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INNOVATION LABORATORY AS A CREATIVITY STIMULATING ENVIRONMENT

ABSTRACT

Nowadays, creativity and resourcefulness are the characteristics most highly anticipated by the employers. Their formation and development in educational institutions is conditional, among others, upon the staff's innovative approach and readiness to take experimental actions, sometimes in violation of the canons of classical teaching.

This paper presents the international activities undertaken by the Work Pedagogy of Innovative Economy Centre ITeE-PIB and associated with the implementation of the idea of teamwork in innovation laboratories that enable creative problem solving. Research is carried out in an international partnership on the possibilities of the i-Lab use and their influence on the innovation development processes of the participants of the teaching and learning processes.

Keywords: innovations, creativity, innovation laboratories, quality of education.

1. INTRODUCTION

Results of the contemporary labour market research show that the employers expect from the employees and graduates creativity, innovation and the ability to solve problematic situations. Creativity is also mentioned in the report *Foresight of the Modern Economy Personnel* as one of the eleven core future competencies in Poland (Matusiak, Kuciński, Gryzik 2009: 117).

Creativity appears to be a synonym of the concept of innovation not only in the colloquial usage, but also in definitions created and functioning for the purpose of developmental psychology, psychology of learning, psychology of creativity and management sciences. Researchers, however, distinguish creativity as an innate trait that is subject to shaping as opposed to innovation treated as a learned

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trait resulting from environmental conditions and impacts (Drozdowski et al. 2010). Research on systemic assumptions for the innovation-raising activities through the strengthening of individual creativity has shown that in the opinion of the majority of respondents, innovation is the result of creativity (Figure 1). Creativity is a set of traits that can lead to innovation (Drozdowski et al. 2010: 58).

Thus, creativity (of the employees) seems to be a prerequisite for the implementation of innovations in the organisation, and these in turn are an essential factor in the productive and dynamic development of the organisation. The employees' creativity depends, among others, on the creativity of the educational staff and innovative, that is open to Europe and to the world, management of education systems (Grześkiewicz 2010: 17). Therefore, the development of competencies stimulating and releasing the potential of creative people constitutes an important area of interest of theorists and practitioners of the continuing vocational education. Actions in this respect are undertaken, among others, by the Work Pedagogy of Innovative Economy Centre ITeE-PIB. They are related to the implementation of the idea of teamwork in innovation laboratories (i-Lab). Research on the potential of i-Lab use and its influence on the creativity development processes of the participants of teaching and learning processes is carried out in an international partnership.

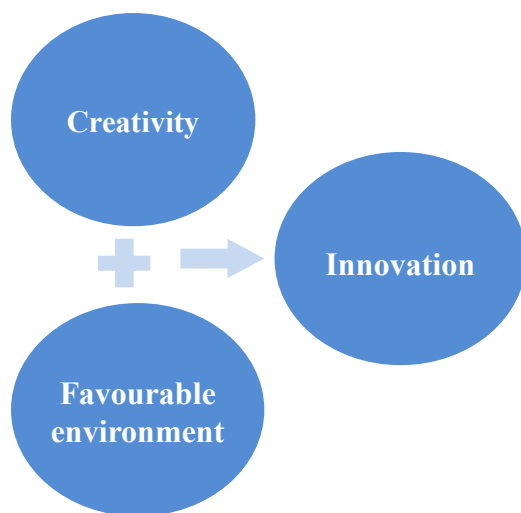


Figure 1. The relation between creativity and innovation

Source: Drozdowski et al. (2010: 57).

2. THE CONCEPT AND OBJECTIVES OF THE INNOVATION LABORATORY'S OPERATION

The idea of innovation laboratories was born in the 1990s in the UK, as a solution meant to improve the efficiency of teamwork, and to promote the innovative thinking and creative decision-making.

It should be emphasized that learning and teaching of creativity has much longer tradition and the scientific achievements (theoretical and empirical) date back to the 60s of the 20th century. Let us mention the works of D. Treffinger or S. Parnes and A. Osborn, related to the processes of creative problem-solving (CPS), including brainstorming as one of the CPS' tools.

Brainstorming becomes the basic method of work in an innovation laboratory. During the sessions, the participants strive to find solutions for the posed problem with the use of their intellectual potential.

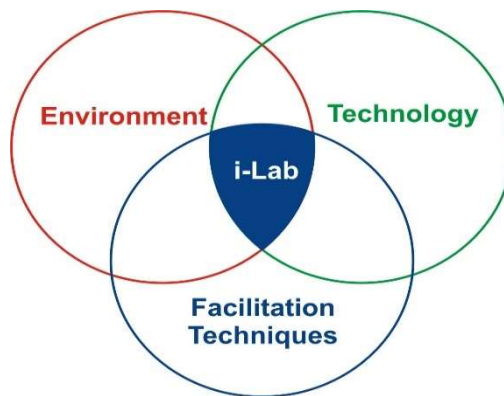


Figure 2. The concept of an innovation laboratory (own elaboration)

Source: Koprowska (2014: 12).

The quality of the i-Lab work results is very strongly influenced by the environment, which consists of three coexisting and interpenetrating elements:

- **Environment:** an i-Lab is designed in a manner providing the participants with a feeling of working together in a space intended for that very purpose that does not resemble a typical work environment. It is characterised by an untypical interior design, e.g. the outer space, the sea and the beach, the underwater world or the forest wilderness (these are just examples of i-Labs known by the authors and operating in Great Britain, Poland and Romania; an i-Lab can be designed in many ways, only human imagi-

nation is the limit). The i-Lab's interior design often refers to the childhood's motives, when human openness and creativity is the greatest, not burdened with life or professional experience. The laboratory generates a feeling of privacy, freedom of expression and action among the users, a sense of working together towards one on set goal.

- **Moderation:** an element aiming at stimulation of the creative process, primarily through the use of group work dynamics, but also the environment and technology, which are an essential part of every Innovation Laboratory. The moderator's task is to guide the group work so that the participants use their ideas in the most effective manner. Many other functions are assigned to the moderator that determine the success of the session conducted, which is why we devote to it a separate chapter of this paper.
- **Technology:** primarily an easy-to-use software that allows engaging all the participants in the process of generating and collecting solutions for the problem analysed in an i-Lab. The software provides for the simultaneous recording of ideas coming from all the participants. Each participant can preview the ideas proposed by others, which is often inspiring. The software used in an i-Lab has features of voting/evaluation, allowing a choice of several from among all of the submitted ideas. A very important feature of the software used in an i-Lab is the possibility of ensuring the anonymity of the session participants who submit ideas. The Centre's experience shows that this enables the participants to share their ideas in an honest and uninhibited manner, breaking the barriers often encountered during traditional meetings.

The environment and the methodology of work in an i-Lab make it possible to overcome the barriers, such as hierarchy in a team, political dependencies, habits and stereotypes that often prevent creative and innovative thinking. British, Finnish, Romanian and German experience confirms that an i-Lab is the perfect support for any teamwork involving planning, conflict management, organisational change, mind mapping, organising consultations or focus groups, education, and many others.

3. INNOVATION LABORATORIES IN THE CREATION OF INNOVATIVE SOLUTIONS

The first innovation laboratory in Poland was established at the Institute for Sustainable Technologies – PIB in 2009, as a result of the European Leonardo da Vinci project: *European Competence Development Programme for Innovation La-*

laboratories (i-Lab1). Selected employees of the Institute, characterised by respective predispositions and personality traits, were prepared to act as moderators. A guide to good practice for the i-Lab design, as well as the professional qualifications standard for the i-Lab session moderators and a related training programme were developed.

The idea of the innovation laboratories was developed in another transnational initiative – the Leonardo da Vinci project *Innovation Laboratories for the Quality Assurance of Vocational Education and Training – i-Lab2* (2013–2014), whose aim was to improve the quality of vocational education and training using innovation laboratories in the teaching and learning processes. The European i-Lab network was extended in the course of the project with four new innovation laboratories (in Poland – University of Rzeszów, Romania, Slovenia and Germany). Pilot implementation of the newly established i-Labs was carried out in all the partner institutions representing different levels of formal and non-formal vocational education.



Figure 3. Innovation Laboratories in the Institute for Sustainable Technologies – PIB in Radom (launched in the course of the i-Lab1 project)

Source: T. Sułkowski, ITeE-PIB.

The sessions during which an i-Lab was implemented into the practice of vocational education focused mainly on the organisation of office processes, defining professions of the future, searching for materials with new properties for modern construction, generating new technical solutions in the automotive industry, defining new software functionalities which aim to improve the life of disabled people.

The session participants' opinions (students and teachers) on the usefulness and effectiveness of the innovation laboratories in the vocational education processes were similar: the environment of the Innovation Laboratory, which consists of specialised software, inspiring surroundings and the conduct and organisation of the session, create conditions for an unfettered intellectual work,

creative work in a group. The methods used activate and engage all the session participants. The i-Lab session's efficiency in the process of vocational education was assessed favourably. It was pointed out that similar effects could not be achieved during a traditional lesson or it would be much more time consuming. In the opinion of the pilot session's participants, all the accessories and educational games stored in the i-Lab stimulated the creativity, whereas the magnetic boards and other facilities made it easy to work in groups and present the best ideas. According to the majority of the session participants, the Laboratory is seen as an innovative solution, which influences the quality of education.



Figure 4. Innovation Laboratories launched in the course of the i-Lab2 project (Universita Duracea de JoS, Romania and School Centre Ptuj, Slovenia)

Source: D. Harb, SCP.

The subject of the i-Lab application in the education of people with special educational needs has become a particular area of interest for several institutions that form the International Partnership for the i-Lab3 project: *Innovation Laboratories in the Development of Competencies of the Special Education Teachers and Persons with Special Educational Needs*¹. It will be implemented in the years 2014–2017 under the leadership of the Maria Grzegorzewska University – the key institution preparing the special education teachers in Poland.

The project involves the launch of new innovation laboratories (in Poland, Italy, Germany and Czech Republic). One of the project results shall include the proposals of specific group session scenarios with the use of innovation laboratories. They will complement the guide to good practice developed successively by the ITeE-PIB team in subsequent editions of international projects concerning innovation laboratories.

¹ More information available in project website www.ilab3.aps.edu.pl.

4. THE MODERATOR'S ROLE IN STIMULATING SESSION PARTICIPANTS' CREATIVITY

The role that the moderator has to play in the innovation laboratory is complex. In order to fulfil their duties properly, moderators need a wide range of skills. First of all, they should understand the very idea and concept of innovation laboratories that lie behind the elements that constitute the i-Lab reality. The moderator must know the possibilities of the i-Lab environment use, and have the ability to make use of specialised software and various available technical elements supporting its work.

The main tasks of the i-Lab session moderator include: planning and preparation of a session in a way to ensure the optimum use of resources available in an i-Lab, execution of sessions in the i-Lab environment (using available supporting techniques), and reporting.

Efficient operation of the i-Lab sessions requires the skills that would be more conveniently required from two people: the moderator and the computer technician. Practice shows that both these functions can be linked together and performed by the same person, although it is very common that in this post the work is done by a team of two people with mutually complementary skills.

The moderator's skills guarantee the high quality of results obtained in the work with a group in an i-Lab. This applies not only to the ability to use appropriate stores of knowledge and skills, and present appropriate attitudes in order to achieve the desired results, but also includes the ability to cope with the group dynamics in different situations and environments with the use of different techniques.

The professional qualifications standard for the moderator (developed in the course of the i-Lab1 project) lists the following competencies:

- Design of sessions conducted in an i-Lab.
- Moderation of the i-Lab session.
- Organisation and conduct of activities in an i-Lab that stimulate creativity.
- Use of specialised software in order to conduct the i-Lab session.

Beside the skills needed to prepare and carry out the session, also the skills to stimulate session participants' creativity are of great importance in the moderator's work. In this regard, the moderator, among others (Religa 2014: 27):

- Selects and uses games and stimulating exercises to revive the group of participants, get to know them better, and „break the ice”.
- Determines communication barriers and suggests ways to overcome them.
- Encourages the participants to be more active by stimulating them with own behaviour, e.g. provocative (when it is deemed appropriate) or relaxed, friendly and open.
- Combines (mixes) the actions undertaken by the participants individually with activities conducted in groups.

- Provides a wide range of proposals to support all the activities that make up the session conducted in an i-Lab.
- Remains flexible in its role as the moderator during the step of interpreting the answers and, if necessary, redefines some of the rules.

The standard has provided the framework for the development of a training programme for moderators. According to this standard, in the context of the aforementioned projects, a group of moderators has been prepared and they are currently working in all innovation laboratories.

5. SUMMARY

The appearance and integration of innovation laboratories in the teaching processes confirm changes in the vocational education and training, an example of opening to the experimental, innovative actions of the teaching staff and freedom to realise their own ideas, sometimes in violation of the canons of classical teaching. Creativity of the teaching staff and the innovative, creative environment for teaching constitute today one of the conditions of creativity of the citizens – employees, so much expected and sought by employers.

Previous projects related to the use of innovation laboratories provide interesting experience. They show that i-Labs can be seen as a new quality in education, but this quality depends on other factors, like the costs involved in the laboratory activities and the teaching staff's commitment and openness to new ideas in education.

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AUTHOR NOTES

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Creativity is now an exposed trait. This is due to the high need for innovation, original and useful solutions that serve the development of the organization, their effective market entry and long-term survival. This publication is a collection of papers prepared under The First National Conference „CREATIVE VIBES. Kreatywnością napędzamy gospodarkę”, whose aim was to stir issues concerning the significance of creativity from the point of view of the development of innovative economy, as well as to draw attention to the role of creativity in the education process of students and its impact on the development of professional competence.



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