I. IT TOOLS – GOOD PRACTICE OF EFFECTIVE USE IN EDUCATION

INNOVATION AND CREATIVITY IN E-LEARNING

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Abstract: *Problems of innovation and creativity raise particular interest in education. In the distance education you can discuss the extent to which e-learning tools trigger the need for innovation and creativity. Therefore, in light of the literature and environmental studies, attempts were made to address the challenge of innovation and creativity in utilization of e-learning techniques. Analysis of available sources and research materials enable to outline the concept of the continuous improvement of e-learning in order to implement the innovative and creative development of the student and progress in teaching.*

Keywords: innovation, creativity, utilization of e-learning.

INTRODUCTION

E-learning in the educational process is an effective form and method of digital intellectual development in order to achieve the desired results in the acquisition of general and professional qualifications, as well as participation in the research of cognitive and utilitarian nature. The aim of the actions for obtaining reliable sources and data analysis is to deepen knowledge about the possibilities to utilize e-learning in developing innovative and creative attitudes covering the diagnosis of cognitive source materials, motivational and emotional attitudes and practical actions. The rationale for the development of this subject is, on the one hand, intellectual curiosity associated with the treatment of e-learning as the form-method streamlines and even supposedly facilitates the process of learning and self-study, and self-learning. In fact, learning, self-study and self-learning seek to master the desired innovative and creative skills, which are associated with far-reaching abstraction, intellectual effort and emotional experiences that do not always yield the expected results. Therefore, there is a need to discuss e-learning as a standard, relatively great educational tool for the exchange of information, distance communication, diagnose

of needs and intellectual abilities of the participants' as well as control of the pace and evaluation of completed tasks.

In the process of acquiring innovative and creative skills when utilizing e-learning, much depends on the predispositions of the participants, especially their aptitude, so that the self-learner and self-taught benefits from the help of a tutor or coach effectively. A lot depends also on the sophistication of the e-learning program, allowing and encouraging the multilateral innovative and creative attempts.

1. THEORETICAL PREMISES OF EDUCATIONAL INNOVATION AND CREATIVITY

1.1 Effectiveness of education

In general, theoretical premises are considered from the point of view of declarations acquired and developed in the research. In fact, they do not correspond directly with the subject of research, but show a relatively coherent system of statements and permit the formulation of some practical conclusions necessary in the procedure of making methodological assumptions. Therefore, the effectiveness of education systems operating in the West, including in Poland, should be considered first and foremost on the canvas of significant successes of the neo-liberal economics (to 2008).

Little success in terms of innovation in Polish science and economy is reflected in the available documents and research studies. Polish place in the rankings indicates, inter alia, that the domestic economy is one of the least innovative economies in Europe. This results from the fact that economic growth is based on low labour costs, large internal sales market and funds from the European Union, which may result in a few years in the exhaustion of reserves and slowing down of development. The current position of the country is the result of long-time and strengthened negligence in the financial sector deficit, public debt and ubiquitous Euro problems, suggesting further savings in spending on research and development (Smith 2012, p. 167). Therefore, the implementation of the competitive system of knowledge creation, particularly in the form of taking care of equal opportunities for research institutions and potential innovators, so that competitive and open support system created a positive feedback to increase the efficiency of the whole NSI in Polish science and R&D sector (Bukowski, Szpor, Śniegocki 2012 , p. 29).

The publications of a team of School Effectiveness working on testing the quality and effectiveness of education and institutionalization of research facilities describe major problems in this regard. 1. Is the school important in the light of the analyzed different aspects of efficiency in the first stage of education? 2. To what extent determinants of the effectiveness of education at the second stage of education are revealed (research report)? 3. Is the school self-evaluation the result or the cause of educational achievement? 4. Is there an inter-school diversity of learning outcomes after the first stage of education? 5. The extent to which *the Criteria for Achieving*

Success in the Opinion of Partners are applied? 6. Where is the *Educational Optimism of Parents* revealed? 7. What are the values of parents and their conditions? 8. What are the possibilities of using the computer application? (SUEK 2015). Unfortunately, educational studies initiated and supervised by the Institute for Educational Research, in the convention for Human Capital (National Cohesion Strategy) and the European Social Fund (EU), there were no research materials published on the impact of e-learning on innovation and creativity in terms of educational efficiency. Similar case applies when referring to the effectiveness of Polish higher education, as criteria for evaluating the effectiveness of the university is defined and set from the comprehensive perspective, e.g. recognition of its assumed functions in relation to the realized ones (Piasecka 2012). On the other hand, in the area of the effectiveness of achieving the teaching and upbringing objectives of university, it is worth paying attention to academic favorability in relation to the cost of operation and economic efficiency, e.g. in reference to partly historical, multifaceted evaluation of the effectiveness (R. Kaplan and D. Norton 2001).

1.2 Innovation and creativity in education

There were numerous scientific studies published on innovation and creativity in educational terms, e.g. a series of articles (Grzesiak 2014, Wenta 2015, p. 91) and in popular science publications. Innovation is variously interpreted, for example as *... introducing something new*, which means repeating semantic phrase (i.e. almost the same "*eodem*" - Lat.) or *... newly introduced thing; news; reform* (Kopaliński, 1988, p. 231). In the dictionary of philosophical terms... *Innovation* (Lat. *Innovatio - renewal*) - *is ... the process of introducing new techniques, methods, agents, habits, a change in the method of exercising something. Innovation is effective if it allows to do something that could not be done previously, or at least could not be done so well. Often innovation is opposed to the idea which was approved and used for the renewal of a course of action* (Damski 1996, p. 91). For the purpose of education, these concepts are missing actors as sources of innovative projects and objectives, educational values, principles, efficiency etc. (Denek 2012, pp. 142-143). An example of the implementation of innovation to the research on education may be the publication of the Joint Research Centre of the European Commission, which has the form of legislative expertise. The category of innovation is closely linked with creativity: innovative solutions in education trigger a paradigm shift that allows free use of creative competence of students. Therefore, innovation in education is: 1) teaching creativity and 2) using new teaching methods. The analysis of education in EU member states also shows that schools always remain reluctant to innovation understood as "creative disruption", regardless of the system. The aspect that limits the school to adapt the requirements of "innovation" is the negative catalogue, based on the absence of such qualities as flexibility, positive approach to new ideas, independence, acceptance of risk, celebration of success, fostering synergy and promoting the "fun" (Konepczyński 2014). In search of the roads taken towards high-quality education system, the Ministry of Education supports activities and

participation in mainstream politics for the development of innovative projects that test finished products (Law of 2006).

On the other hand, creativity is the broadest and most indefinite concept, because it concerns the whole of human culture and the various spheres of human activity recognized as a universal and necessary phenomenon. Modern criteria for the creativity have been extended and liberalized, so it may be not only art, but also technology, organization, fashion etc., as in every area you can explore and construct new symbolic and material forms. It is true that creative activities (and its results) occur in at least two basic meanings: psychological and sociological. In the sociological meaning attention is drawn to the types of fields of human activity, the results of which deviate with its originality from those achieved so far and gain public approval (Rudniański 1981, p. 16). Both of these terminological approaches are generally differently applied to general didactics and subject education, especially in a situation of far-reaching commercialization of science and education (Wenta 2015, pp. 91-92).

Opinions and views about the digital generation are generally negative, e.g. based on the research. Therefore, we can argue with the opinion of Professor Bauerlein that a teen of the twenty-first century, connected to the network and performing multiple tasks at the same time, autonomous, and at the same time, striving for partnerships, failed to make a huge step forward in the field of human intelligence, global thinking and citizenship network. ... Not being [ready] to bear his responsibilities towards the past, he has made a breakthrough in the foundations of our society, as seen in their stopping before the threshold of adulthood and citizenship (Tapscott 2010, p. 44-45). Values important in the consideration of his innovation and creativity include: 1) a sense of freedom of speech and the possibility to choose, e.g. people can wade through the chaos of marketing signals that correspond to their needs due to technical novelties; 2) passion for personalization and media adjustment to own needs, especially in the times of no longer standardized job descriptions and one variety of the product; 3) being a generation of careful observers, who are conscious of their market power, knowing what can be required from manufacturers and employers; 4) the desire of entertainment and fun at school, at work and social life, as this is a generation raised on interactive experiences; 5) attitude towards joint action and networking, for example cooperation on Facebook, computer games, constant sending of text messages, etc. .; 6) the need for speed, not only in computer games, in chat rooms, in marketing, but also in dealing with employers; 7) innovation, which manifests itself in the efforts to work in innovative companies that use new equipment, for example Black-Berry, iPhone and others, but also search for new forms in the joint efforts, spending free time, acquiring knowledge and organizing work (Ibid pp. 85-88).

Utilization of educational media in order to develop innovative and creative attitudes, taking into account pedagogical talent o f a parent, guardian, teacher shall develop a student for innovation and creativity.

1.3 E-learning for innovative and creative education

Distance learning, as a new form-method of education to acquire theoretical knowledge and to some extent also practical knowledge that leads to action in the postmodern world, has been marked by at least two English-language terms. The first e-learning, is sometimes interpreted as a teaching method, which uses a different electronic media, controlled by computer technology, the most active in local and global networks. The second of these terms e-education is a form of extramural education mainly at secondary and higher education and is based, like e-learning, on the appropriate use of new technologies, including the Internet for interactive and multimedia education of students, who strive for all kinds of knowledge (*Strategia* , 2003).

In considerations on the barriers and difficulties in the implementation of distance education, especially in Poland, there is a need to take into account a long list of objective factors, often material-technical and financial ones, but also subjective factors, which lie in the potential participants. It is important to create an economy based on knowledge and long-life learning society, which depends on the state of Polish education and a vision of development for education until 2020 and beyond. On the other hand, it is important to notice that the educational success of students does not always translate into the conditions of employment in the labor market and wage, and human capital cannot be considered only in terms of access to knowledge. Pupils and students are very talented and capable, compared to the average, less able and intellectually disabled, including very diligent and hard-working as well as more focused on fun and lazy, who are the great unknown for the functioning and improving system of distance education.

The specificity of communication between the teacher and students in the online environment is expressed in the form of diverse consequences in terms of organization and personality of participants, including in the field of decision-making, skills to apply social codes, selection of a communication channel ~~of~~ and technical skills, reception of a communication channel, which depends on the interpersonal skills of both parties in the interaction, the way and direction of interpretation in favor of maintaining interpersonal contact, the impact of the message on the recipient in terms of encoding content, especially emotional one (Lubin 2012, pp. 151-152).

Qualities and even dysfunctional nature of e-learning are related to the fact that it becomes a popular tool as a distant educational portal, because it is a teaching system designed for self-education and under the supervision of a teacher via the Internet. It includes six interrelated elements: technology, communication, content, people, behavior and contextual factors (Plebański 2011, p. 10). The two most commonly used forms applied for individual and group education in e-learning include: 1) CBT (Computer Based Training) is a carrier of educational materials in the form of documents, presentations, multimedia, audio and video recordings as well as external data carrier; 2) WBT (Web Based Training) is an online interactive

form or the form operating in a closed computer network (intranet, extranet) for transmitting educational content (Przewodnik 2015). Both forms are characterized as self-learning techniques due to their mode of participation and access and transmission of information, but from the point of view of the so-called education for innovation and creativity, they are most predisposed in the field of blended learning.

From the point of view of education for innovation and creativity, e-learning refers to the characteristics of Moodle (Modular Object - Oriented Dynamic Learning Environment) based on LSM system (Learning Management System), which enables to gain intellectual experience related to online education. Moodle is designed to apply the theory of constructionism to effectively interact with teaching materials for others and communicating with other users while learning (Rice 2008, p. 19). The use of online interactive and static materials by the e-learning user, e.g. taking online tests and sending a file to the teacher online, as well as the utilization of standard questionnaires (multivariate response) drawn up by specialists, opens up innovative and creative possibilities. On the other hand, in addition to interactive materials the Moodle platform enables also to utilize social networking materials, for example chats, forums, conceptual dictionaries, Wiki websites (Ibid p. 241), which can enrich innovative and creative teaching.

2. METHODOLOGICAL BASIS

2.1 Research objectives and problems

Terminological base on the impact of e-learning on innovative and creative teaching are presented in the theoretical premises. Interdisciplinary research is aimed at obtaining data for analysis and interpretation aiming to understand the functioning of e-learning in innovative and creative teaching. This is related to the utilization of cognitive achievements of other humanities and social sciences, and natural sciences about the nature of man, his institutionally and intentionally stimulated development and his self-development - self-education, self-learning, self-creation (Palka 2010, p. 342-353). Therefore, it is so important to notice different pedagogical paradigms, which should take into account the idiom of pedagogy as a key science of education (Kubinowski 2010, p. 43-44).

The applied research methodology on the utilization of e-learning in innovative and creative education, the following questions should be answered. 1. Does the Internet, especially e-learning platforms, for example Moodle, allow for creativity and innovation in the work of the teacher? 2. Why are formal standards of e-learning ~~are~~ limited or is there ~~is~~ "no" possibility of introducing significant modifications showing signs of creativity and innovation? 3. To what extent do we learn from mistakes? 4. What can be done to expand the corset of formal restrictions related to the introduction of creative and innovative elements in improving e-learning platform? 5. What determines trust in the school when it is promoted with the use of

e-learning? The analysis of the impact of e-learning on the perception of messages and task-implementing activities related to education for innovation and creativity should take into account a variety of complications, especially in the so-called appearances in building own knowledge.

2.2 Description of the research environment and results

The research environment includes 32 teachers of various specializations as students of the Postgraduate Studies - IT and Computer Classes for Teachers at the Higher School of Humanities in Szczecin. The research was conducted in May 2015 on the basis of a questionnaire including 2 open questions and 3 questions with answers to be chosen by the respondent.

Table 1.

Personal declarations of respondents with respect to e-learning and online school promotion

Declarations of respondents	Number	Percent
I'm a fan of e-learning	12	37,5
I use the Internet in school promotion	28	87,5
I'm neutral to e-learning	4	12,5
Total	32	100

Source : Own work

Most of the surveyed teachers declared (Table 1) to use the Internet to promote school (more than three-quarters of respondents), which was shown e.g. in diploma theses, and one-third of the respondents considered themselves to be fans of e-learning.

The obtained data from respondents is important in the response of the importance of the Internet, especially e-learning platform, for example Moodle, in teacher's work in favor of education for innovation and creativity. Almost all respondents (96.9%) declare that the Internet and e-learning allow them to be innovative and creative (only one of the respondents found it difficult to answer), which corresponds to their participation in postgraduate IT studies for teachers. However, the question arises as to what extent these declarations coincide with their statements on possible restrictions and proposals for use of the Internet, especially e-learning, in education for innovation and creativity?

In response to the question - Why do some formal standards in e-learning limit the possibility of introducing significant modifications showing signs of innovation and

creativity - 62.4% of respondents gave a positive answer, and 37.6% did not respond. Some of the answers are even only contextual, e.g.: ... *the life experience teaches us on mistakes and we accept them with humility; limitations arise from lack of contact with the teacher; ... the time of waiting for the questions asked by the student is extended; ... Limitations are associated with the transmission of information, the selection of the program and the use of IT tools; ... Not everything can be done digitally, there are also legal restrictions; ... There is a long time of waiting for the assessment and feedback; ... There are difficulties in sending large files; ... E-learning platform does not allow to demonstrate all the teaching aids*. Interpretation of the responses on formal standards in e-learning, which partially limit the use of creative innovations, shows that, in general, knowledge of these terms is superficial. Educational innovation and creativity carry a wealth of semantic designates that are applied to the teaching practice with a great deal of difficulty.

In these considerations an important question is to formulate - What can be done to expand the corset of formal restrictions related to the introduction of creative and innovative elements in improving e-learning platform? Here a reference is made to praxiology understood as the science of good work (Kotarbinski 1996, pp. 182-183) in terms of individual and team activities, with minimal intervention in order to avoid own contribution to global resources, including in the sphere of self-knowledge, self-study and self-learning, interprofessional teaching functions and the dynamics of change in applied education (Wenta 2002, p. 119). Answers to the question about what can be done to improve e-learning platform when introducing innovative and creative elements are rather poor both in terms of quantity and quality. Brief responses were given by only 37.5% of respondents, and 65.5% of the surveyed teachers – students did not give any answer. The following answers are characteristic: ... *there are* being *constantly created new tools that enable the presentation of information and they must be applied; ... Seek to overcome the limitations associated with the size of files to be sent; ... Because not everything can be done digitally, direct contacts should be considered; ... You must constantly improve in terms of didactics and IT; ... Raising funds for the purchase of new e-learning platforms*. The answers given by the respondents show that the issues of educational innovation and creativity are rather general for them, because educational planning among students is still rather poor. On the other hand, the surveyed teachers most frequently use Moodle because it is free, although it also includes considerable formal restrictions for the user.

In the analysis of the selected diploma theses written by surveyed teachers doing postgraduate IT studies it is worth to refer to their statements about trust of Internet users in the school (Table 2), because in their work they use Moodle to present schools where they are employed.

Table 2.

Differentiated trust in school of surveyed teachers

Specification	Total	%	Inter.	%	Fan	%	Neutr.	%
Teacher	28	87,5	20	71,4	4	33,3	4	100
School management	10	31,2	4	14,3	2	16,7	4	100
Parents	8	25,0	2	7,1	2	16,7	4	100
Students	6	18,8	2	7,1	-	-	4	100
Local opinion	24	75,0	18	64,3	2	16,7	4	100
Online presentation	12	37,5	7	25,0	2	16,7	4	100
Total	32	100	28	100	12	100	4	100

Legend: Inter. – Declaration of the respondent that he/she opts for the use of the Internet in school promotion;

Fan - Declaration of the respondent that he/she is a fan of e-learning;

Neutr. – Declaration of the respondent that he/she is neutral to e-learning

Source : Own work

From the analysis of the respondents' opinion (Table 2) it can be concluded that the most common and effective impact on trust in the school have: the teacher (87.5%); local opinion (75.0%); school management (31.2%) online presentation (37.5%) parents (25.0) and students (18.8%). Therefore, even declarations of respondents about opting for the use of the Internet in school promotion, being fans of e-learning, do not have a significant impact on the choice of authorities, institutions and opinion-forming factors in creating trust in the school. This is due to the fact that respondents treat e-learning mainly instrumentally, and they do not have a wider knowledge about what is education for innovation and creativity.

Analysis of six diploma theses (Błaszków, Podwójna, Mikołajczyk, Nicka, Sikora, Szechyńska 2015), studies also among other teachers through a survey (Tables 1-2), who are students of postgraduate IT studies, allow to conclude that e-learning is primarily treated as a form-method for supporting the educational process and the online presentation of their educational facility. It is significant that these theses do not include merit signs, which would show that their authors notice the issues of innovative and creative education. However, the analysis of the topics and content of diploma theses shows that they include e.g. issues concerning the description of an online medical school as a showcase and source of information

(Błaszków 2015), the school website as a pedagogical micromarketing (Podwójna 2015), website of the care center as a showcase and source of network information (Nicka 2015), website presentation of the complex of special schools (Sikora 2015), e-learning Moodle platform as a system supporting the education process (Szechyńska 2015) and support for the organization of teacher's work with the use of Google Classroom (Mikolajczyk 2015).

A characteristic feature of the diploma theses of the surveyed teachers – IT students is that they are dominated by descriptions focused on the importance of information technology in education, but the process is presented briefly and they do not include issues related to the information education for innovation and creativity. They include the list presentation of tools and their use by the teacher and the student, and the valuable description of the so-called cloud computing, Microsoft Office 365 version EDU and Google Apps for schools and universities (Mikołajczyk 2015). An example of approach to innovative and creative teaching is the use of e-learning Moodle platform in supporting the educational process, where e-learning is described as a form of teaching aid, and Moodle platform is characterized from e.g. social perspective, although the reader is bound to critical deduction (Szechyńska 2015).

To sum up, substantive issues relating to the use of e-learning procedures regarding innovation and creativity in the work of the teacher and student rather do not occur in the responses of the surveyed teachers - graduate students of applied informatics, as well as in the selected theses. It results from the fact that the issue of innovation and creativity of teaching revealed itself rather in signal dimension of using the Moodle platform to present the school and the school, image.

CONCLUSION

The issues concerning innovation and creativity of teaching supported by e-learning are entangled in strands of internal and external contradictions, due to their semantic and substantive inconsistency. It is connected with the apparent belonging to teaching, although they belong to two different fields of science. Theory and practice of innovation and creativity in principle situates itself within the humanities and social sciences, while e-learning in its digital-communication layer rather opts for mathematics and technical sciences, and also strongly corresponds to the area of communication and information. When considering their substantive-objective and practical integrity, it is worth noting that issues related to innovative and creative teaching are more abstract and difficult to undergo qualitative and quantitative analysis than e-learning, because it is based on measurable mathematic and technical values, realized "here and now" in the context of the far-reaching results in the form of educational success of individuals in terms of science, art and social practice.

In the question about the cloud or a silo of human culture resources, which is influenced by dynamic transformations of civilization, it is worth paying attention to

at least two aspects of e-learning. The first of these concerns the need for effective lifelong learning based on constantly evolving and improved learning tools. On the other hand, you cannot fail to notice that educational outcomes, also achieved with the use of e-learning, are measured over long periods of time, and sometimes in the information self-education the categories of error and failure are the source of success for the common good, but also can provide threat to humanity.

The practical conclusions from the analyzed literature and surveys concerning theses are addressed to the scientific and research community to promote interdisciplinarity in the search of the truth. This paper also aims to make interdisciplinary science serve social practice, e.g. in the area of education, taking into account the attributes of freedom, skepticism and reductionism in solving scientific and educational problems.

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