to promote thinking through questioning and challenging.
- Attention to written instructions and examples that reinforce spoken instructions.
- Provision of timely feedback, verbal and/or written, or computer-based.
- Ability to match assessment to intended learning outcomes.

Briefly, if we want to develop student creativity, we have first to develop our own understanding about what it means in the context of our teaching. Through such understanding we can

be clearer about the types of creativity we want to encourage. One good way to help students learn about creativity is for teachers to reveal their own creativity and show students what it means to them in their own practice. We appreciate, however, that this may be easier said than done (Jackson, & Sinclair, 2006). Teachers need to be trained in teaching and learning practices for creativity, which means drawing on teachers' existing practices regarding these considerations, as well as integrating emerging creative practices (Lassig, 2009).

Suggested readings: Livingston, 2010.



References

- ACER (2005). *Life Satisfaction of Young Australians: Relationships Between Further Education, Training and Employment and General and Career Satisfaction*. LSAY Research Report 43. Retrieved 10 July, 2006, from http://www.acer.edu.au/research/projects/lsay/exec_summary/execsum43.pdf
- Amabile, T.M. (1996). *Creativity in Context: Update to the Social Psychology of Creativity*. Boulder, Colorado: Westview Press.
- Amabile, T. M. (1998). How to Kill Creativity. *Harvard Business Review*, 76(5), 76–87.
- Amabile, T.M., Barsade, S.G., Mueller, J.S. & Staw, B.M. (2005). Affect and Creativity at Work. *Administrative Science Quarterly*, 50, 367-403.
- Amabile, Teresa M. & Steve J. Kramer. (2011). *The Progress Principle: Using Small Wins to Ignite Joy, Engagement, and Creativity at Work*. Harvard Business Review Press.
- Anderson, D. (2002). Creative Teachers: Risk, Responsibility, and Love. *Journal of Education*, 183(1), 33–48.
- Becker, M. (1995). Nineteenth-Century Foundations of Creativity Research. *Creativity Research Journal*, 8(3), 219-229.
- Beghetto, R. (2007). Ideational Code-switching: Walking the Talk about Supporting Student Creativity in the Classroom. *Roeper Review*, 29(4), 265–70.

- Boden, M.A. (2004). *The Creative Mind: Myths and Mechanisms*. London: Routledge.
- Bourdieu, P. (1993). *The Field of Cultural Production*. Cambridge: Polity Press.
- Chemi, T. (2016). Distributed Problem-Solving: How Artists' Participatory Strategies Can Inspire Creativity in Higher Education. In Zhou, C. (Ed.). *Handbook of Research on Creative Problem-Solving Skill Development in Higher Education* (pp. 139-157).. IGI Global Publishers.
- Chemi, T., Jensen, J. B. & Hersted, L. (2015). *Behind the Scenes of Artistic Creativity: Processes of Learning, Creating and Organising*. Frankfurt am Main: Peter Lang.
- Craft, Anna, Hall, Emese & Costello, Rebecca. (2014). Passion: Engine of Creative Teaching in an English University? *Thinking Skills and Creativity*, 13, 91-105.
- Cropley, A. J. (1999). Education. In M.A. Runco & S. R. Pritzker (Eds.) *Encyclopedia of Creativity*, Volume 1, pp. 629-638. USA: Academic Press.
- Cropley, D. & Cropley, A. (2010). Functional Creativity: "Products" and the Generation of Effective Novelty. In J.C. Kaufman & R.J. Sternberg (Eds.), *The Cambridge Handbook of Creativity* (pp. 301-321). Cambridge: Cambridge University Press.
- Csikszentmihalyi, M. (1996). *Creativity. Flow and the Psychology of Discovery and Invention*. New York: Harper Perennial.
- Csikszentmihalyi, M. (1999). Implications of a Systems Perspective for the Study of Creativity. In Sternberg, R. J. (Ed.) *Handbook of Creativity* (pp. 313-338). Cambridge: Cambridge University Press.
- EC. (2008). *Lifelong Learning for Creativity and Innovation*. A Background Paper: Slovenian EU Council Presidency, Retrieved February 2016 at www.sac.smm.lt/images/12%20Vertimas%20SAC%20Creativity%20and%20Innovation%20-%20SI%20Presidency%20paper%20anglu%20k.pdf.
- Davies, Dan, Jindal-Snape, Divya, Collier, Chris, Digby, Rebecca, Hay, Penny & Howe, Alan. (2013). Creative Learning Environments in Education – A Systematic Literature Review. *Thinking Skills and Creativity*, 8, 80–9.
- de Bono, E. (1985). *Six Thinking Hats*. New York: Little, Brown and Company.
- Feist, G., J. (2010). The Function of Personality in Creativity: The Nature of the Creative Personality. In J.C. Kaufman & R.J. Sternberg (Eds.), *The Cambridge Handbook of Creativity* (pp. 113-131). Cambridge: Cambridge University Press.
- Feldman, D. H., Csikszentmihalyi, M. & Gardner, H. (1994). *Changing the World: A Framework for the Study of Creativity*. Westport, Conn.: Praeger.
- Ferrari, A., Cachia, R. & Punie, Y. (2009). *Innovation and Creativity in Education and Training in the EU Member States: Fostering Creative Learning and Supporting Innovative Teaching Literature review on Innovation and Creativity in E&T in the*

- EU Member States (ICEAC). Luxembourg: Office for Official Publications of the European Communities.
- Fleith, D. (2000). Teacher and Student Perceptions of Creativity in the Classroom Environment. *Roeper Review*, 22(3), 148–53.
- Freund, P. & H. Holling. (2008). Creativity in the Classroom: A multilevel analysis investigating the impact of creativity and reasoning ability on GPA. *Creativity Research Journal*, 20(3), 309–18.
- Gero, J. S. (1996). Creativity, Emergence, and Evolution in Design. *Knowledge-Based System*, 9, 435-448.
- Glaveanu, P. (2014). *Distributed Creativity: Thinking Outside the Box of the Creative Individual*. Springer International Publishing.
- Guilford, J. P. (1956). The Structure of Intellect. *Psychological Bulletin*, 53, 267-293.
- Hartley, J. (2004). The Value Chain of Meaning and the New Economy. *International Journal of Cultural Studies*, 7(1), 129-141.
- Hobbes, T. (1914). *Leviathan*. London: J.M. Dent.
- Hornig, J. S., J.C. Hong, L. J. ChanLin, S. H. Chang & H. C. Chu. (2005). Creative Teachers and Creative Teaching Strategies. *International Journal of Consumer Studies*, 29(4), 352–358.
- Jackson, N. & Sinclair, C. (2006). Developing Students' Creativity: Searching for an Appropriate Pedagogy. In N. Jackson, M. Oliver, M. Shaw, & J. Wisdom (Ed.) *Developing Creativity in Higher Education: An Imaginative Curriculum* (pp. 118-141). London: Routledge.
- Jackson, N., Oliver, M., Shaw, M. & Wisdom, J. (2006). *Developing Creativity in Higher Education: An Imaginative Curriculum*. London: Routledge.
- Kaufman, J.C. & Sternberg, R.J. (Eds.). (2010). *The Cambridge Handbook of Creativity*. Cambridge: Cambridge University Press.
- Kaufman, J. C. & Beghetto, R. A. (2009). Beyond big and little: The Four C Model of Creativity. *Review of General Psychology*, 13, 1-12.
- Kazerounian, K. & Foley, S. (2007). Barriers to Creativity in Engineering Education: A Study of Instructors and Students Perceptions. *Journal of Mechanical Design*, 129, 761-768.
- Kim, K. (2008). Underachievement and Creativity: Are gifted under-achievers highly creative? *Creativity Research Journal*, 20(2), 234– 42.
- Kleiman, P. (2008). Towards Transformation: Conceptions of Creativity in Higher Education. *Innovations In Education & Teaching International*, 45(3), 209-217.
- Kozbelt, A., Beghetto, R. A. & Runco, M.A. (2010). Theories of Creativity. In J.C. Kaufman & R.J. Sternberg (Eds.), *The Cambridge Handbook of Creativity* (pp. 20-48). Cambridge: Cambridge University Press.
- Lassig, C. J. (2009). Promoting Creativity in Education- From Policy to Practice: An Australian Perspective. *Proceedings the 7th ACM Conference on Creativity and Cognition: Everyday Creativity*, 27-30 October 2009, University of California, Berkeley, Calif.

- Liedtka, J., King, A. & Bennett, K. (2013). *Solving Problems with Design Thinking: Ten Stories of What Works*. Columbia University Press.
- Liedtka, J. & Ogilvie, T. (2011). *Designing for Growth: A Design Thinking Toolkit for Managers*. Columbia University Press.
- Lin, Y. S. (2011). Fostering Creativity through Education – A Conceptual Framework of Creative Pedagogy. *Creative Education*, 2 (3), 149-155.
- Liu, Z. & Schoenwetter, D. J. (2004). Teaching Creativity in Engineering. *International Journal of Engineering Education*, 20(5), 801-808.
- Livingston, L. (2010). Teaching Creativity in Higher Education. *Arts Education Policy Review*, 111(2), 59-62.
- Mayer, R., E. (1999). Fifty Years of Creativity Research. In R.J. Sternberg (Ed.), *Handbook of Creativity* (pp. 449-460). Cambridge: Cambridge University Press.
- McWilliam, Erica L. (2007). Is Creativity Teachable? Conceptualising the Creativity/Pedagogy Relationship in Higher Education. In *Proceedings 30th HERDSA Annual Conference: Enhancing Higher Education, Theory and Scholarship*, Adelaide.
- McWilliam, E. & Dawson, S. (2008). Teaching for Creativity: towards Sustainable and Replicable Pedagogical Practice. *Higher Education*, 56, 633-643.
- O'Donnell, S. & Micklethwaite, C. (1999). *Arts and Creativity in Education: An International Perspective*. Retrieved from www.inca.org.uk/pdf/199_creativity_and_arts.pdf
- Osborn, A.F. (1953). *Applied Imagination: Principles and Procedures of Creative Problem Solving*. New York: Charles Scribner's Sons.
- Peters, M. A. & Besley, T. (Eds.). (2013). *The Creative University*. Springer Science & Business Media.
- Pink, D.H. (2005). *A Whole New Mind*. New York: Penguin.
- Plucker, J. A., Beghetto, R. A. & Dow, G. T. (2004). Why Isn't Creativity More Important to Educational Psychologists? Potentials, Pitfalls, and Future Directions in Creativity Research. *Educational Psychologist*, 39(2), 83-96.
- Plucker, J., A. & Makel, M.C. (2010). Assessment of Creativity. In J.C. Kaufman & R.J. Sternberg (Eds.), *The Cambridge Handbook of Creativity* (pp. 48-74). Cambridge: Cambridge University Press.
- Queensland Government. (2004). *Creativity is Big Business: A Framework for the Future*. Available at <http://arts.qld.gov.au/publications/pdf/ge-cr-bi-bu.pdf>
- Richards, R. (2010). Everyday Creativity: Process and Way of Life - Four Key Issues. In J.C. Kaufman & R.J. Sternberg (Eds.), *The Cambridge Handbook of Creativity* (pp. 189-216). Cambridge: Cambridge University Press.
- Ripple, R. E. (1999). Teaching Creativity. In M.A. Runco, & S. R. Pritzker (Ed.) *Encyclopedia of Creativity*, Volume 2, pp. 629-638. USA: Academic Press.
- Roberts, P. (2006). *Nurturing Creativity in Young*

- People: a report to Government to inform future policy*. London: Department for Culture, Media and Sport.
- Rossiter, M. & Garcia, P. A. (2010). Digital Storytelling: A new player on the narrative field. *New Directions For Adult & Continuing Education*, (126), 37-48.
- Runco, M.A. (2003). Education for Creative Potential. *Scandinavian Journal of Educational Research*, 47(3), pp. 317-324.
- Runco, M.A. & Albert, R.S. (2010). Creativity Research: A Historical View. In J.C. Kaufman & R.J. Sternberg (Eds.), *The Cambridge Handbook of Creativity* (pp. 3-20). Cambridge: Cambridge University Press.
- Shaheen, C. A. (2010). Fostering Creativity and Innovation in the Workforce: An Annotated Bibliography. *Continuing Higher Education Review*, 7493-100.
- Sawyer, R. K. (2004). The Mechanisms of Emergence. *Philosophy of the Social Sciences*, 34(2), 260-282.
- Sawyer, R. K. (2007). *Group Genius: the Creative Power of Collaboration*. New York: Basic Books.
- Sawyer, R. K. (2012). *Explaining Creativity: The Science of Human Innovation*. Oxford and New York: Oxford University Press.
- Schacter, J., Y. M. Thum & D. Zifkin. (2006). How Much Does Creative Teaching Enhance Elementary School Students' Achievement? *Journal of Creative Behavior*, 40(1), 47-72.
- Scott, C. (1999). Teachers' Biases Toward Creative Children. *Creativity Research Journal*, 12(4), 321.
- Sefton-Green, J. (2008). *Creative learning*. Creative Partnerships, Arts Council England.
- Simonton, D. (1990). History, Chemistry, Psychology, and Genius: An Intellectual Autobiography of Historiometry. In M. Runco & R. Albert (Eds.), *Theories of Creativity*, pp. 92-115. Newbury Park, California: Sage Publications.
- Simonton, D.K. (2010). Creativity in Highly Eminent Individuals. In J.C. Kaufman & R.J. Sternberg (Eds.), *The Cambridge Handbook of Creativity* (pp. 174-189). Cambridge: Cambridge University Press.
- Smith, A., Courvisanos, J., Tuck, J. & McEachern, S. (2012). *Building the Capacity to Innovate: The Role of Human Capital*. Research Report. National Centre For Vocational Education Research (NCVER).
- Smith-Bingham, R. (2006). Public Policy, Innovation and the Need for Creativity. In N. Jackson, M. Oliver, M. Shaw & J. Wisdom (Eds.) *Developing Creativity in Higher Education: An Imaginative Curriculum* (pp. 10-18). London: Routledge.
- Starko A.J. (2010). *Creativity in the Classroom: Schools of Curious Delight*. New York: Routledge.
- Sternberg, R.J. (Ed.). (1999). *Handbook of Creativity*. Cambridge: Cambridge University Press.
- Sternberg, R. J. & Williams, W. M. (1996). *How to Develop Student Creativity*. Alexandria, VA, USA: Association for Supervision & Curriculum Development (ASCD). Retrieved from <http://www.ebrary.com>

- Tanggaard, L. (2014). A Situated Model of Creative Learning. *European Educational Research Journal*, 13(1), 107-116. 10.2304/eeerj.2014.13.1.107
- Thompson, Tracy A. & Purdy, Jill M. (2009). When a Good Idea Isn't Enough: Curricular Innovation as a Political Process. *Academy of Management LEARNING and EDUCATION*, 8(2), 188-207.
- Torrance, E. P. (1962). *Guiding Creative Talent*. Englewood Cliffs, NJ: Prentice Hall.
- Weisberg, R.W. (1993). *Creativity: Beyond the Myth of Genius*. New York: Freeman.
- Wisdom, J. (2006). Developing Higher Education Teachers to Teach Creatively. In N. Jackson, M. Oliver, M. Shaw & J. Wisdom (Eds.) *Developing Creativity in Higher Education: An Imaginative Curriculum* (pp. 183-196). London: Routledge.
- Zhou, C. (2012). *Group Creativity Development in Engineering Education in Problem and Project-Based Learning (PBL) Environment*. Ph.D. Thesis. Aalborg: akprint.
- Zhou, C. (2014). A Student Project as an 'Extra Group Member': A Metaphor for the Development of Creativity in Problem-Based Learning (PBL). *Akademisk Kvarter*, 9, 223-235.

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