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The aim of the article is to answer the research questions that concern both the essence of pedagogical innovation and the opportunities and barriers of creating detailed components of teachers' creative potential in the workplace. The article presents the definition of pedagogical innovation created on the basis of the general notion of innovation. The author introduces a typology of innovation that can be implemented at schools and discusses the ways of shaping teachers individual creativity. She also points out the shortcomings in the activities related to shaping the creative potential of teachers.

Keywords: innovation, pedagogical innovation, teacher, creativity, potential

Introduction

It is possible to put forward the thesis that the late XX century and the early XXI century are the time of interest in innovations. The notion of innovation has been present in and increasing number of projects financed by individual countries and pursued by entrepreneurs and scientists. Within the process of creating innovative economy, the organization educating future generation of innovators cannot be neglected. Within the Polish system of education the process involves public and non-public entities: nurseries, pre-schools, elementary schools, pre-high and high schools, colleges, school of arts as well as other schooling, educations institutions and care centers. The Polish system of education of children and youth is dominated by public institutions.

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The functioning of the system is based on activities performed by teachers and other employees of schools. The quality of functioning of the system derives from efficiency of school in accomplishing the responsibilities entrusted to them by the society. Therefore, a high level of educational process and shaping appropriate attitudes is what the society expects. Thus, it is teachers who are key employees of the educational system. The specifics of their job and their role in schooling institutions make it possible to call them the workers of knowledge (Cortada, 2009, p. 14).

On the other hand schools are expected to transfer knowledge, shape the abilities to make use of the knowledge required as well as develop such qualities of a student as self-reliance, communicativeness and creativity. Such qualities enable efficient adaptation not only to further education, since the so-called social and psychological elements of a human potential determine people's professional and non-professional success to a large extent.

Transformations taking place in the school environment, especially permanent and easy access to the sources of knowledge thanks to information technologies enhance the necessity of searching new – non-conventional – methods of working with a student. And it is the so called pedagogical innovations, with the key role of a teacher, that are gaining importance. Therefore, a sin qua non condition of having innovations at schools is the creative potential of the schools teachers.

Considering the above, the objective of the article is to address two research questions:

- What are pedagogical innovations?
- What are the opportunities of and barriers to shaping the components of teachers' creative potential in their workplace?

The accomplishment of the objective, divided into stages, consisted in presenting – based on literature studies – the very concept of pedagogical innovations in the context of general notion of innovation, working out the typology of innovations that could be implemented at schools and presenting the components of individual creativity along with the methods of shaping it. With the use of the findings of the Author's and other empirical researches, it was possible to identify shortcomings of the methods and practices applied in shaping individual creativity components.

Pedagogical innovations – their specificity, typology and examples

Prior to characterizing pedagogical innovations it is worth defining the primary notion, i.e. innovation. This phenomenon is an integral part of such notions as

change, novelty, reform or an idea perceived as a new one. Innovations could be

various facts, processes and phenomena that are technical, organizational, social or psychological in their nature. Such a diversified concept of innovations results from both relatively short tradition of researches into innovations and a variety of theoretical concepts. However, in the so called broader aspect – promoted by J. Schumpeter – innovation in each and every activity leading to the change in the hitherto state of the objects and/or relationships between them (Słownik Innowacji, http://www.pi.gov.pl..., 19.03.2017).

In the literature regarding schooling issues the notion of innovation refers to the macro level (system of schools) and the micro level (individual schools). Innovation concerns changes within the schooling system and its elements aimed at implementing measurable improvements (Okoń, 1979, pp. 322, 350). Referring to the literature on innovations in managing economic entities and the literature on educational system, it is possible to distinguish the types of innovations as presented in Table 1.

Division criterion	Innovation types	Characteristics/examples	
Source of initiation	demand	are the result of research on the needs of schooling institution clients (i.e. students, parents, local community)	
	supply	are initiated by education (implementation of rudimentary researches done by a teacher within academic activity)	
Scope of effects	strategic	are of major importance and of long-term character	
	tactical and/or operational	concern current/mid-term changes and raising educational institution efficiency in short term	
	product related	concern change or amendments to educational offer	
Object	technological	include changes in the process of providing services	
	organizational	concern changes in work organization	
	social	concern changes in workers' motivation	
	marketing	concern initiatives undertaken in order to shape proper image of institution	
Effect	product	concern the type and scope of services offered by school (i.e. subject offer of extra – curriculum classes)	
	process	concern basic processes (education and upbringing), auxiliary (administrative services) and management (management methods)	
Degree of	original	implemented for the first time (absolutely new, unique)	
originality	immitative	adapted for other educational institution	

Table 1. Types of innovations in educational institution

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Division criterion	Innovation types	Characteristics/examples	
Subject of innovation	upbringing related	concern methods of upbringing	
	didactic	concern educational methods	
	infrastruktural	changes to school equipment	
	organizational & managerial	concern methods of functioning of schools and managing its resources	
Number of	coupled	result of work of several people	
innovators	non-coupled	result of work of single employee	
Origin of innovators	closed	created by workers of one institution for its needs	
	open	created in liaison with other organizations (not only educational ones)	
Sources of	inwestment	subsidized from external sources (e.g. UE funds)	
funding	non-investment	financed from organization's own sources	
	curriculum	concern changes or amendments to educational curricula	
General subject of innovation	methodological	concern improvements in teaching and/or learning, and/or upbringing methods	
	organizational	concern organizational aspect of didactic and upbringing process, organization of school and its management	
	systemic	include all the mentioned aspects of innovations	
Subject of innovation as element of didactic process	curriculum contents	concern the educational contents	
	methodological	change from knowledge providing methods into teaching through identifying problems	
	organizational	concern the introduction of new organizational forms of education, aimed at increasing the student's self-reliance and cognitive curiosity	
	in the field of didactic tools	concern the implementation of the latest achievements of technology, facilitating both cognitive processes and teacher's work	
	concerning infrastructure base	concern improvements in school equipment	

Source: Author's own based on (Karwat, 1978, p. 11; Okoń, 1979, pp. 330–336; Janasz, Kozioł-Nadolna, 2011, pp. 29–32; Pietroń-Pyszczek, Piwowar-Sulej, 2012, pp. 6–7, 12; M. Piskiewicz, 2015, p. 12; Piwowar-Sulej, 2016, p. 50).

All the changes implemented in a schooling institution are most often referred to as pedagogical innovations. This notion was defined in the directive of the Ministry of National Education of 9 April 2002, concerning the conditions of conducting innovative and experimental activities by public schools and

educational institutions (Journal of Laws No. 56, item 506). Under paragraph 1.1 of the directive pedagogical innovations include all innovative organizational, methodological and curriculum solution aimed at improvement the activity of the school. Under paragraph 1.2 the innovations can concern all or selected classes, the whole school, a form or a group of students.

In order to implement the pedagogical innovation the headmaster is obliged to submit the resolution of the schools pedagogical board concerning the innovation to an institution in charge of the school. The deadline for submitting the document is 31 March of the year preceding the start of the school year. The resolution might be passed following the opinion of the school board or pedagogical board, and having reached the agreement of the innovation author or a team of authors concerning the innovation implementation at school (this refers to the situation when the details of the innovation have not be previously released). The administration units, then, adapt the provisions of the directive, introducing detailed procedures concerning pedagogical innovations in regions they are in charge of including, e.g. specimens of forms where principles of the innovation should be described.

Theoretically, the school headmaster, each pedagogical and non-pedagogical school employee as well as teams of employees might be the innovators. However, given the specificity of educational services and a teacher's role, it is worth stressing that creating and implementing innovations is mostly required from pedagogical school staff. Analyzing the data presented in bases of pedagogical innovations available in Polish provinces, it could be concluded that the register of infrastructure as well as organizational and managerial innovations does not exist. Therefore, the focal point are innovative curriculum solutions, organizational and methodological ones – all connected with the teaching process.

As it is presented on the website of the Board of Education in Poznań (2017), teachers ought to improve methods and conditions of teaching and education as well as their organization of daily work. Therefore, innovation might concern all the activities that are a novelty in organizational culture of a school and go beyond recommended methods and ways of realizing the rudimentary curriculum as well as the one that addresses the diagnosed need of students. The same institution presents on the Internet the list of innovations implemented in educational entities of the Wielkopolska province within the recent years. Among them there are such innovations as e.g. launching "uniform classes" educating firefighters, soldiers and prison guards, IT interest circles, the program of developing eating and nutrition habits at pre-schools, holding meetings of Polish and German families in order to familiarize with the culture and tradition of the region, implementing classes based on the use of the LEGO blocks.

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Several groups of beneficiaries of such innovations could be, then, distinguished. First of all they benefit a student (child), because they enable i.a. the development of individual interests. Parents are also beneficiaries to pedagogical innovations as they help satisfy expectations connected with the children's education. Any innovation translates into self-fulfillment of a teacher. It also benefits a school being a tool of creating the school's positive image (Piwowar-Sulej, 2016, p. 51). And on the macro level, both society and economy should benefit as well.

However, creating and implementing innovations is subject to external and internal factors. Innovations might be impeded by human potential of an individual organization, including the teachers' potential – all the qualities of knowledge workers of a school. Thus, it is adequate creative potential that is a prerequisite of creating innovations. Creativity is used generating new ideas, and innovation is a wider process including both generating and using creative solutions (West, 2000, p. 12). Creativity is an element of potential of employees of an organization, whereas innovation (in terms of its effect) is the aftermath of making use of this potential. Components of individual creativity and a possibility of shaping them in the workplace are discussed further in the article.

Creativity components of teachers and possibilities of shaping them in workplace

Creativity is an ability to creating new solutions. A concrete solution might be assessed in terms of its creativity addressing a question to what extent it is unexpected, original, beautiful and useful (Gautam, 2012). *National Advisory Committee on Creative and Cultural Education* describes four features of creativity (Lloyd, Smith, 2004, p. 3):

- creativity requires making use of imagination,
- creative acting is a deliberate acting aimed at achieving a result,
- original "product" is a result of creative acting,
- the result should be valuable from the perspective of the assumed objectives.

According to T.M. Amabile (1989, p. 63), the possibilities of utilizing a man's potential are determined by such factors (called creativity components) as: autotelic motivation, target-oriented abilities and creative abilities. In turn, T. Nęcka (2001, p. 17).

States that people's creativity depends on four components, i.e. specialized knowledge, ability of creative thinking, entrepreneurial personality and internal motivation. However, the above concepts have some common components such as: knowledge, ability of creative thinking and motivation.

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Knowledge is constituted by the acquired and suitably processed information (Kwiatkowski, 2001, p. 247). The knowledge is of quality character contradictory to data and information that are of quantitative nature. Abilities are generally understood as a capability of performing a task. In the analyzed case creative thinking is considered to be a creative activity. T. Proctor (1998, p. 46) defines this type of thinking as a phenomenon of evolving new thoughts, reformulating the hitherto knowledge and analyzing assumptions in order to put forward new theories.

As it is already known, the way of acquiring knowledge and abilities by a man depends on the level of motivation. Motivation is referred to as the "stamina of human behaviors and activities" (Borkowska, 1985, p. 9). It comprises a set of phenomena influencing a man. The so called internal motivation that is linked to satisfying a man's own needs and aspirations deserves further attention and discussion.

Some people have inborn abilities (predispositions) enabling them to act creatively. For interest, cognitive curiosity is considered such an ability. However, creativity is not the quality typical for the selected persons. It could be learnt and developed. The development of already discussed components of creativity potential might also take place in the workplace with the use of tools connected with the field of human resources management. Examples of activities to be undertaken at schools to benefit the development of a given component of teachers' creativity are presented in Table 2.

Creativity component	Activities to be undertaken for further development of the component	
Specialized knowledge	Training teachers in specialized knowledge (concerning the subject taught) and providing opportunities for acquiring knowledge in other fields (e.g. arts) Ensuring access to knowledge (including taking care of internal communication) Delegating challenging tasks	
Ability of creative thinking	Organizing trainings in creativity Using heuristic techniques during meetings of pedagogical boards	
Motivation	Providing organizational culture with properties facilitating creativity. i.a. through the opportunities of conducting experiments, risk taking, empowerment and appreciation of creativity	

Table 2. Teachers' creativity components and possibilities of shaping them in workplace

Source: Author's own.

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First of all the efforts should concentrate on the adequate level of teachers' specialized knowledge broadening their cognitive horizons. Yet, it should be remembered that creative ideas are often born through the combination of various fields of knowledge. Then, it is necessary to develop the abilities of creative thinking, mostly through heuristic techniques.

IF it is assumed that every teacher is to some extent creative, but not all of them feel the need to use the creativity to benefit their schools, it is enough to provide them with the opportunities unleashing their creativity, and most of all it is essential "not to disturb".

J. Brilman (2002, p. 171) underlines, that innovators should be provided with an opportunity of flexible working hours and choosing their workplace. According to M.A. West (2000, pp. 97–98) when people are given the freedom of decision making (empowerment) and are held responsible for their work effects, they are more willing not only to revealing their ideas, but also eager to implement them.

Findings of researches on factors shaping creativity of pedagogical staff

In 1970s K. Waligórski (1979) conducted researches concerning styles of managers used by headmasters of Polish schools and the relationship between the style and methods of working applied by school teachers. The findings of the researches of the above author prove and confirm that autocratic style of management affects both initiative and creativity of teachers. At schools, where the autocratic management style is used, reactive methods of working with students dominate. On the other hand, innovative teachers originate from the schools that are managed in a democratic way.

Interesting observations concerning creativity potential of teachers involved in early stages of children's education result from the researches done by I. Adamek and J. Bałachowicz (Adamek, Bałachowicz, 2013). It results from them that in the process of knowledge acquisition teachers lack opportunities of further improvement in their creativity competences. The surveyed reported on incomplete preparations in terms of methodology and subject matter concerning education in arts, and shortages within their technical, musical and drawing abilities.

Referring to the first component of creativity, i.e. knowledge, and findings of the researches of the above mentioned authors it should be stated that most often teachers choose these methods of professional advancement that do not require large amounts of time and funds. Therefore, among the researched postgraduate

studies enjoy the smallest popularity. Over a third of the surveyed declared insufficient amount of psychological knowledge and, therefore, the most expected area of teachers' improvement such problems that the teachers struggle with in their daily work (Adamek, Bałachowicz, 2013, p. 251).

It is worth noting that in terms of motivation the discussed researches indicate a relationship between teacher's seniority (level of professional advancement) with their creative competences. However, among the surveyed teachers, since the time of becoming certified teachers (i.e. the top level of promotion), the research findings indicate a significant drop in indicators concerning the size of creative activities of the teachers (Adamek, Bałachowicz, 2013, p. 252).

Insufficiency in practices connected with shaping teachers' creativity components – identified in empirical researches (the Author's own and of other researchers) – are presented in Table 3, where problems most often highlighted in the researches are the focal point.

Creativity component	Insufficiency of practices of component shaping	Type of barrier to creativity
Specialized knowledge	Limited impact of teachers on the topics of trainings (trainings on current school problems) Problems with internal communication (not keeping pace with changes generated by regulatory institutions)	Managerial – on school level Managerial or systemic
Ability of creative thinking	Lack of training aimed at developing employees' creativity Restrained use of heuristic techniques at meeting of pedagogical board	Managerial – on school level Managerial – on school level
Motivation	Excessive formalization of activities (procedure of innovation submission) Large extent of avoiding uncertainty and excessive concentration of current activities as characteristics of organizational culture Autocratic style of managing school System of appraisal, rewarding, promoting	Systemic Cultural – on school level Managerial – on school level Systemic and managerial

Table 3. Insufficient practices and barriers to shaping teachers creativity connected with them

Source: Author's own.

The Author's own researches were conducted within three projects. The first of them covered the years 2004–2006. The subject of the researches – financed from the funds of the Committee for Scientific Researches – was instrumental and entity aspects of realization of personal roles, creating working conditions

and shaping organizational culture at schools. The researches were done on purposefully selected sample population of twenty eight public schools within the Wrocław municipality. The researches were direct in nature and were conducted based on, i.a. categorized interviews and informal interviews with headmasters and representatives of pedagogical staff (see: Piwowar-Sulej, 2009, pp. 11–12).

The second research project – of contributory character aimed at identifying the elements of pro-innovative working environment that the school headmaster has influence upon. The researches conducted in January 2016 were based on an auditorium survey which was responded to by teachers of ten schools – students of post-graduate studies in the area of management of educational institutions, at the University of Economics in Wrocław (see: Piwowar-Sulej, 2016).

The third project was based on the method of focused interviews conducted at the turn of 2016–2017 with teachers – participants of the next edition of post-graduate studies in the area of management of educational institutions. About 10 people (from various educational institutions) took part in the interviews (four meetings lasting four hours each). The moderator was the Author of the article, presenting and discussing the findings of her previous researches (conducted using the *tunnel* strategy). In line with the guidelines regarding the researches of this type, the Author first defined the objective of the interview, determined the number of questions and made attempts to arouse interest of the respondents in the survey (see: Apanowicz, 2002, p. 85).

However, truly speaking teachers have access to knowledge. They are offered trainings and their classrooms are equipped with computers with the Internet access. Yet, none of the respondents ever participated in training courses aimed at enhancing creative thinking. The work of a teacher allows some freedom and a possibility of deciding about the ways of performing the teacher's tasks. The educational law, however, makes the teacher comply with a bureaucratic procedure regarding the implementation of innovations, which impedes creativity. Under the educational law (the Law of 26 January 1982, the Teachers Charter: Directive of Ministry of National Education on teachers' promotion of 1 March 2013) the system of appraisal of professional accomplishments of teachers and their promotion system values creative teacher. However, as it has been already indicated – having reached the top promotional level, the motivation of teachers to creative starts shrinking.

Working out innovative (teacher's own) curriculum and didactic contents is also one of the criteria of teachers' performance appraisal (see: par. 2.8 of the Ministry of National Education directive of 2 November 2000 on criteria and methods of teachers' performance appraisal...). The results of the above appraisal might be considered a basis of researching teachers with extra money (par. 6 of

the Ministry of National Education directive of 31 January 2005 on the amount of minimum rates of base salary of teachers...). However, the amount of extra money reward for an individual teacher depends on the decision of the headmaster. Teachers emphasize that the rules of such financial rewards are not transparent enough and headmasters, i.a. in this area tend to be autocratic.

Finally, "avoiding uncertainty" is a barrier to creativity within an organization. It is defined as "a degree of threat perceived by members of a given culture in view of new, unknown and uncertain situations (Hofstede, 2000, p. 180). In the event of perceiving the threat degree as high, people undertake creative acting reluctantly. It is worth stressing here that the negative attitude of school employees towards novelties results from their previous experience connected with the implementation of numerous amendments to the education law. Instability of the law – and the above described barriers to creativity – were indicated by the respondents of all the discussed research projects of the Author.

Conclusions

School cannot be innovative if does not have the employees with appropriate creative potential. And it is teachers who are the school key employees. Yet, knowledge, motivation and the ability of creative thinking are the most essential components of their creative potential.

It is said that incentivizing workers to creative acting is the task of managerial staff. Headmasters of public schools that the article focuses on, have to conform to numerous law regulations at their work. Some of them directly define the rules of informing about the innovations created at schools or the ways of rewarding teachers for their creativity. Therefore, the article has also presented both possibilities of and barriers to shaping the components of teachers' creativity, considering internal factors (on school level) and external ones (on the level of educational system).

In an attempt to determine further directions of the researches, it is worth noting that there is a lack of literature on the factors contributing to innovations at Polish schools. In the article is has also been underlined that innovations at school can be of multidimensional nature and may concern not only the didactic process. Therefore, an interesting research subject could be the identification of the level of innovations of educational institutions in the area of infrastructure or in organizational and managerial terms – i.e. such fields where headmasters themselves should be innovators.

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