TO ADAPT OR TO DIE WHEN LEAVING THE UNIVERSITY: TO PROMOTE INNOVATION COMPETENCE MAY BE THE KEY

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Abstract

In the current European context, and in the Spanish in particular, with the entire system in global crisis, where everything moves fast and few things remain unaltered, the university has the challenge of training people to be prepared to deal with the changing environment, who must be prepared, at any given time, to compete to get or keep a job, to reinvent themselves at work, to be able to make the leap to other countries or to create their own job or company. Society needs creative and competitive enterprises that offer new products and services, with managers and workers trained for these tasks. In the educational context, the accumulation of knowledge content is losing meaning and the acquisition of procedures and attitudes is gaining presence. Therefore, the generic skills are becoming relevant in the whole educational process, and more specifically innovation competence. In this paper we examine the components of innovation competence with the objective of introducing it into the university curriculum so that graduates will be better prepared for the work place.

Keywords: Competence, Innovation, Higher Education.

1 INTRODUCTION

In recent years it has not been unusual to see in the Spanish press statements made by politicians on the need for innovation. “We want to introduce the innovation gene into our shared DNA. It is the surest way to acquire the leverage to get through the crisis,” said Patxi López, President of the Basque Country (El País 15-12-2011). “Innovation is not only for growth, it is for survival,” exhorted the former Minister of Science and Innovation, Cristina Garmendia (El Mundo 26-11-2008). It seems our economy should depend less on the building sector and more on businesses that bank on quality, innovation and internationalization. Public administrations should also manage their budgets better and plan strategically to support research, sustainable development and innovation. The rector of the Universitat Politècnica de València, Juan Juliá, declared that there is no other way to overcome the present economic situation than to invest in higher education, research and innovation. The countries that do so will be the most competitive and prepared to find the solution (Expansión 20-01-2012).

Along the same lines, more opinions have appeared in other sectors. In business, for instance, Mónica Deza, Vice-President for Innovation, and Head of Neuromarketing in the McCann Group, stated in 2011 that the crisis has brought out the importance of innovation to keep companies and society sustainable. All companies are being forced to adopt innovation as a core matter and a strategy to benefit from present and short-term challenges, as well. She also suggests that being able to detect social, economic and scientific trends is absolutely essential for any country, sector, company or brand.

Moreover, the area of economy and business has offered proposals to overcome the present crisis. Juan Carlos Cubeiro (2009), an expert in Leadership, thinks that attention must focus on talent management and working on the habit of excellence. Innovation has to be put into practice and trust should prevail to improve the atmosphere in working teams and customer’s satisfaction. Leadership is the key, as he considers the quality of our managers below the level required in the Spanish economy, which ranks eighth among world economies.

Thus, the adequate training of our undergraduates should be paramount in the transformation of the society of the twenty-first century. The authors believe that measures have to be taken in education, particularly at the university level. This paper posits that the capacities and skills comprised by innovation competence can be included in university curricula and that doing so will give students the advantage needed to succeed in their near professional future.
2 INNOVATION COMPETENCE

According to Villa & Poblete (2007), competence can be defined as, “Good performance in diverse, authentic contexts based on the integration and activation of knowledge, standards, techniques, procedures, abilities and skills, attitudes and values”. Recommendations by the European Qualifications Framework for Lifelong Learning (2008) add the terms responsibility and autonomy to the meaning of competence as “the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development”.

Competence can also be defined as complex know-how resulting from the integration and adaptation of capacities and skills to situations having common characteristics (Lasnier, cited in Fernández March 2010). Andreu et al., (2011) establish that competence is combinatorial, ongoing, contextual and evolutionary as well. A competence uses many resources, making it necessary to limit the types of learning outcomes in educational programs and is also the dynamic organization of many types of resources. Its development requires time and continues throughout a career. Situations are the framework that triggers the need to choose and combine resources, leading to conscious, reflective learning. By working in increasingly complex situations, the mobilization and combinations of resources become more and more effective. Marin et al. (2011) have observed a slight distinction made in the literature between competences required for managers and others for technicians, although there is no research to strengthen the distinction.

Much has been said about innovation and in our review of some of the literature we have found that the term adapts to current times. Lehto et al. (2011) define it as the invention of something new or improvement of something that already exists. The capacities and skills that make up the competence can be classified in three dimensions, individual, interpersonal and networking (Kairisto-Mertanen et al., 2011). The last dimension of innovation implies a process of transformation that, once it is carried out, has an immediate and medium-term effect on society. Innovation must go hand in hand with ethical values and social responsibility, which includes sustainability.

The Organization for Economic Co-operation and Development (OECD), in the description of the skills that lay the ground for innovation and research, mentions three broad categories. First, the skills of reading, writing and numeracy are basic for digital-age literacy. Second are the academic skills which are generally obtained through the education system and are transferable across situations (English, mathematics, history, law and science). Last, technical skills are the specific skills needed in an occupation that may include academic skills and knowledge of certain tools or processes (OECD, 2011).

In higher education, innovation must maintain the balance between knowledge and applied research so that the universities as institutions will provide society with professionals who fill the existing gap between what society and companies demand from universities and what universities offer. More and more, companies require more from graduates than brilliant grades. Being fully equipped for the work place may mean possessing skills that students have never been taught.

The task of university instructors is to make sure that undergraduates meet situations and learn techniques that will cultivate abilities that will prepare them for real working scenarios. Institutions of higher education must consider themselves part of the strategy for the development of a country and model university management should incorporate the new proposals and challenges that society and a globalised world offer. Undergraduate curricula should, therefore, include the crucial competences that are the driving force of innovation.

For this paper approximately 287 articles dating from 2001 to 2011 were extracted from the data bases Scopus, ISI and Google Scholar on the topic of innovation and employment competences. After reading the abstracts of the articles, 35 were selected for review. The in-depth examination of these articles led to the need to review approximately fifteen other sources.

3 CHARACTERISTICS OF INNOVATION COMPETENCE

In reports from Turku University of Applied Sciences (TUAS) Lehto, A. et al., (2011) and in Kairisto-Mertanen et al., (2011), the authors propose that innovation competence be developed in three dimensions or scales: individual, community (recently relabeled interpersonal in the INCODE project; see Acknowledgements) and networking. The following review attempts the adoption of the classification to present the results of our search of the literature on the topic of innovation competence.
3.1 Individual

People who show a more complex professional performance and lead innovation processes possess a special personal profile; they are somehow different from average individuals. A number of capacities and skills appear in the literature, in which several are outstanding at the individual level.

- The willingness to know and explore the unknown or anything new. These characteristics encompass curiosity, readiness and ability to learn or what is called the Learning Goal Orientation ([12], [13], [11]).
- Creativity, being inventive and thinking creatively are the most frequently cited capacities in the literature related to innovation. ([14], [15], [12], [16], [11]).
- Problem solving, ability to conceptualize, and cognitive complexity are other capacities required for innovation ([11], [16], [13]).
- Managing oneself, being committed, governing oneself or being target-oriented are also essential individual-scale capacities ([12], [13], [16], [17]).
- Managerial and entrepreneurial skills are held in high esteem. These include entrepreneurship, risk-taking, visioning, volition and initiative or commercial acumen ([12], [16], [11], [14]).
- Not so frequent but present in the literature are motivation, coping with chaos and uncertainties or the ability to manage complexity ([12], [17], [11]).
- Autonomy and thinking critically are also relevant for innovation ([12], [11]).
- Flexibility or receptiveness to innovation have also been noted ([12], [11]), as well as training in design and art education ([11]) or ambition ([12]).

3.2 Interpersonal

In any innovation process there is a fundamental need to establish relationships with other people. In the workplace, individuals will have to use certain abilities that will allow them to handle the work environment and professional situations effectively. The authors reviewed highlighted capacities and skills that are key for innovation on the interpersonal scale.

- Communication is one of the most outstanding ([16], [11], [15], [14]).
- Empathy and emotional intelligence by building trust, being sociable, socially astute and able to influence others, having the ability to read and manage one’s own and others’ emotions and behaviour during social interaction ([17], [13], [11]).
- Team work is also one of the most relevant, along with the ability to create knowledge collaboratively and manage conflict ([17], [13], [11]).
- Leadership also stands out and includes team building and steering, coaching, mentoring, lobbying, negotiating, coordination, ethics, charisma ([11], [18], [14]).

3.3 Networking

The networking dimension covers the capacities and skills that involve the relationships among all the actors involved in an endeavor, local or international, be they institutional, commercial or user level. This perspective contemplates a multicultural professional environment where agreement, respect for different approaches and social responsibility help to develop a network, able to provide society with reliable outcomes.

- The so-called “green” or ethical skills. These are crucial to establish the solid foundations for sustainability both in society and innovation processes and outcomes ([11], [19]).
- Multicultural openness, understanding and communicating across cultures, enjoying contact with dissimilar others ([11], [13])
- Consumers skills, i.e., understanding the role of consumers and their power of participation ([11])

Regarding the characteristics of innovation competence that companies look for in potential employees, qualified observations from the business sector (see Acknowledgements) cited the following five.
• Creativity: The ability to transcend traditional ideas, relationships or the like, and to produce new ideas, forms, methods, interpretations, etc.

• Initiative and leadership: Ability to think and act without being urged; ability to guide, influence or command.

• Forward thinking: Planning for the future or the power of anticipating what will or may come to be.

• Communication: The interchange of thoughts, opinions or information by speech, writing or signs.

• Team work: Cooperative or coordinated effort by a group of people acting together in the interests of a common cause.

Interestingly, these five could be classified in the individual dimension (creativity, initiative, forward thinking) and in the interpersonal dimension (leadership, communication, teamwork), which we find logical when considering that the employees possessing them would be highly prized in a company. However, as higher education also owes society in general, we find the Finnish definition of a third, networking dimension of innovation competence to be very convincing. The definition should be helpful to universities in setting their sights.

4 IMPLEMENTING INNOVATION COMPETENCE IN HIGHER EDUCATION

A number of initiatives have already been taken by universities within the European Union in order to introduce learning methods that develop innovation competence. This paper will enumerate only a few.

For example, TUAS (Finland) uses “research hatcheries” (Kanerva-Lehto, H. et al., 2011). Students are given projects of a certain difficulty for research and development. There are always a project leader, student assistants and ordinary students involved. Students work in teams under the monitoring of lecturers. Outcomes are the results of a hands-on teaching and learning process because teams work on different projects. Students learn at the same time they are working and acquiring expertise in certain matters. They receive credits under the European Credit Transfer System (ECTS). Surveys have observed satisfaction among both lecturers and undergraduates. The topics of the projects come from real life. Team work, critical thinking and other key components of innovation competence are put into practice in what TUAS calls Innovation Pedagogy.

As assessment in active learning contexts is demanding, a consortium of four European universities has been formed to develop an instrument to measure the generic skills needed in innovation pedagogy, which will be called the Innovation Competence Barometer (ICB). The ICB will be validated through oral performance tasks and later piloted in research hatchery experiences at the four partner universities. Members of the Innovation Competencies Development (INCODE) are TUAS as coordinator (Finland), Hamburg University of Applied Sciences (Germany), Karel de Grote-Hogeschool, (Belgium) and Universitat Politècnica de València (Spain).

The ICB intends to be a complement to the criteria currently under study in fifteen countries of the OECD under its Assessment of Higher Education Learning Outcomes (AHELO) program. AHELO has proposed the adoption of the Collegiate Learning Assessment criteria and testing system to assess students’ analytic thinking, problem solving and written communication skills. The viability of the criteria is the object of the study. AHELO is drawing international attention to the learning outcomes in higher education at conferences, workshops, seminars and other encounters supported by its research accomplishments and publications.

A number of Spanish universities are also involved in the implementation of innovation competence in their degree programs. Two examples are Universitat Rovira Virgili and Universitat de València. Sogues-Montserrat Pera, M. et al., (2011) describe the efforts of Universitat Rovira Virgili, which has developed specific methodology to define a competency based assessment model, implying the use of a shared teaching approach and active participation of students in the process. Researchers at Universitat de València (Vila & Pérez, 2011) have analyzed the relationship between the use of active methodology and the success in the development of the innovation competences by Spanish graduates. This research was carried out by surveying 5,500 individuals.

An example of a joint venture involving university, industry and administration is the OIVALLUS project financed by the European Social Fund, the Finnish National Board of Education and the Confederation
of Finnish Industries. The main goal of OIVALLUS was to make education policymakers aware of the “competence needs of learning networks in tomorrow’s Finland” (2011). The situation, as we can observe, is that future has come already and we must move fast and be quick in giving the right response to meet society and companies’ requirements. These initiatives are good examples and steps in the right direction but there is still much work to do.

5 CONCLUSION

The objective of this paper was to delve into the topic of innovation competence. We have presented the characteristics of innovation competence found in the bibliography examined and in the interviews with human resource representatives from the business sector. The literature reviewed, although limited to a ten-year period and to the hits found in three data bases, yielded several characteristics that concurred with those set forth from the business perspective. Additionally, we have included the description of several initiatives within the present European Higher Education area, where innovation competence, capacities and skills development is already under way.

Albeit the unassuming nature of our contribution, we do think that it is necessary to attempt to restructure our higher education programs to accommodate the teaching and learning methodologies and assessment strategies that will prepare graduates to become the qualified professionals that the twenty-first century requires. The practice and development of innovation competence within their studies may help students prepare to solve the as yet undefined problems that they will encounter later in life. Not only academic but social and “green” competences are urgently required. Universities have to become the engines for that change and verify that assessment procedures for those competences are feasible, reliable and efficient.

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