



STUDENTS FUTURE TEACHERS FOR PRIMARY SCHOOLS OPINION ABOUT THE UNIVERSITY OPENNESS TOWARDS INNOVATION

Liliana CIASCAI, Lavinia Denisa ŞUTEU, Mădălina CRISTEA

Abstract: This study presents the results of an investigation focused on the university position towards innovation. 219 students, future teachers for preschool and primary education, have been involved in the survey and voluntarily filled in an online questionnaire. The results indicate that most students agree that the development of innovation skills has to be an aim of the current educational system and that it's an important objective of their university. Still, a high percent of students disagrees with the fact that they have enough time to be innovative and that university is a proper environment to be innovative. However, most participants agreed that teachers can stimulate the students' interest for innovation and they also have an active role in cultivating their capacity for innovation. Participants believe that all students should benefit from programs focused on the development of their innovation skills, not only those students with an innovative potential. The answers of participants suggest that university is theoretically opened toward innovation and the development of students' innovative skills. However, in practice there are some malfunctions, as the results of the study indicate.

Key words: innovation, students, university, education.

1. Introduction

Education represents a social and public policy field frequently subjected to change, and also with a great inertia to change (OECD, 2016). Inertia is due to the fact that not all changes are innovative, based on research and meticulously organized programs (Psacharopoulos, 1990).

1. 1. Defining innovation

Innovation can be defined as generating, accepting and implementing various ideas, knowledge, procedures, processes, products (goods or services) and methods, new or improved/optimized (Shavinina & Seeratan, 2013; OECD, 2016, OECD/Eurostat, 2018). Innovation differs from change and reform (OECD, 2016). The change may or may not be intentional and does not necessarily add value to a system or process, while the reform is a change that responds to a need and is implemented on the basis of a rigorous plan (ibidem). As an initiative, innovation begins with a creative idea, continues with the step of transposing the idea into practice and ends with a tangible product, which, once disseminated and evaluated by a critical audience, is noted for its novelty and impact (Delcourt & Renzulli, 2013; Tierney & Lanford, 2016). Innovation, like invention, is intrinsically related to creativity (Tierney & Lanford, 2016; Van Tassel-Baska, 2013; Wagner, 2012). Both involve creative imagination and discovery, flexible thinking, critical, creative and integrative thinking skills, creative problem solving, motivation, perseverance and autonomy. Imagination plays a more important role in the invention, while in the innovation process dominates the implementation of ideas, products and processes for concrete problem solving, which most often meet commercial needs (OECD/Eurostat, 2018). The innovative person must have experience and knowledge not only in a particular field but in different fields as well. His skills comprise, besides the basic skills in a specific field, high-level

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thinking skills, critical thinking skills, social skills and behaviors, and leadership skills, managerial, collaborative and communication skills. As a person, the innovator distinguishes himself through intelligence, flexibility, unconventional thinking, imagination, motivation and confidence, task persistence, risk-taking, curiosity, vitality, conflict handling, autonomy, pro-activeness and intellectual honesty (Mansouri, 2015; OECD, 2016; Roffeei, Kamarulzaman, & Yusop, 2016). In the whole document single linespace should be used.

1. 2. Innovation in education

The educational market benefits greatly of the national innovation system. Innovation in education focuses on products and processes, which have to be new or improved (Vincent-Lancrin et al., 2019). Mykhailyshyn, Kondur, & Serman (2018) distinguish between innovation in education and educational innovation, indicating that the former includes the latter one, which is essential. Innovation in education can be exercised in the educational (psychopedagogical and didactic), scientific, methodological and technological, infrastructural, economic, social, legislative, administrative plan. The psychopedagogical and didactic innovation refers to the organization of the educational process and to the elaboration and implementation of theories, models and didactical strategies that are new, creative and innovative. The innovation in the methodological and scientific plans aims to develop new theories based on research, the change of the educational programs, the development of new and updated contents (in the curriculum, textbooks and educational materials). In the technological plan, the innovation mainly concerns the creative implementation, in the educational process, of the existing technologies or of new technologies (NTIC, e-learning, mobile learning etc.). In the infrastructure domain, the innovation aims to develop research networks, virtual labs, communities of learning and practice, university networks, research institutions and industrial labs. The innovation in the economic, social, legislative and administrative domains is related to the creation and satisfaction of new needs of the digital society / artificial intelligence (Mykhailyshyn, Kondur, & Serman, 2018).

1. 3. Innovation within the university education

Research in the university education generates knowledge, invention and innovation (Kearney, 2009). The innovation serves mainly the following purposes: solving educational problems and optimization of the educational process (Magda & Buban, 2018). Because it depends on administrative leadership and collaborations between different departments, the innovation approach is often subjected to financial or intercultural blockages (ibidem). However, innovation can quickly generate individual, social, economic and other gains, through the improvement of the quality of learning, through vocational training, through improving economic activities and ensuring, on a social level, equal rights and equal opportunities (OECD, 2016). Innovation in higher education concerns the curricula (the development of new curricula or the improvement of the existing ones), the teaching-learning and assessment process (e.g. innovative learning strategies and models), research (e.g. the identification of new research areas, new products and processes), technological development (e.g. the construction of electronic platforms and the development of electronic teaching/learning communities), institutional and administrative management and leadership (e.g. the management of faculties and of departments, of various component units), financial management (e.g. support given to the component units of the university, the personnel involved in the innovation process, the management of resources from various sources) and changes in the mentality.

Universities should encourage the culture of innovation, considered a strategic resource that regulates the process of adaptation to environment and market. This is defined as a multidimensional environment characterized by values, motivations and beliefs shared by the members of the organization, that leads to predispositions for the systematic exploration and promotion of new ideas and ways of thinking, transposed into actions of solving specific problems and of capitalizing of opportunities, to meet market demands (Morris & Setser, 2015; Naranjo-Valencia, Calderon-Hernández, 2018). Universities that cultivate innovation are characterized by clear objectives, by the ability to innovate, by the high desire and high potential for innovation and by the adequate infrastructure and strategies for achieving the marketing of innovation.

2. Method

The research was carried out during the second semester of the 2018/2019 university year.

2. 1. Research instrument

The instrument used in the research has 60 items, adapted by researchers after Muñoz-van den Eynde, Cornejo-Cañameres, & Diaz-Garcia (2015) and Cachia & Ferrari (2010). Internal consistency assessed through Cronbach's alpha reliability coefficient is 0.964. The instrument gathered information on: (1) the demographics of the group of participants (3 items); (2) the students' opinion on innovation and innovator (29 items); (3) the university openness towards innovation (28 items). The questionnaire was completed online.

In a previous study (Haiduc, Ciascai L. & Ciascai, I., 2019), participants' responses to the second category (2) were analyzed and presented. The present study focuses on the participants' responses to the other categories. The answers were formulated using the Likert scale (1 - totally disagree; 5 - fully agree). The discussion of the results presented in the tables is done through the statistical mean and through the summing of the percentages of variant 1 and 2 and 4 and 5. In the latter case, the first sum represents the percentage of students who don't agree with an affirmation (marked with No), and the second one represents the percentage of students who agree with an affirmation (marked with Yes).

2. 1. Participants

The survey involved 219 respondents distributed by the following age groups: under 24 years (48,4% respondents); 25-29 years (10% respondents); 30-34 years (15,5% respondents); 35-39 years (11,4% respondents); 40-44 years (9,6% respondents) and the rest of the respondents over 45 years old. 70% of the respondents are in the third year of license at Pedagogy of Primary and Pre-school Education specialization, 3 follow master studies and 4 are PhD students. The rest of the respondents are teachers and 8 of them hold the title of PhD or a master's degree. The majority of the participants (97%) are women, this being a characteristic of the Romanian education. Participants engaged voluntarily in this study.

2. 3. Results

The results obtained by Haiduc, Ciascai L. & Ciascai, I. (2019) have shown that students positively assess innovative people and innovative skills development.

Students' opinion of the position of the university regarding innovation is presented in Table 1. As can be seen from the data analysis, a large percentage of the students (40,18% No) don't agree that, within the university, there is enough time to express themselves in an innovative way, respectively, that the university represents an appropriate environment for exposing their innovation skills (29,68% No). Moreover, one-third of the respondents express a neutral point of view about having the conditions to be innovative at any course, this being possible only in certain courses (76,26% Yes). Actually, 71,69% of the participants agreed that some courses require more innovation skills from students while others less innovation skills.

Table 1. *The opinions of students concerning the University's openness to innovation*

Item	N	No (%)	Yes (%)	M	SD
Students have enough time in the university to demonstrate their innovation skills	219	40,18%	31,96%	2,86	1,08
The university is the most suitable place where students can demonstrate their innovation skills	219	29,68%	41,10%	3,11	1,07
A school environment that cultivates competition and conformity discourages innovative manifestations of students	219	7,02%	52,05%	3,49	1,14
In any course students have many opportunities to demonstrate their innovation skills	219	10,22%	36,07%	3,02	1,07

In order to manifest their innovation skills in a learning situation, students must have a prior knowledge base	219	3,83%	73,06%	3,93	0,99
In some courses students can manifest their innovation skills to a greater extent than in others	219	4,74%	76,26%	4,03	1,00
Developing the students' innovation skills must be a goal of the current education	219	2,00%	79,45%	4,17	0,91
Some courses require more innovation skills from students (others less)	219	3,37%	71,69%	3,99	0,98
To be successful in college a student must also have innovation skills	219	5,20%	53,42%	3,50	1,05
Students with a potential for innovation must benefit from special development programs	219	3,37%	60,73%	3,78	1,09
All students should benefit from programs to develop their innovation abilities	219	2,91%	79,00%	4,17	0,95
In order to develop the necessary skills to be innovative, students need special conditions (space, materials, etc.).	219	2,91%	79,45%	4,26	0,95

The vast majority of respondents (70% - 80%) agree that all students should benefit from programs to develop their innovation skills (46,12% totally agree), that developing students' innovation skills should be a goal of the current education (44,29% totally agree) and that, in order to improve the innovation skills, students need special conditions (space, materials, etc.) (54,34% totally agree).

The lowest percentage of agreement (58,90%) is registered for the item: "Teachers need to be specially trained to recognize students with innovation skills" (see Table 2). The majority of students express their total agreement regarding the following roles of the teacher: to promote innovation in school (60,73% acord total) and to stimulate students' interest in innovation (60,27% acord total). Furthermore, students believe it necessary for teachers to have knowledge about innovation and the innovation process (60,27% totally agree).

Table 2. *The teachers' role in developing innovation skills*

Item	N	No (%)	Yes (%)	M	SD
Teachers must promote innovation in the educational institution	219	6,39%	82,65%	4,35	0,97
The competence to educate students as future innovators is gained after many years of experience	219	12,33%	66,67%	3,75	1,00
Teachers must be especially trained to recognize students with innovation skills	219	17,35%	58,90%	3,59	1,09
The teacher can stimulate the students' interest in innovation	219	4,57%	85,39%	4,39	0,91
Teachers must have knowledge about innovation and the innovation process	219	7,31%	80,82%	4,33	0,96
Teachers who make innovations have knowledge in many fields	219	8,22%	75,80%	4,08	0,97
The development of students' innovation skills is an important goal in our university	219	13,70%	71,69%	3,96	1,15

Only two-thirds of the participants agree that the competence of educating students as future innovators is the result of the experience.

The students' point of view regarding the relationship between the ability to innovate and education is presented in Table 3 (7 selected items). Therefore, 59% of the participants agree with the statement: "The ability to innovate can be developed in any person". The highest percentages of total agreement (53.42%) are recorded for the statements: "Innovation can be applied to any field of knowledge" and "Innovation can be applied to every object of study".

Table 3. *The participants' opinions regarding the educability of innovation capacity/ skills*

Item	N	No (%)	Yes (%)	M	SD
The ability to innovate can be developed in any person	219	14,61%	58,90%	3,66	1,07
Innovation can be applied to any field of knowledge	219	5,94%	78,54%	4,24	0,98
Innovation can be applied to every object of study	219	7,31%	73,97%	4,13	1,03

The ability to innovate have to be developed in the university	219	16,44%	58,90%	3,68	1,11
The ability to innovate can be taught	219	21,92%	44,75%	3,28	1,08
The ability to innovate can be assessed	219	17,81%	52,97%	3,51	1,06
Innovation skills are learned / developed through study and exercise	219	10,96%	67,12%	3,82	1,02

The agreement on teaching and evaluating the innovation capacity is around 50% (44.75% and 52.97%, respectively). More than two thirds of the participants (67.12%) agree that “Innovation skills are learned / developed through study and exercise”. 58.90% of the students consider that “The ability to innovate has to be developed in the university”. This percentage is 23.75% lower than the one obtained for the statement: “Teachers have to promote innovation in the educational institution”.

3. Conclusion

The majority of students consider that developing their innovation skills should be a goal of the current education and that innovation must be developed within the university. Furthermore, the vast majority of participants believe that developing students' innovation skills is an important goal for Babes-Bolyai University. However, a large percentage of students don't agree that during their university studies they have the necessary time to express their innovation skills, respectively, that the university represents an appropriate environment for manifesting their innovation skills. The vast majority of respondents believe that teachers can stimulate the students' interest in innovation, and they have an active role in promoting the students' innovation capacity. Thus, they have to possess knowledge from various fields, about innovation and the innovation process. Over half of the participants believe that teachers have to be especially trained to recognize students with innovation skills, and they also believe that anyone could be innovative. Less than half of the respondents believe that innovation can be taught, but more than half think that innovation is a capacity that can be assessed. In what concerns the university, the pre-service teachers for primary and preschool education have expectations regarding the needed conditions to develop their skills as innovators: time, knowledge, support provided by competent teachers in this field and an adequate teaching and assessment process.

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Authors

CIASCAI Liliana, Babes-Bolyai University, Cluj-Napoca (Romania). E-mail: liliana.ciascai@ubbcluj.ro

ȘUTEU (HAIDUC) Lavinia Denisa, Babes-Bolyai University, Cluj-Napoca (Romania). E-mail: lavinia.haiduc@yahoo.com

CRISTEA Mădălina, Babes-Bolyai University, Cluj-Napoca (Romania). E-mail: madalinarcristea@yahoo.com