

Teaching for Creativity in Universities

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Abstract

It is more than obvious, that Creativity is not the gathering of knowledge as such, that is important, but “what we can do with our knowledge” (Quintin, 2009, p. 3). If we are to prepare our students to be able to adapt to change, to work in jobs that may not even exist at present and face unpredictable encounters, we need to rethink education. We have to move away from delivering knowledge/information and concentrate on how our students can use such knowledge. Thus, in the face of such stormy times, creativity, originality, and innovation are at the top of the list in importance, now, more than at any time before. In a summary of scientific research into creativity Michael Mumford suggested that “creativity involves the production of novel, useful products” (Mumford, 2003, p.110). From the same perspective, Prof. Teresa M. Amabile from Harvard Business School noted that “creativity is the production of novel and useful ideas in any domain” (Amabile, 1996, p.1). Yorke (2001, p.7) defined it as “the ability to be original or inventive and to apply lateral thinking”. The importance of educating for creativity in higher education can be derived from arguments in favor of a focus on student empowerment and employability. In some domains, the performing arts for instance, creativity is supposedly already generally accepted as a critical personal quality needed for performing adequately as a professional. The question is how we can achieve the development of creativity in University students.

Introduction

What is Creativity?

It has been widely acknowledged that creativity is a complex concept for which there is no one particular definition (Prentice, 2000).

Although, it should be noted that even defining the word may seem by some as being inappropriate and vague, when relating to the ‘idea’ of what is creativity (Cowdray & de Graff, 2005).

Perhaps it is worth starting with the distinction between creativity and innovation. Although creativity and innovation are closely related they differ since innovation is using creativity – turning creative ideas into use as products or as active practices.

The notion of creativity includes ideas, inventions, and breakthroughs, Implementing a new idea (Von de Ven & Angle, 1989), while innovation is defined as “the successful implementation of creative ideas within an organization” (Amabile et al., 1996; Amabile, 1983). For the purpose of this review ‘creativity’ will be used as the main notion of ideas, imagination and originality.

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However, despite the numerous definitions there seems to be a widespread agreement on the definition that creativity is the “ability to produce work that is both novel and appropriate” (Sternberg & Lubart, 1999, p. 3). Although this definition seems to be the most appropriate, for the purpose of this literature review, a number of other definitions are being considered.

A popular idea about creativity is the thinking process involved in the creation of novel ideas or products. Paul Torrance (1970), one of the ‘architects’ in the study of the creative process, suggested that creativity is the ability to produce something novel, something that is unique and original. However, it is argued, a definition of creativity that only measures originality is problematic, because any idea, however strange or unsuitable to the situation, should be included. Subsequently, academics have extended the definition of creativity to include the concept of appropriateness and added value (Sternberg & Lubart, 1999). Adding to this, the National Advisory Committee for Creative and Cultural Education (NACCCE), defines creativity as: “imaginative activity fashioned so as to produce outcomes that are both original and of value” (p.3). That is, creativity requires both novelty and usefulness or value which suggests that an idea or concept might be novel but if it has no use, cannot be defined as a creative idea and vice versa (Beghetto, 2005).

Another dimension added, by some authors, is that of ‘problem solving’, the competence to find new solutions to problems; thus, a more unifying, completed, definition for creativity must contain the core dimensions of originality, appropriateness (that is useful and added value) and problem solving. For example, Costello (2000) argued that creativity involves, problem solving, i.e. thinking “outside the box”. But at the same time Costello (2000) also added that it must be “future oriented”, i.e. “not looking backwards”, and dealing with the uncertainty and insecurity – in other words “learning is incremental and involves making mistakes” (Ball, 2003, p.28).

Seeling (2012), also, claimed that attitude, knowledge, and imagination can spark and add to creativity. According to Seeling (2012), to be creative you must have a depth of knowledge as a starting point. Knowledge is the toolbox for inventiveness and imagination is very important in the formation of new ideas and attitudes that help set the creative process in motion (ibid., 2012).

It is also suggested that by trying to identify of what is creativity we must also consider other factors such as the cognitive abilities and processes involved to creative thinking as well as the learning environment. Thus, Csikszentimihalyi (1999) adds three factors that are important for creativity to take place: a culture that contains symbolic rules, a person who brings novelty into the symbolic domain, and a field of experts who recognized and validate the innovation in a learning environment. Similarly, Sternberg (2002) also reaffirms that the parameters that define the concept of creativity must include the environment.

It follows, therefore, that the learning environment such as that of universities, seems to influence the creative performance (Oldham & Cumming, 1996; Scott & Bruce, 1994; Barron & Harrington, 1981). This leaves us to the conclusion that most people are capable of creativity and “the creativity processes could be taught” (Coombs & Smith, 1999, p.80) especially in the higher education sector. At the same time, a number of studies concluded that creativity can be enhanced and cultivated (Craft, Jeffrey, & Leibling, 2001).

Defining Creativity in the Context of Higher Education

There is, as yet, a shortage of conclusive research evidence suggesting ways of developing creativity, and in particular ‘small c’ creativity in universities (Beghetto & Kaufman, 2009; ibid., 2007).

Creativity is often approached as a distinction between “big C” (eminent, genius – level) (Beghetto & Kaufman, 2007), creativity and “small c” (everyday) creativity. “Small c” or second generation (or everyday) creativity places the creative endeavour in the processes of collaboration and ‘purposeful activity’ that aims to develop an ‘original’ and ‘appropriate’ explanation to a situation or problem (McWilliam & Dawson 2008; Runco, 2004;) and which, also, allows for student-empowerment and student-centeredness. In contrast, “big C” (genius – level) creativity is associated with truly original ideas and ground breaking ideas. Creative ideas and achievements that are outstanding in their domain.

They comprise novelty and excellence as well as social recognition and valuation. “Small c” creativity is seen as appropriate and valuable for the development of students’ creativity for two main reasons.

First, it’s acknowledged significance as a driver in the new or digital economy; with specific reference to ‘creative capital’ (Florida & Goodnight, 2005). McWilliam & Dawson (2008) argued that this shift allows more space for engaging with creativity as an outcome of pedagogical work in higher education.

Economists are now viewing creativity as a form of capital, and thus as a driver of economic growth and prosperity. As stated by Florida and Goodnight (2005) “a company’s most important asset is not raw materials, as was the case in the past, but its creative capital — a pool of creative thinkers whose ideas can be turned into valuable products and services” (p. 124). In the face of economic crises the development of creativity amongst our students is not only necessary but essential.

Secondly, we must also recognise that technological and digital advances brought with them a change in the way students learn (Redecker, 2008). Today’s students are born in an ever increasing technological environment surrounded by iPods, iPhones, video-games, mobile phones, cloud computing and other digital media. Thus lecturers find themselves competing for attention and have to find ways to attract students’ interest and attentiveness in a new way.

This overpowering intensification of technologies brings a new understanding of communication, knowledge and meaningfulness. This apparent gap between the university and the students’ digital environment does thus influence the students’ understanding (Pedró, 2006) and most importantly it influences their expectations of higher education (Selinger et al., 2008). This calls for new developments of creative teaching approaches (Simplicio, 2000) that are able to engage the university students in productive and meaningful ways.

What we are arguing here is that cultivating creativity and more specifically, “small c” creativity (Beghetto, 2005; Sharp, 2004), that is both novel and appropriate by adding value (Sternberg & Lubart, 1999) to learning will provide the opportunity of all students to be or to become creative (Esquivel, 1995).

Thus “small c” creativity seems particularly suitable for the Higher Education sector, where its priority should be to encourage all students to reach and achieve their full potential. Thus the creative talent of every student can be both encouraged and developed (Sharp, 2004). Its development depends on the kind of training they receive whilst in university (Esquivel, 1995).

Therefore, here we argue that creativity in education is not only essential but vital in promoting our students’ opportunity to extend their knowledge and give them the chance and possibility to create new knowledge and ideas.

In a sense, this review paper constitutes an opportunity to explore the possibility of translating “small c” creativity into specific pedagogical principles and strategies, and thus help to fill the missing gap in HE research and contribute toward a more competitive and employable workforce for the future. This initiative is in line with the European Commission 2020 Strategy of HE.

What is the Current Situation in Universities?

Drucker (1969) argued that: “in the academic disciplines a student cannot perform. He can only promise. All he can do is to repeat what somebody has already done or said” (pp. 316-317). Is where the originality and novelty have ended, is where the student stops to think due to criticisms and their creativity is vanished. That is, creativity is not promoted, favored, welcomed or awarded.

The above statement made over 40 years ago could also apply to today's academic environment. Similarly, the Torrance original test examined, 48 years ago, in 1965, the attitudes of over 1000 teachers in Germany, India, Greece, the Philippines and the USA, and concluded that teachers in all five countries were found to be unduly rewarding pupils for being well-mannered, doing work on time, and being obedient, popular and willing to accept the judgments of teachers and on the other hand punishing pupil who were good at guessing, questioning and who were daring in their opinions. Unfortunately, this approach still prevails in many educational establishments of today.

The majority of pedagogical practices within the academia are concentrated on accessing information and using it to solve relatively anticipated problems or to complete predictable and routine transactions of one kind or another concentrating instead on 'knowing' the discipline. This continues to be so despite the fact that disciplinary knowledge has such a limited shelf-life (McWilliam, 2007).

However, if students are to become unique, autonomous individuals, they must feel worthy and competent. They must take command of their life, reach decisions for better or worse; act (i.e. do or make something) on their own and get further bearings from the consequences of their actions. The sense of task-relevant accomplishment is crucial in encourage people to grow. However, few of these prerequisites seems to be fully satisfied in most university environments which are usually over-structured to allow little room for students' initiatives and viable curriculum alternatives.

Students are more recipients and audiences than agents and actors (Yamamoto, 1975). The education system does not sufficiently promote and welcome creative thinking and creative persons, because sometimes creativity does not "go with" the curriculum. Students have learn to inhibit or to avoid their creative thinking and the creative act as it is not the one to expected and in the end to be accepted. Students sometimes have an innate talent of creativity (Oliver et al., 2006), which they learn to repress or hide, because they might not get a "good grade" (as their creative feedback to teachers' expectations might be taken as wrong or out of the subject). Though creativity, most of the times, has nothing to do with academic performance and academic distinctions, and is not motivated, the educational system has focused and promoted "parroting", which is the favored and "right/correct" way to learn.

In fact, Hennessey (1996) has argued that many approaches in education such as: expected reward, expected evaluation, surveillance, time limits and completion destroys intrinsic motivation. Furthermore, while many higher academics recognize the intrinsic motivation of promoting students creativity they usually 'downright' the additional work necessary to successfully implement more creative approaches (Jackson, 2006).

Although students are expected to be creative, creativity is seldom a clear objective of the learning assessment process. More specifically, looking at the types of assessments used in the majority of our universities, there seems to still be a preference for conventional student testing methods in the form of multiple choice and essay questions. Furthermore, overall student grades are usually made up of quizzes, assignments and participation and these usually form the main method of assessment. The project aims to promote a range of assessment methods which measure not only end results but also support creative learning processes that contribute to the general quality assurance system of all the courses of the university.

Even though teaching and designing a course are widely seen as parts of creativity, teachers' creativity and creative process are largely implicit and are not publicly acknowledged and celebrated (Jackson, 2006). Thus, as far as the course syllabi are concerned, it seems that the situation is not better. So, even though the term 'creativity' is often used as a wide aim in local universities it is generally linked to Arts/Design courses, and is basically absent from the other course syllabi. The proposal makes an attempt to readdress the importance of creativity as a centre point in all course syllabi.

Fortunately, there are also some positive trends that indicate elements of change. More recently, creativity is starting to be the target through policies, through teaching strategies and is now added to school's curriculum. Nowadays, many teachers try to develop this innate process which had been previously suppressed.

More specifically, during the last part of the 20th century and early part of the 21st, creativity has been seen to be increasingly significant in education, within cultural policy discussions, starting with the landmark advice of the National Advisory Committee on Creative and Cultural Education (NACCCE, 1999).

Several authors (e.g. Sawyer, 2006; Craft, 2005) suggest that creativity should be an important educational objective: "In today's knowledge societies, one of the key missions of the school is to educate for creativity" (Sawyer, 2006). Prof. Anna Craft in fact calls it in her paper in 2008 a change "from drought to tsunami" (p. 1).

So, as years pass creativity gains an extended value in education, and it is considered to be one of the basic elements of policy change. Indeed, since 1950 there has been a strong concern that education should prioritize the development of creativity. At the United Kingdom education system, for example, Beetstone (1998) focused on creativity in early years' education. Woods (1995) and Woods & Jeffrey (1996) exported teachers' creativity; and Craft (1996) looked on how to nourish the creative teacher. Nowadays, there are many more researchers dealing with the concept of "creativity" especially in relation with higher education (Graft et al., 1997; Jeffrey & Woods, 1997; Fryer, 1996; Torrance, 1984; Hubbard, 1966).

More recently, several E.U. countries including Sweden, Australia and the UK have considered compulsory teacher training for lecturers in what is regarded as change management through innovation and creativity. Norway has implemented such a policy too and it appears that if you "train higher education teachers to teach, they will do a better job than untrained ones" (Trowler & Bamber, 2005, p. 80).

Indeed, more teachers training is needed since globalization has 'settled' in everywhere, becoming thus a challenge but also a barrier in creativity. In the context of creativity in universities, events promoted by the forces of globalisation can appeal to educated professionals and their employers, considering that a creative class of professionals relates to cultural and creative contexts (Florida, 2002)._Additionally, universities are expected to work in an interactive triple helix, a part of the regional innovation systems (Mowery & Sampat, 2005): university, government, industry. Industry links rank academic consultancy or Research & Development as most important, funded research, spin-off and start-ups, work-study programmes, student-industry collaboration and entrepreneurship projects.

Bramwell and Wolfe (2008) found innovation in education cooperative programmes in three different ways: First, it provides appropriate employability to graduates and companies. Second, students help companies obtain new skills and knowledge through the university. Third, the cooperative students and programs help knowledge transfer across local firms and the university. In problem-based learning activities, student groups' work on particular problems identified in local firms, the community and government organizations.

The program provides similar benefits to the community (Puuka & Marmolejo, 2008). Vega-Jurado et al., (2008) mention that academic staff rated student internship as one of the most relevant contributions to industry. In an analysis by Bosma et al. (2009), there is also found a positive relation between entrepreneurship training and entrepreneurial attitude, activities and aspirations. Moreover, a number of growing U.S. universities (University of California Bekerley, University of Washington, University of Chicago, Cornell University, Carnegie Mellon University, University of Massachusetts at Amherst)² have created, recently, programmes of studies based on cloud computing as an alternative learning environment.

²<https://sites.google.com/a/kinlane.com/cloud-computing/universities>

It seems that other Canadian, Asian and more than 40 European Universities (Oxford University among the ultimate top users) use cloud technology in students' interaction and learning, for the past 4-5 years, too.

Getting such skills for the MBA students for example, in how to leverage the Google Platform or how to deploy Amazon EC2 instances, becomes crucial for their future jobs and careers, simply because such platforms can develop creative work and support creativity beyond learning and working. These skills are used also more and more by other Medicine and Science students as well.

Additionally, there are a number of Universities and Educational Institutions who have developed their curricula and programmes related to creativity and innovation. For example the City University of London³ has a Master's degree in Innovation, Creativity and Leadership (the MICL).

The University of Malta also offers a master degree in Creativity and Innovation, designed with the collaboration of Professor Edward de Bono, the inventor of Lateral Thinking⁴. In addition some universities have introduced their own centres for Creativity and Innovation as are the DePaul University⁵, Drexel University⁶ and Boise State University of USA⁷.

Despite the fact that developments in creativity have been improved and have been extensively reviewed, there has been rather less investigation into the approaches of teaching and, specifically, how creativity can be developed in practice in higher education.

Approaches to Teaching for Creativity in Higher Education

The results of previous research were very fruitful insofar as they provided an important starting point for identifying a number of approaches and dimensions of creativity. Thus, in this section we review a number of approaches to teaching for creativity.

First of all, we need to bear in mind that students are creative and in some sense gifted. Indeed creativity is one of the basic characteristics of being human (Lakota, 2007). Yet creativity can be supported, encouraged and cultivated - as well as weakened, suffocated, even killed (Robinson, 2005).

In fact, students have a potential creative level, which is a combination of nature and nurture; this suggests that people have some upper limit of their capability of creativity, but they can work towards achieving the ultimate goal of creativity. Some students do have a more developed sense of creativity, but some others might need to be taught how to be creative. The natural creative person does not have to be always a step ahead of those who have been taught how to be creative; that's why higher education turns to ways which will allow students to develop their creativity, by being original and at the same time useful. Oliver et al. (2006) argued that even creativity was not taught, not considered teachable and not valued in assessment, it is still relevant in defining how the students see themselves.

Higher education needs to see creativity within the important role it plays in preparing people for an uncertain and even more complex world of work, a world that requires people to utilize their creativity as well as their analytical capacities. Sternbrerg and Lubart (1995) argued that a person needs three different sorts of abilities to be successful: analytic abilities - to analyze, evaluate, judge, compare and contrast; practical abilities - to apply, utilize, implement and activate; and creative abilities - to imagine, explore, synthesize, connect, discover, invent and adapt.

³<http://www.city.ac.uk/courses/postgraduate/innovation-creativity-and-leadership>

⁴<http://www.um.edu.mt/create/courses/masterdegreeprogramme>

⁵<http://innovation.depaul.edu/index.asp>

⁶<http://goodwin.drexel.edu/mep/creativity.php>

⁷<http://cobe.boisestate.edu/ci/>

More recently the EUA⁸ (2007) Creativity Project developed 5 major factors that influence creativity and creative thinking and is worth noting: i.e. diversity, future orientation, quality mechanisms, quality processes and learning organizations.

Diversity takes into consideration aspects like, talents, interests, previous qualifications, etc as crucial factors for fostering creativity among students and staff; *Future orientation* means that university practices should concentrate on the future rather than the past; *Quality mechanisms*, indicate the systems which will be used to monitor the institution's ethical and strategic choices; *Quality processes* focused on the capacity to change as a way to integrate future challenges; *Learning organizations* centered on the institutions ability to explore the possibility in where all staff seek to reach common goals through collective and individual practices.

In fact the EUA (2007) research project reaffirmed the major core characteristics of creativity as outlined in the introduction of this literature review and should be taken into account when referring to the approaches to teaching: *Originality*, as the ability to produce ideas that are unusual; *Appropriateness*, as the ability to produce work that is both novel and appropriate; *Future orientation*, as looking forward of what may happen in the future and dealing with the resulting insecurity and uncertainty; *Problem solving ability* as the capability to identify new solutions to problems (this requires "thinking outside the box"); looking at things from a new angle, venturing off the beaten path and risking failure.

More specifically, in enhancing creativity it is also maintained that certain teaching approaches become necessary. Some of these approaches are the following:

The 'Creative cycle' approaches: Kessler (2000) describes these approaches as including the following stages: preparation, incubation, inspiration or illumination and verification. *Preparation* involves the gathering of skills, principles and data. Incubation by contrast involves the doing of nothing, 'letting go'. This is an essential unused period, of receptivity and openness, sometimes even chaos or disorder (and thus offers a potential challenge in the classroom). Inspiration, or illumination, comes directly out of the incubation space. Finally, verification involves the refining of the outcome.

The 'Single-strategy' approaches: These might include questioning approaches which wonder about possibilities and are both prepared to follow, and to be supported in, seeing the questions through to an outcome (Craft, 2000).

The 'Multi-strategy' approaches: Shallcross (1981) has also identified a range of strategies that included the allowing of adequate *space and time* for developing a creative response to any given situation. University teachers often interfere too early in a students' thinking process, preventing them from working out ideas for themselves. In addition, it is also essential to provide an appropriate environment for creativity in the classroom which includes fostering self-esteem and self-worth and at the same time adopting a *questioning approach* which wonders about possibilities and is both prepared to follow, and be supported in, seeing the questions through to an outcome (Craft, 2000).

In addition, Torrance (1974, 1966) added another approach as the '*Recording and assessing creativity*'. Torrance described four components by which individual creativity could be developed and assessed. These four components are: *fluency*- the ability to produce a large number of ideas; *flexibility* - the ability to produce a large variety of ideas; *elaboration* - the ability to develop, embellish, or fill out an idea; *originality* - the ability to produce ideas that are unusual, statistically infrequent, not banal or obvious.

⁸ European University Association

Current pedagogical discourses attempt to view learners as the center of teaching and learning processes, with an active role in the production of knowledge and meaning, democratically bringing their expertise, experiences and ideas into the classroom (Williamson & Payton, 2009) and thus stimulating also creativity. Nevertheless, creativity still does not seem to play a central role in the curriculum or learning objectives that teachers are asked to follow in every country (Cachia et al., 2009). According to a large EU level survey of teachers (Cachia et al., 2009) there is a remarkable agreement (over 95% of responses) in the understanding of creativity as an attribute that can be applied to every domain of knowledge and to every school subject, and therefore as a fundamental competence to be developed at school. Moreover, teachers do not see creativity as being only relevant for intrinsically creative subjects such as the arts, music or drama. This is of paramount importance for the development of creative thinking as a transversal skill. In brief, to adopt creativity for everyone's lifetime 'safety net' is crucial.

On this basis, Runco (1999), Sharp (2004) and Beghetto (2007), Ferrari et al. (2009) present a model opposing implicit and explicit theories of creativity, where creativity can be stimulated or inhibited. It is argued that implicit theories refer to the tacit and shared knowledge of ordinary people, while explicit theories refer to scientific research findings. This model reflects the change of purpose regarding creativity that shifts towards a personal method in which there is a creative potential in all individuals. Moreover, the model, teaching for creativity aims at encouraging the *Autonomy* - a feeling of ownership and control over the ideas that are being offered and passing back control to the learner; the *Respect* - for each other and for the ideas that emerge without searching for mistakes; the *Authenticity* - in initiatives and responses, deciding for oneself on the basis of one's own judgment; the *Openness* - to new and unusual ideas, and to a variety of methods and approaches; and *the Fulfillment* - from each a feeling of anticipation, satisfaction, involvement and enjoyment of the creative relationship (Jeffrey & Craft, 2003).

In adding to the above argument that is that there is a "creative potential" in every individual one should also remember that learners "get" role models from their teacher's approach. This is experienced in situations where learners had to take ownership, control and where they were more likely to be creative although the teacher was not explicitly planning to teach for creativity.

It is important, here, to make a distinction between teaching creatively and teaching for creativity. The former is defined as "using imaginative approaches to make learning more interesting and effective" (NACCCE report, 1999, p. 89), whereas teaching for creativity is defined as forms of teaching that are intended to develop young people's own creative thinking or behavior and which definition applies to this paper.

However, the research evidence shows a strong relationship between teaching for creativity and teaching creatively, but some aspects must be considered when doing so: Teachers teach creatively and teach for creativity according to the circumstances they consider appropriate and sometimes they do both at the same time without excluding critical thinking (Craft, 2005). Moreover, Azzam (2009) explains that the two often interact as critical thinking is used to determine the value of something considered to be creative. Teaching for creativity is more likely to emerge from contexts in which teachers are teaching creatively notwithstanding some evidence of creative reactions to constraining situations (Fryer, 1996).

Another challenging idea to the concept and development of creativity has been proposed by Laird McLean (2005). He suggests that organizations influence the creativity of individuals. This means that, within the context of higher education, creativity can not only be 'taught', but that development of creativity in students is also a function of the characteristics of the university that 'teaches'.

Thus, higher education systems are powerful expressions not only of "knowledge factories" certainly, but also "open zones" in which social transformation and cultural creativity can flourish (Scott, 2005, p.309). Higher education needs to ensure that graduates have the right skills to equip them for a lifetime in a fast changing working environment (DfES, 2003). Therefore, education should focus on the personal and social dimensions of human existence as well as the academic and vocational dimensions (Kenny et al., 2007).

Additionally, it is necessary to establish an appropriate learning environment that will encourage students to gain experience, develop their creativity and take advantage of opportunities that their own business environment offers, while developing their entrepreneurial behavior (Hewitt-Taylor & Andrews, 2005). As Lynda Ball et al. (2010) stated "HEIs provide an environment that fosters creative practice and encourages important employability skills.

A distinctive characteristic of the creative curriculum is that opportunities for transfer of the creative process occur naturally, as students experience different contexts in which to apply their learning through live projects, exhibitions, commissions and learning alongside teacher practitioners. Furtherstill, capacity building is required in research communities to nurture academic careers, meet aspirations for new knowledge and innovation in the HE sector, and to bring in the next generation of teacher practitioners" (p.11).

Hence, higher education must provide students with a valuable learning methodology, from which to evolve their practice and important transferable processes and skills that need to be made more explicit. As Knight and Yorke(2003) noted, "the final task for teachers is to design promising learning environments and then help students to discover what they afford, what might be learnt, how and why" (p.14). Essentially, creativity depends on the people who make up the higher education community. The more teachers understand about creativity, creative learning and motivation, the more they can help to enhance their students' creativity, "as creative teaching approaches encourage students to link their generic and disciplinary skills and highlight the importance of the students' role in developing these skills" (Turner & Day, 2012, p. 8). Of course, equally important factors in enhancing student creativity and to contribute to the fruitful results of the staff, are structural, ethical and cultural conditions of the institution "in order to create an institutional milieu favorable to creativity" (Jackson, 2006, p. 34).

Clemson University⁹ in the United States is an example of putting creativity into practice by developing an excellent online Creative Thinking Program (CTP). The results of the program clearly demonstrated a higher level of creativity than those in the past, and student comments reflected their enthusiasm for the experience gained through the program.

It seems clear from the above that university students' creativity can be developed. Summarizing the previous paragraphs, there are at least three factors that influence the degree of success when educating for creativity. First of all, there is the culture of the organization, in our case the university or faculty, involved. Second, students' intrapersonal characteristics affect how they react to (learning) environments with plenty opportunities to develop creativity. And the third, and probably the most interesting factor, in the sense that it is the least difficult to adapt, is the learning environment itself, including teacher activities, available facilities, etc. It is possible however, that the challenge of educating for creativity requires a holistic approach in which development of all three factors is tackled.

It might be tempting to believe at this point that, with all the experts' ideas mentioned above, implementing creativity into a curriculum guarantees almost instant success. However, we also know from studies on educational innovation, that this kind of change, requires more from an organization than inspired teachers alone. In fact, the quality of the innovation itself, is only one of a set of determinants. James Ellsworth (2000) summarizes these "conditions for change", as proposed by Ely, in his book "Surviving change" dissatisfaction with the status quo, knowledge and skills of the change agent, availability of resources, time, availability of rewards or incentives, encouragement of participation, commitment of the people involved, and evidence of leadership.

⁹http://www.clemson.edu/ccit/about/publications/facultydirections/Fall09/creative_thinking.html

It becomes clear that this kind of innovation process requires a lot from the teachers, students, and organization involved. The next section deals with how creativity can be taught in universities.

How Creativity can be taught in Universities

The importance of educating for creativity in higher education can be derived from arguments in favor of a focus on student empowerment and employability. In some domains, the performing arts for instance, creativity is supposedly already generally accepted as a critical personal quality needed for performing adequately as a professional. The question whether the development of creativity in students can be facilitated, and how that could be done, remains unanswered. In this section, we will present several authors' contributions to answering this question. It is not our intention to present a complete overview, but merely to provide some inspiring thoughts and theories that help gain understanding and insight in ways to promote students' creativity in higher education.

Sternberg and his colleague Wendy Williams (1996) provided us with a list of 25 ways to teach creativity in their book "How to develop student creativity".

The list encompasses a broad range of prerequisites, and techniques, such as dealing with complex issues and how to avoid roadblocks and at the same time provided tips which could be used as inspirations when designing and implementing creativity oriented curricula.

An interesting, but paradoxical statement made by Sternberg (2006), is that knowledge can facilitate, but also hinder, creativity. The facilitative effect can be seen in processes where people combine seemingly unrelated concepts, use analogies to map knowledge to a less familiar domain, or put effort in the approaches they choose when formulating problems. From Ward's discussion of the cognitive psychological models underlying these processes; it becomes apparent that there is a world of knowledge from which more pragmatic tips and tricks can be gathered.

Moreover, literature suggests several methods to achieve the 'Creativity' goal:

A.Promotion of Creativity at Individual's Level

Intrinsic motivation arises when the task itself is a source of interest, enjoyment, self-expression, and personal challenge (Amabile, 1997). An individual will be intrinsically motivated by a task if it increases his/her acknowledgement of own capability and autonomy (Deci, 1975). These feelings of competence and self-determination will, in turn, be influenced by task characteristics, such as skill variety, challenge, autonomy, and feedback (Hackman & Oldham, 1976).

Furthermore, Personal Development Planning (PDP) (Jackson 2006) initiated in theUK helps students plan and reflect on their abilities of managing their learning development, and it is an important policy that might be utilized in promoting more creativity in higher education. This takes into consideration the following concepts:

Curiosity: Isaac Asimov said "The most exciting phrase to hear in science, the one that heralds new discoveries, is not "Eureka" but "That's funny. . . ."¹⁰ Students are advised that, from time to time during their scientific careers, they will come across unexpected results. They are advised to follow these observations and capitalize on them.

Challenging assumptions: Students are requested to list the assumptions they normally make about a specific subject or problem. Then, they are asked to challenge the assumptions by simply asking 'What if?'

Analogy: In an analogy two things that are essentially different, but which nonetheless have some similarities, are compared. Students are asked to define a problem then to try to generate an analogy, perhaps by looking to nature for inspiration.

¹⁰http://www.brainyquote.com/quotes/authors/i/isaac_asimov.html

They then use the analogy to apply knowledge or technology from its source to their problem with the aim of bringing a new insight or perspective. The idea is that the analogy will help suggest an entirely novel solution to the problem.

Personal analogy: Students are encouraged to look for novel insights and solutions by imagining themselves part of the problem under consideration, as many of us imagine ourselves visually in various situations easier than we can imagine others.

The importance of a fresh eye: Students are advised to network and collaborate with people from a range of backgrounds, such as family, friends, colleagues from related or not related disciplines and industry.

B.Promotion of Creativity at Group Level

Group chat, idea incubation and submission: People are often at their most creative during periods of 'relaxed attention'. Students are asked to incubate their ideas for a few days and to think about them when they are feeling relaxed (e.g. when taking a shower, during sports, chatting, etc). They are also encouraged to exchange ideas with other members of their group using the website's Forum or Chat facility, anonymously or not.

Group sessions: Each group member will have had the occasion to produce, develop and submit ideas for reflection by the group, with a constant pressure and synergy between the individuals and the group (Leonard & Swap, 1999).

A constructivist approach to group activities is the Game-Based Learning (Egenfeldt-Nielsen, 2006), where teachers and trainers will develop innovative learning artifacts that are interesting and engaging for their students in groups, interdisciplinary activities and real life game simulations (Garcia et al., 2013). In admiring the advantages of business simulations, Senge (1990) uses the expression 'micro world' to describe the way individuals can immerse themselves and 'learn by doing' (Lombardi, 2007; Aldrich, 2005). At the same time digital games do stimulate students' motivation towards learning (Gee, 2003; Malone, 1980). For example, Wynder (2004) describes the results of the game simulation 'My Muse' in a second year management accounting course, which successfully offers students the opportunity and motivation to develop creative solutions. Other games simulations used in the literature as creativity boosters and tools for teaching for creativity are Europaia, Fabrica de Tados and many other social Sims. Some (i.e. Europaia) are have been developed in joint venture among different European countries and within the framework of projects funded by Lifelong Learning Programme (EACEA).

In consequence, digital games are now a main characteristic and trend in Universities and in various industrial training to promote active learning and improve students' problem-solving skills instead of memorization. It has been confirmed that for certain target groups (e.g. students), they can increase personal realization and reach higher performance (Mayo, 2007; Squire & Barab, 2004).

The success factors for games based, according to Mellini et al., (2010) are goals, rules, challenge, rewarding systems/short feedback, engagement/immersion, adaptability / flexibility, several levels of access, replay ability, competition / collaboration, entertainment, educational objective, student's profile and communication, learning resources, evaluation methodologies, comprehensive learning scenarios, progressive acquisition of knowledge, personalization, level of autonomy of the learner, motivation, usability, well designed graphics, reusability.

C.Cooperation vs. Competition

Competitive pressures can be powerful motivators and powerful inhibitors for learning about invention.

Cooperative processes are essential to design, engineering and invention, which can be both undercut and reinforced by competitive dynamics. Competitive tension and cooperative partnership are both essential to innovation in the "real world" (Adams, 1986).

D. The Environment or Place for Creativity Delivery in Universities

Another core concept in indulging or suppressing creativity is that innovative practices have to be constructed directly in the contexts where they take place and not separately from them. For example, in the case of one of the most creative companies, Google, it is known that the employees develop their ideas and work also by benefitting of free food, playful settings, informal dress code, in-house spa and fitness center amongst other benefits.

If we think of knowledge as "an act of participation with complex learning social systems" (Wenger, 2000, p.26), this accepts the sense of a bidirectional tension between competence and experience, where personal alterations are combined with the evolution of social structures (ibid.,2000). In fact the content by teacher is just a stimulus for learning but then the teacher himself cannot predict where learners will go through the creation of new meanings and new learning paths in different and various environments.

Not only the way of teaching, but also the role of the instructor has to be improved, and in many cases it has been enhanced. Inspirational researchers, but also technology through ICT replace in many cases the 'traditional' role of the teacher, and this is played not only in the classroom, but also in alternative virtual learning environment, much-needed capacity-building in research in contexts where this is lacking (Rumbley, 2008). ICT resources offer access and flexibility and like e-mail, instant messaging, and online social, networking spaces, they provide opportunities for joint projects and academic research, collaboration, as well as personal and professional networking (Altbach et al., 2009).

The alternative or blended teaching/learning environment has been strongly considered nowadays in reducing the stress of the 'standardness' in education, especially in highly scientific sectors. In business the educational environment has shifted to industry simulation and virtual game playing, while in arts, and other subjects the open space technology has been used in promoting creativity through autonomy, control and expression (Biggs & Tang, 2011).

Besides, we can state that the following areas are representative as stimuli in bringing creativity in universities: ICT development and proper utilization; social inclusion; game based learning; motivational individual and group; quality assurance and management decisions at administrative level; industry and government acceptance and cooperation and involvement; PDP (Personal Development Plan); training in people delivering the courses, motivating the students; designing the curricula; the assessment methods, changing the metaphor from relevance to risk taking and mistake acceptance; international environment based on internationalization; mobility and life-long learning; aging population and cross-cultural training;

Furthermore, cloud computing as part of ICT tools streams from a metaphor for the Internet and its blend with computing – access to networks, software services, data storage, etc (Gruman & Knorr, 2009). But a more complete definition is given by Vaquero et al., (2009). They state that "clouds are a large pool of easily usable and accessible virtualised resources (such as hardware, development platforms and/or service)", these resources allow for "optimum resources utilization" and adopt a "pay-per-use model in which guarantees are offered by the infrastructure provider by means of customized Service Level Agreements" (Vaquero et al., 2009, p. 50).

A study by Microsoft investigated cloud computing solutions as potential producers of a few hundred thousand new small-and medium-sized businesses in Europe, hence with high impact on unemployment rates and GDP growth. Despite being very new and not much explored, this area has potential for creativity and innovation in Universities as well, but it requires high reliability on trust and personal ties, things that take quality time. A study by De Laat (2006) of Utrecht University in Netherlands has investigated in a PhD research thesis the cloud learning–creativity relationship.

The study analyses an open learning environment which could not be controlled much since this would limit its flexibility and openness, the choices made by learners make. However, this could potentially stimulate the learners' creativity. Also the study looked into the level and type of engagement with tools and people, the creation of digital artifacts and the related creativity influencers. The simple participants' interaction and the reaction to other's creative work have triggered people engaging in such activities themselves.

Other similar studies (Kop & Carroll, 2011) show that Cloud based tools and applications offers people pleasure to express themselves and play, empowering learners to be creative and take control, traits uncover as creativity facilitators. In these studies the learners are in control rather than educators, as was also highlighted by Sharpe, Beetham, de Freitas&Conole (2010), the technological realities of learners are constantly varying, with influences on their learning experiences and expectations.

Gail Edmonson (2012) mentioned in her article that creativity is in the network and supported the findings of Wim Vanhaverbeke, professor at the Hasselt University, National University of Singapore and ESADE Business School, who has written a case study on Curana. In his case study, Vanhaverbeke (2012) on Curana, a small SME using cloud computing, argued that "the creativity and value-creation is in the network. That's completely new. We always thought of the firm as the center of the R&D, but nowadays it's becoming the 'network'"¹¹.

Both Chesbrough(2012) and Vanhaverbeke(2012) argued that experimentation is a must in innovation while networks help smaller companies discover and access technology faster and crowd-source cutting-edge ideas from entrepreneurs, inventors and other SMEs.

Academic and practitioner interest in organizational creativity has boomed in the last two decades (e.g. Napier & Nilsson, 2008; Runco&Richards, 1997), in large part because leaders have begun to see creative outputs as essential for sustainable advantage.

The link with universities and creativity is that SMEs and Large companies are looking for creative skills, while universities budgets worldwide seem to have drastically shrunk; thus it becomes imperative for universities to build on technology updates.

Many other authors concluded in their studies about the importance of "Open Learning"; that "openness can lead to multiple paths, potentially as many as there are individuals, and among the chaos there will be the "bad", aimless and time-consuming, as well as the "good", constructive and creative"(McAndrew, 2012)¹².

Indeed, universities can create new methods to learn or to teach with creativity. At the same time if the universities and educational institutions do not take that chance then others (such as other professional dedicated institutions or certainly students and teachers) may elude the need for accredited recognition. "Openness offers many paths for the future of learning, that future may indeed be a bit more complex and chaotic, but could also offer the seed for inspiration and creativity by all involved" (McAndrew, 2012)¹³.

In adding to the above argument, a recent report by the Centre for Educational Research and Innovation (CERI, 2012) shows the increasing use of flexible learning spaces, multi-age groupings, team teaching, the involvement of parents and the promotion of autonomous learning, and suggests that these trends are conducive to creativity (Carlile& Jordan, 2012). Carlile and Jordan (2012) identified some useful suggestions in their teachers' guide book for creativity.

¹¹<http://www.microsoft.eu/entrepreneurship-and-smes/futures/small-companies-win-big-in-innovation-partnerships-creativity-is-in-the-network-cm2l.aspx>

¹²<http://www.eurodl.org/?p=special&sp=articles&inum=4&article=543>

¹³<http://www.eurodl.org/?p=special&sp=articles&inum=4&article=543>

A small sample of the suggestions, are outlined and worth mentioning here. Carlile and Jordan outlined the promotion of creativity in many forms three of which take the form of possession, product and process.

In order to promote creativity as possession, that which also develops ownership, teachers should: adopt a learner-centered pedagogy; accept the mysterious aspect of creativity; encourage an openness to experience; help learners to articulate their thinking; develop the receptivity of learners; be flexible in responding to learners' interest; offer opportunities for self-expression; acknowledge the emotional dimension of learning; devote time to the development of creative ideas; and create safe but bounded spaces for creative activity, (ibid., 2012) According to the Carlile and Jordan (2012) as a guide for creativity, in order to promote creativity as product, with a view at the practical site of teaching, teachers should: involve learners in practical making activities; require learners to arrive at a discernible outcome; highlight the purpose and contexts of creative outcomes; provide the raw materials and opportunities for creative performance; supply exemplars of creative precedents; encourage personal ownership of outcomes and discourage simple imitation; negotiate evaluative criteria and encourage feedback on outcomes; support risk-taking and encourage persistence in the light of failure; encourage self and peer assessment and evaluation; and finally develop learner's discrimination of cultural and intellectual achievement.

Furthermore, in order to promote creativity process, teachers should: present creativity as an explicable process; focus on achievable rather than exceptional creativity; explain processes in the form of creativity tools; require that the process results in an outcome; break down problems or activities into component parts; expect all learners to engage in creative process; teach a staged approach to problem solving activities; combine active individual and group teaching methods; reveal and emphasize the complexity and inter-relatedness of ideas; and devote extra time and space for emergence to occur.

In addition, following the above suggestions, some literature discusses the value of both unexpected and unexploited information. In the process of finding unexpected connections, for example, chance events or information can be the basis for unplanned findings (Napier & Vuong, 2013; Napier, 2008), assuming the recipient individual and organization is open to new opportunities. The ability to absorb and sort large amounts of information, spark insight and then check for reliability, is also important for organizational members to develop. While discussing serendipity, Napier and Vuong (2013) represent the method of observing useful – but unexpected and unexploited – information and insights, then evaluating them to decide whether an emergent opportunity should be considered valuable and worth pursuing.

After all, it seems that Tina Seeling (2012) was right saying not only that "our brains are creativity machines", but also that creativity can be taught; because we are all naturally creative and we just have to unlock our "Innovation Engines"¹⁴. Moreover, as Lynda Ball (2003) argued, the goal "is to create new and sustainable ways of including young people in the cultural life of their communities, nurturing their innate creativity and supporting teachers, cultural and creative organizations and individuals to work with them. Not only these are creating opportunities for creative graduates, but encouraging young people to pursue a creative education" (p.8).

Current Challenges of HE Institutes in Promoting Creativity

Bearing the 2007-2008 and the 2010-2012 financial crises effects on education, the budgets for both public and private universities shrunk to a large extend. Thus it appears that students should pay more money for their education, while at the same time have higher expectations of the education supplier and the "product" they receive (Campbell, 2008).

The survival issue becomes thus the increasingly competitive market-knowledge, the quality and relevance of their teaching activities in a completely different setup.

¹⁴http://www.youtube.com/watch?v=Dle_GvFIbqY

Another interesting fact is that the two major activities of educators at HE institutes, i.e. teaching and research, have had poor integration when conducted together in many universities: Some academics put more emphasis on teaching; others on laboratories and research centers/projects; while others deal with knowledge transfer and community bounding.

Although research and research training are an intrinsic part of the educational process of graduate students-in particular at the doctoral level, they are seldom used for undergraduates on various geographical regions, but experiencing drastic changes everywhere towards mutual integration. Professional and vocational programs traditionally have made better use of accumulated knowledge and tend to emphasize practical applications of knowledge over research training, although this is changing in both new and old professional fields (Altbach et al., 2008).

From the above analysis, it seems that teaching for creativity will not be explored, unless it adds value to the learning process, the individual and to the university, government, industry and the community stakeholders. For example, Mihai-Yiannaki and Savvides (2012) have conducted research and contoured a theoretical framework promoting excellence and sustainability; networking between students; faculty, management and community; improving learning environment; developing staff; teaching; learning competencies and programme curricula under an integrated service vision; anticipating educational future trends in networking; and building creative climates and partnerships.

According to several authors, the educational system in many countries does not promote creative teaching / learning processes (Ferrari et al., 2009; Robinson, 2006). It seems that formal education does not facilitate creative behaviour and skills of students, as learners most often act as receiver of methods, pedagogies and knowledge (Ferrari et al., 2009). Teachers tended to give importance to relevance (Beghetto, 2007), competence and mistake-free (Ferrari et al., 2009). According to Runco (1999), teachers like 'conforming' and 'considerate' or respectful students.

Moreover, Ng and Smith (2004) stated that teachers often dislike personalities associated with creativity, as such, they are often assertive and will position their own ideas against everything and everyone, are self-possessed, determined, passionate about their work and have a tough skin, meaning they are often inflexible (ibid, 2004).

Thomas et al. (2013), in a research survey, argued, that the major barriers to change in education are represented by faculty, university systems and academic rigor, among others. This can lead us to think that these seem to be also related to limiting access to creativity in tertiary education, where the main leading role is related to systems or procedures.

We must not forget also that, students too, highly evaluate their higher education experience; and they would have liked a stronger and substantial connection with the professional world during their courses (Ball et al., 2010)

Furthermore, any measures for improving creativity at any level will have to consider the fact that universities as we know them today, may not exist for a long time. As the business environment develops, there will be need for more creativity. New business competencies such as flash-mob marketing, crowd sourcing, and community based design and compelling content delivery will require developed thinking skills and more creativity.

The university of the future, which will have as its main engine improved thinking skills and creativity, will have to expand its reach to untraditional areas, change the mix of its offerings, broaden its student base, develop more creative delivery of learning ways, and play more on the vertical dimension. All these will have to be done in parallel and in an exponentially changing rhythm.

Finally, according to Hill(2012), today's students will see more new knowledge and invention in their lifetime than mankind has witnessed since recorded history. Hill concludes by adding that, when looking for solutions to world's imminent problems, critical thinking, creativity and innovation have the capacity to play the most vital role in assuring our survival. This in itself places a challenge for higher education, and re-emphasizes the importance of creativity.

Conclusion

Following the thorough examination of the literature review, we arrived to the conclusion that creativity and hence creative thinking is an important skill for university graduates. It is at the same time a skill very much required by employers as well. As competition intensifies, the importance of creativity will become more and more critical and demand for creative graduates will be increasing. There is no doubt that creativity, in combination with other critical skills, will help future employees to meet the demands of employers and businesses operating in a rapidly evolving world. This will undoubtedly improve the university graduates employability.

Thus, it is obvious that there is a gap between the creativity level and thinking skills of today's graduates and the level required by the business world. We feel that we need to establish an appropriate learning environment and adopt those teaching methodologies that will encourage our students to develop their creativity and take advantage of opportunities in the real world. At the same time we need to offer our students the tools, the techniques and the methodologies that will support their thinking and boost their creativity.

If the main purpose of education is to make a positive difference to students lives, by helping them develop their potential as fully as possible, promoting their creativity should be an explicit part of their higher education experience (Fullan, 2003).

It is also apparent that a certain degree of creative approaches in teaching does exist in many Universities across Europe however; the evidence is not conclusive and needs further investigation.

Creativity and growth-oriented education are not new ideas in themselves and the concept of 'progressive education' (Dewey, 1916) is almost a hundred years old now, yet is still in a state of gradual acceptance and development. As such, there have emerged many ideas regarding the manner to go forward, as seen in the literature review.

The cornerstone philosophical foundation upon which this review is based is that creativity can indeed be learned (and subsequently, taught) to a good degree and that people, particularly students in our case, can become creative professionals (e.g. Turak, 2011).

The main conclusion to be made and can be qualified as a conviction that creativity can be 'inspired' rather than just taught (e.g. Heitz, 2013) if there are in place the 'right' goals and the 'correct' facilitators (e.g. educators, infrastructure). As a result, if such catalysts are in place, students can become equipped with this 'creative skill' which will be amongst the most useful qualifications one can have for increased employability opportunities.

Finally, there is probably no easy answer to the question how to educate for creativity in higher education. It is even much more difficult to implement a selected answer and measure the results of these efforts. Implementing creativity into a curriculum is a hard task, requiring much attention from everyone involved and especially faculty, academics and students in order to prove successful. At the same time, it is a challenge every society must take. We have reasons to believe that students will welcome creative approaches in teaching and thinking tools that they can take away and use for their entire life. The evidence on creative thinking shows that people are always eager to learn more and improve their thinking skills. Students may be even more eager to learn. We need to give them this opportunity: for their benefit, the economy's benefit and the society's benefit in general.

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