



Nikola Barčíková

<https://orcid.org/0009-0002-0337-2996>

e-mail: nikola.barcikova@umb.sk

Faculty of Education Matej Bel University in Banská Bystrica

## Definition and Classification of Pedagogical Innovation. Systematic Review

Definicja i klasyfikacja pojęcia innowacji pedagogicznej – przegląd systematyczny

### KEYWORDS ABSTRACT

pedagogical innovation, definition, classification of types and kinds of pedagogical innovation, innovations in education, innovative teaching at the first level of primary school, systematic review study

The article is based on a systematic review study which includes systematization, collection and analysis of relevant scientific studies in the field of pedagogy related to the issue of the definition of pedagogical innovation, as well as its types and forms, at the first level of primary schools. The main objective of the review was to identify the definition of pedagogical innovation and its classification of types, kinds and forms at the first level of primary schools in professional literature. We selected the analysed literature according to the criteria: scientific studies and articles published in scientific journals and periodicals, studies related to pedagogical innovation at the basic level of education, studies published in the last 20 years, studies in Slovak, Czech and English languages. We have identified a number of problems that we suggest to address at the research level. These are: synonymous understanding of the terms: pedagogical innovation and reform, semantic meaning of the word pedagogical innovation, pedagogical innovation and its form in the process of social change, the connection of pedagogical innovation with the innovation process, the innovation cycle, the creation of conditions in school education for the introduction of pedagogical innovations, criteria for classifying pedagogical innovation.

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**SŁOWA KLUCZE**      **ABSTRAKT**


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innowacja  
 pedagogiczna,  
 definicja,  
 klasyfikacja  
 typów i rodzajów  
 innowacji  
 pedagogicznych,  
 innowacje  
 w edukacji,  
 innowacyjne  
 nauczanie na  
 pierwszym poziomie  
 szkoły podstawowej,  
 systematyczne  
 badanie  
 przeglądowe

Artykuł opiera się na systematycznym badaniu przeglądowym, które obejmuje systematyzację, gromadzenie i analizę odpowiednich badań naukowych w dziedzinie pedagogiki, związanych z kwestią definicji innowacji pedagogicznej, jej rodzajów i form na pierwszym poziomie szkół podstawowych. Głównym celem badania przeglądowego było zidentyfikowanie w literaturze fachowej definicji pojęcia innowacji pedagogicznej oraz jej klasyfikacji typów, rodzajów i form na pierwszym poziomie szkół podstawowych. Literatura została wybrana zgodnie z kryteriami: badania naukowe i artykuły opublikowane w czasopiśmie naukowych i periodykach, badania związane z zagadnieniem innowacji pedagogicznych na podstawowym poziomie edukacji, badania opublikowane w ciągu ostatnich 20 lat, badania w języku słowackim, czeskim i angielskim. Zidentyfikowano problemy do rozwiązania na poziomie badawczym. Są to: synonimiczne rozumienie terminów „innowacja pedagogiczna” i „reforma”, semantyczne znaczenie wyrażenia „innowacja pedagogiczna”, innowacja pedagogiczna i jej forma w procesie zmian społecznych, związek innowacji pedagogicznej z procesem innowacji, cykl innowacji, tworzenie warunków w edukacji szkolnej do wprowadzania innowacji pedagogicznych, kryteria klasyfikacji innowacji pedagogicznych.

## Introduction

In the field of pedagogy and education, new ideas, practices and technologies are constantly emerging that have the potential to improve the learning process and student outcomes. These new approaches are often referred to as pedagogical innovations and represent an important aspect of the current education system. As interest in this issue grows, the definition and classification of the term ‘pedagogical innovation’ itself becomes the key issue.

Innovation can be defined as a deliberate change process that seeks to restore, modernize and improve various aspects such as objects, phenomena, means, work organization, institutions, and systems (Obdržálek et al., 2004). Průcha, Walterová and Mareš (2003) state that innovations in education represent new pedagogical ideas and practical measures that focus on transforming the content and organization of education, assessment of pupils and the atmosphere at school, with an emphasis on good relationships with pupils and the public. These innovations also include the use of modern technologies in education.

Pedagogical innovation is understood as a change, renewal of the content of education, methods and forms of work, the concept of teaching, methodological aspects

of the teacher's work, the school system, and school institutions (Petlák, 2012). Innovation is understood as a recommended, implemented and systemic transformation or turnaround in the form of the application of a new idea, innovative solutions, improvements and enhancements to a thing. It is addressed to individuals or groups and can refer to a certain product, process, leadership, structure, or management (Porubský et al., 2014). According to LaCroix (2020), pedagogical innovation is defined as a certain teaching practice that differs from traditional instruction and is intended to improve student learning. Pedagogical innovation is a certain process whose function is to create teaching practice to more effectively support student learning (LaCroix, 2020).

In addition to defining pedagogical innovation, it is useful to pay attention to what specific types, kinds and forms of pedagogical innovation exist. Pedagogical innovation and its specific forms in pedagogical practice should be seen as a reflection of social, economic, social, political changes and events in the current era. Therefore, it is necessary to perceive several types of classifications of pedagogical innovations and to define their categories and criteria. Currently, pedagogical innovations in pedagogy are identifiable on the basis of the criterion of technology, e. g. digital applications, portals; on the basis of the criterion of strategies, methods and forms in teaching, e. g. gamification, cooperative, group teaching; on the basis of the criterion of the concept of teaching, e. g. project-based learning, interest-based learning, personalised learning, experiential learning, peer learning or eco-pedagogy (Cristol, 2023).

In modern pedagogy, there are several approaches to defining and classifying pedagogical innovations. Some definitions focus on technological aspects and the use of digital tools in the educational process, while others focus on new teaching methods, organisational changes in educational institutions or innovations in the content structure of education.

The issue of change and innovation has been the subject of theoretical research in sociology. Investigating change and innovation can often be an important topic in sociology. This discipline deals with the analysis of social structures, relationships and changes within the society. Change and innovation are significant because they affect how companies develop, adapt to new conditions and solve new problems. Sociological theories can offer insight into how and why societies change their behaviour, norms and values as a result of innovation and change. They can analyze how innovations spread through society and their impact on different groups of people. Some of the most popular sociological theories, which are often used to investigate the issue of change and innovation in the society, include the theory of social interaction, the theory of diffusion of innovations, the theory of social capitalization or the theory of postmodernism.

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Primary education is a key period in the development of pupils, and therefore it is important to know how we can apply innovations in this context. The advantages of pedagogical innovations in elementary education include the improvement of education by increasing the engagement of pupils, supporting their critical thinking and developing competences important for the 21st century. Because of innovations pupils have access to a richer source of information and educational materials, which supports their individual development.

### The purpose of the present study

For the purpose of the systematic review study, we selected and formulated the following research question: What are the possible definitions of the term 'pedagogical innovation' in literature?

The main aim of the research was to identify and classify the definitions of the term 'pedagogical innovation' in professional literature.

The sub-objectives were:

- to find out how the category of pedagogical innovation is defined in literature;
- to analyze what kinds, types and forms of pedagogical innovation are defined in literature.

### Method

This article is perceived as a systematic review study. We have followed the procedure of creating a review study described by the author Mareš (2013) in his publication. Mareš (2013) defines a systematic review study as a type of study that analyses in detail a large body of work on a particular topic over a selected time interval. We followed the PRISMA methodology (Page et al., 2021) in selecting the research studies. We used the Web of Science, Scopus, ERIC and Researchgate databases as sources of searches for international research studies and publications. For Slovak research studies we used the databases of the Slovak Pedagogical Library and the databases on the ISSN portal of the University Library of Matej Bel University. The search was conducted on 15 October 2021. We chose the following as the criteria for selecting the studies:

- databases of domestic and foreign pedagogical journals and periodicals such as ERIC, Web of Science, Scopus, ERIC and Researchgate;
- year of publication: from 2000 to 2023;
- languages: Slovak, Czech, English, German;

- studies related to the definition and classification of pedagogical innovation – articles;
- keywords: pedagogical innovation, definition, classification of types and types of pedagogical innovation, innovations in education, innovative teaching at the first level of primary school;
- studies based on quantitative/qualitative/mixed approaches;
- level of study: studies mainly related to the primary level of education.

After entering the keywords and a specified time period into the given databases, 70 research studies were initially selected. During the screening process, 58 research studies that did not meet the criteria of the time of study publication, study type and study grade were excluded. 12 research studies were included in the final screening. We analyzed these research studies in depth and extracted the results, which were summarized and systematized into review tables (Table 1, Table 2). Among the research studies, quantitative research design or mixed quantitative-qualitative research design was predominant. In analyzing the research studies, we focused on the following areas which we present in the form of objectives: to find out how the category of pedagogical innovation is defined in the literature; to analyze what kinds, types and forms of pedagogical innovation are defined in the literature.

In our research we chose the following as our research question: what are the possible definitions of the term ‘pedagogical innovation’ in the literature?

## Results

The results on the definition of pedagogical innovation belong to the research objective: to identify and classify the definitions of the term pedagogical innovation in professional literature. The results answer the research question: What are the possible definitions of the term ‘pedagogical innovation’ in the professional literature?

Table 1. Definition of pedagogical innovation in research studies

Definition of pedagogical innovation: key findings	Author	Year of publication
Innovation is thus different from reform or change because these terms do not necessarily imply the application of something new, nor do they imply the application of improved ideas or knowledge	King and Anderson	2002

Definition of pedagogical innovation: key findings	Author	Year of publication
Although these terms are often used interchangeably, it is important to define how innovation differs from reform and change. Most of the literature defines innovation as the implementation of not only new ideas, knowledge and practices, but also improved ideas, knowledge and practices.	Kostoff and Mitchell	2003
<p>In the context of the pedagogical innovation cycle and the objective evaluation and reflection of changes in schools or education, innovation as change can refer to “new school structures, contents, methods, or changes in the focus of values on which the educational process is oriented.”</p> <p>Various attempts to renew the essence of education, attempts to reform, the introduction of new procedures, planned and purposeful changes.</p> <p>Innovation: a synonym of the word ‘modernization.’</p> <p>Innovation (as change, novelty) follows invention (idea) and both are products of the creative process. Thus, pedagogical innovation is a fulfilled invention.</p>	Matulčíková	2005
<p>Innovations in education represent new pedagogical concepts and practical measures which are mainly focused on the content and organisation of schools, education, assessment of pupils, school climate favourable to pupils and the public, including the application of new technologies in education.</p> <p>Innovation includes something new, modern, more interesting, and more stimulating, which is introduced into the teaching process in order to increase its attractiveness for pupils, to achieve better learning results and to improve the overall social-emotional climate in the classroom to eliminate or reduce disciplinary problems.</p>	Bagalová	2011
innovation as some renewal of employees’ or management’s own actions, for example, by creating and implementing new working methods, procedures, products or services; such renewal arising from informal learning through work processes in the context of those actions.	Melkas and Harmaakorpi	2012
Innovation is generally understood as “[...] the successful introduction of a new thing or method.”	Brewer and Tierney	2012
Innovation can be defined as any kind of dynamic change that aims to add value to educational processes; this can range from system innovation to classroom innovation. The Oslo Manual (2005) defines innovation as “the introduction of a new or significantly improved product (good or service) or process, a new marketing method or a new organisational method in business practices, work organisation or external relations.”	Cerna	2014

Definition of pedagogical innovation: key findings	Author	Year of publication
Also in Slovakia, pedagogical innovations in school practice have been one of the important means of bringing qualitative changes to the content and forms of education and training. These changes can be of various kinds, mostly related to the use of modern (new or rediscovered in new contexts) teaching methods, complex methods or educational programmes.	Bagalová & Bizíková	2016
Innovation is defined as a significant change in selected key educational practices; we focus on questions that have been asked in at least two waves of three international surveys, and we develop several indicators to identify changes in professional practices at the classroom or school level.	Vincent-Lancrin, Jacotin, Urgel, Kar and González-Sancho	2017
Innovations can be directed towards progress in one, several or all aspects of the education system: theory and practice, curriculum, teaching and learning, politics, technology, institutions and administration, institutional culture and teacher education. It can be applied to any aspect of education that can have a positive impact on learning and learners.	Serdyukov	2017
The Oslo Manual distinguishes between innovation as an outcome (innovation) and the activities by which innovations arise (innovation activities) This edition defines innovation as “a new or improved product or process (or combination thereof) that is significantly different from the entity’s previous products or processes and that has been made available to potential users (product) or put into use by the entity (process).”	OECD/ Eurostat	2018
The fulfilment of innovation was previously usually perceived as a linear process leading from scientific work to the practical application of innovations. Innovation was perceived more as the result of collaboration within normal social and economic activities. Innovation was seen as a departure from normal practice in order to achieve better results.	Halasz	2020

The second part of the results of the review study, concerning the classification of pedagogical innovations, belong to the research objective: to identify and classify the definitions of the term pedagogical innovation in literature, and the sub-objective: to

analyze what kinds, types and forms of pedagogical innovations are defined in professional literature?

After an in-depth analysis and synthesis of the data from the research studies, we were able to derive the aspects of classification of types, kinds and forms of pedagogical innovations in the analyzed research studies.

Table 2. Classification categories and specific types, kinds and forms of pedagogical innovations in the research studies

<b>Classification category of pedagogical innovations</b>	<b>Classification excerpt from the text; key findings</b>	<b>Author</b>
in terms of methods and forms of work	Teachers, out of their own interest, implement in their teaching experimentally proven teaching methods or an innovative educational program, or only some elements (e. g., integrated thematic teaching or only its elements). Gradually, the whole school can move from individual spontaneous innovations (by some teachers) to substantial systemic changes in the aims, methods and organisation of teaching.	Bagalová and Bizíková (2016)
	Innovative use of ICT as a cross-cutting tool, activating, participatory methods of working with pupils (e. g. project method), use of less common organisational forms (e. g. block teaching), introduction of thematic teaching; the use of activating, experiential and participatory methods, in particular project-based learning, cooperative learning, CLIL.	Bagalová (2011)
	Multiliteracies and discussion-based teaching focus on the development of cultural distance and critical skills and refer to a range of practices and principles rather than a single pedagogical approach.	Paniagua and Istance (2018)
	Innovation can also be tangible (e. g. technological tools) and intangible (e. g. methods, strategies and techniques).	Serdyukov (2017)
in terms of teaching subjects	Pedagogical innovations in the social-emotional domain include, for example, active and performance pedagogies that work with students' personal feelings and relationships, such as role-playing, collaborative pedagogies, games, case study work, and social problem solving.	Paniagua and Istance (2018)
	In mathematics, innovations must address the challenge of increasing student engagement and learning outcomes, which often means introducing pedagogies that use more open-ended, complex, and authentic tasks such as problem-based, project-based, and inquiry-based learning.	Paniagua and Istance (2018)



Classification category of pedagogical innovations	Classification excerpt from the text; key findings	Author
	Both fluency and accuracy are needed in learning foreign languages, which gives a clear direction for innovation in pedagogy. Common pedagogical practices that respond to these challenges are task-based learning and project-based learning, and may involve linking the classroom to other contexts.	Paniagua and Istance (2018)
	Fluency and precision are needed when learning a foreign language, which gives us a clear direction for innovation in pedagogy. It should ensure that the learning of grammatical forms and communication are interconnected and that they are set in meaningful and authentic contexts. Common approaches to respond to these challenges are task-based learning and project-based learning, and they can entail linking teaching to other contexts.	Paniagua and Istance (2018)
in terms of the teacher's didactic aids	The use of teacher-created resources.	Bagalová (2011)
	Gamification builds on how games can capture students' interest and facilitate learning. Gamification in education takes many forms (e. g., gamification, game-based learning, serious games), but in this report "gamification" encompasses the pedagogical core of games and the benefits of playful environments for engagement and well-being.	Paniagua and Istance (2018)
	Online learning design tools that are explicitly designed to help teachers progressively incorporate learning technologies into their work and are linked to repositories of existing digital resources in their field.	Laurillard (2008)
	There are innovations in educational techniques or delivery systems, such as the use of new technologies in the classroom.	Serdyukov (2017)

Classification category of pedagogical innovations	Classification excerpt from the text; key findings	Author
in terms of educational content	<p>Innovation as change can refer to new school structures, new school content, or changes in the focus of the values on which the educational process is oriented.</p> <p>The areas of information in the field of pedagogy: the creation of a school concept, the new design of the educational content (curriculum), the improvement of teaching resources, and the development of different disciplinary didactics.</p> <p>The creation of teaching content: in particular the implementation of various projects ranging from those supported by professional NGOs to classroom and school projects from teachers' workshops,</p> <p>Supplementing, extending the curriculum of individual subjects, developing newly introduced subjects, their objectives and curricula.</p>	Matulčíková (2005)
in terms of teaching concepts	<p>Blended learning changes established routines to get more out of teaching. This pedagogical approach blends student work and teaching for understanding, adapts their sequencing, and draws heavily on digital learning resources.</p> <p>Experiential learning takes place through active experiencing, exploration and reflection. This approach connects content and process; reduces guidance; promotes engagement; enables connections to be made between learning and the wider environment; and generates knowledge from experience.</p> <p>Embodied learning connects the physical, artistic, emotional and social. This marks a significant shift in many education systems that have traditionally prioritised abstract thinking, individual and passive acquisition of content.</p> <p>Embodied pedagogies develop and harness two natural dispositions in young people: creativity and expression, and consciously use creative experiences and active student engagement to support knowledge acquisition.</p>	Paniagua and Istance (2018)
from the point of view of the person implementing the innovation	<p>Innovation in teaching and learning focused on educational ambition; a clear strategy to link research, teaching and innovation; academics leading innovation in learning and teaching with technology. And we should avoid: innovation in teaching that is left to specialists; innovation efforts that are not strategic; technology used to drive innovation in teaching.</p>	Laurillard (2008)

Classification category of pedagogical innovations	Classification excerpt from the text; key findings	Author
	Innovation in the scope of teacher collaboration in schools, Innovation in feedback mechanisms in schools, Innovations in evaluation and recruitment in schools, Innovations in the external relations of schools,	Vincent-Lancrin, Jacotin, Urgel, Kar and González-Sancho (2017)
	Small innovations are also particularly important in the education sector. The “low innovation” sectors noted: “in education, most new practices are developed by individual schools and teachers”.	Halasz and Fazekas (2021)
	Innovations created in the workplace. Innovations initiated by employees, coming directly from the practice.	Halasz (2020)
	Small innovations implemented by frontline practitioners in their daily practice can play an important role in improving the quality and efficiency of public services. They can be described as hidden innovations, invisible innovations, everyday innovations, employee-driven innovations, bricolage innovations or – specifically in the education sector – school-based or teacher-led innovations.	Halasz and Fazekas (2021)

By analysing the research studies and summarising the results, we present an overview of the most important findings. According to the first important suggestion, there is a need for a proper definition and verbalization and semantic meaning of the term ‘pedagogical innovation’. It should be said that, in the theoretical background of the issue, it is not always correctly defined and it is often associated with the term ‘reform’. We have been able to determine, on the basis of the review study, that the terms are not synonyms and we have to distinguish them in meaning and content in order to understand both phenomena correctly and apply them in educational practice. However, the truth is that both concepts are in direct dependence and one is related to the other. The second research finding is that innovation is not meaningfully and substantively associated with modernization, i. e. what is innovative is not necessarily modern. A paradox arises here because one must realize that, for each developmental period of a country’s society and school system, something different is modern or innovative, and, in fact, one cannot clearly define innovation as modernization. It may be so, but for the most part it is not. An innovation is a particular change that may be modern at a certain time in its origin and application, but is not modern for

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another time. It is necessary to look at pedagogical innovations and their historical development in a country and their actual content. According to our findings from the research studies, we have come to the conclusion that pedagogical innovation must be understood for a full understanding of this phenomenon in a procedural perspective, with a close connection to the innovation process and the innovation cycle.

The last observation which has to be mentioned is that, when classifying and distinguishing types of pedagogical innovations, it is necessary to perceive several specific features on the basis of which we divide pedagogical innovations into certain groups. Such categories, that include specific types, kinds and forms of pedagogical innovations, are based on the methods, forms of work, content of education, teaching subjects, means of teaching, as well as aids used by teachers. When classifying and distinguishing types of pedagogical innovations, it is necessary to perceive several specific features on the basis of which we group pedagogical innovations. The conclusions we have interpreted can be generalized for the theoretical frame of the issue. However, we can note that the criteria and categories on the basis of which we divide pedagogical innovations into different types and kinds are largely unspecified in professional literature. The classification of pedagogical innovations is clustered into larger theoretical units.

## Conclusions and discussion

Currently, there are a number of approaches to defining and classifying pedagogical innovations. Some definitions focus on technological aspects and the use of digital tools in the learning process, while others focus on new teaching methods, organisational changes in educational institutions or innovations in the content structure of education. We have identified a number of issues that we propose to subsequently address at the research level. These are mainly the following topics: synonymous understanding of the terms 'pedagogical innovation' and 'reform', the semantic meaning of the term 'pedagogical innovation', pedagogical innovation and its form in the process of social change, the connection of pedagogical innovation with the innovation process, the innovation cycle, the creation of conditions in school education for the introduction of pedagogical innovations, and the criteria for classifying types, kinds and forms of pedagogical innovations. Pedagogical innovations have the potential to improve basic education and prepare students for the challenges of the 21st century. It is important that we continue to research and implement these innovations and that we support teachers and schools in their efforts to achieve better outcomes for pupils.