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ABSTRACT

The study defines the significance of the development and support of educational innovation processes in Ukraine during the difficult period of Russian military aggression and determines the specifics of the introduction of pedagogical innovations in universities in wartime conditions. The classification of education innovations is highlighted, and several innovative approaches to the organization of distance/blended learning are presented. Using the results of the survey of Vasyl Stefanyk Precarpathian National University (Ukraine) students as an example, their attitude to distance learning as a large-scale innovation is presented, and several opinions regarding the use of e-books and electronic teaching aids are characterized. The management aspect of the organization of the university educational process is substantiated. The necessity of effective planning of an innovative strategy for the development of an educational institution is emphasized, the principal's focus on qualitatively new changes, psychological and pedagogical staff interaction based on empathy and partnership, the formation of a common vision of the directions of professional progress of a modern university.

Keywords: education innovations, innovative approach, innovations in war conditions, distance education, universities of Ukraine.

1. INTRODUCTION

Being a component of any society, influenced by processes taking place in it, education must instantly respond to society's challenges to meet the development level of science and technology, trends of modernization of the socio-economic sphere, properly train specialists for effective professional activity in various areas (Wynne & Krummel, 2016; Tsependa & Budnyk, 2021).

Today, Ukrainian education has to function at a specific time, wartime, because of current large-scale Russian aggression. Educational institutions in most regions of the country continue to work remotely. In September 2022, the new academic year will traditionally start, and some of them are planning to begin offline studies, providing they meet special life safety requirements. In case students feel unsafe and fear full-time education, they can choose any form - distance, individual, or externship.

In higher education institutions, a mixed (blended) training option is also considered, when some disciplines will be taught offline, and others – online. At the same time, we will develop a new experience of a comfortable educational environment under the existing war circumstances, namely: creating safe shelters (bomb shelters), providing signs of evacuation in case of air alert, evacuation schemes, estimated evacuation time, informing all students and institution employees, etc. These are new challenges that Ukrainian educators are facing in the XXst century so that our educational front continues to work in the most comfortable conditions for the acquisition of new knowledge.

These conditions require a variable approach to the organization of educational processes, rapid adaptation to teaching, including its continuation in shelters, as well as the introduction of pedagogical innovations for face-to-face and distance learning.

The purpose of this article is to (1) define the specificity of the introduction of innovations in educational institutions of Ukraine in wartime conditions, giving their classification, (2) to present innovative approaches to the organization of distance/mixed education, (3) to justify the management aspect regarding the organization of the university educational process.

2. THEORETICAL ANALYSIS OF THE PROBLEM

Educational innovations are natural, dynamic in nature, and a developmental phenomenon, the implementation of which in practice enables the resolution of contradictions between the traditional organization of the education system and social challenges regarding its modernization. "Innovation is to be regarded as an instrument of necessary and positive change. Any human activity (e.g. industrial, business, or educational) needs constant innovation to remain sustainable" (Serdyukov, 2017). "Innovation in education is a systematic and strategically planned change that can be extremely complex and multidimensional" (Wilson, & Sy, 2021).

Education innovation is considered in different aspects: as a separate branch of scientific knowledge and a subject of methodological research; scientific problems of innovative processes in the modern philosophy of education and training. Therefore, it can be argued that pedagogical innovation includes an interdisciplinary synthesis of sociological, psychological, didactic, acmeological, economic and other tasks. The high-quality implementation of innovations in practice can significantly affect the final results of the student's education, as well as the general level of the teacher's professional activity while expanding the innovative field of the developing educational environment (Budnyk, Mazur, Matsuk et al., 2021).

The modern university is increasingly considered not only as a base for training highly qualified specialists but also as a center for developing innovations, and conducting research in close cooperation with industry (Blass & Hayward, 2014). Today, the progressive university serves as an innovative education and scientific center for organizing conditions for creative self-realization, scientific growth, international cooperation, and mobility of students based on universal and national values (humanism, partnership, responsibility, freedom, professionalism, etc.) (Sonka & Chicoine, 2004).

It is high time to develop new educational technologies that would help identify the talents of school graduates to support and expand the mission of the research university. "The innovations are helping to reset school-university relationships to a focus on direct, scalable, and personalized digital learning services, delivered via interactive technologies that utilize game-based and team-based learning approaches" (Henry, Gibson, Flodin & Ifenthaler, 2018).

In pedagogical science, the 1950s-1980s is the period of the emergence of ideas about pedagogical innovations. It is primarily about the intensification and optimization of the educational process in educational institutions of various types. The ideas of anti-egalitarianism, diversification, and multicultural education were considered innovations of that time. Various models of education were used, such as: rationalistic (providing students with knowledge and skills that will help them successfully adapt to social realities) and phenomenological (based on a combination of scientific knowledge and their own practical experience, students are taught to plan their lives independently, take personal responsibility and figure out complex issue).

The term "innovation" means novelty, change, application of something new, unconventional. The goal of implementing any pedagogical innovation, new idea, or method is to create something different from something having existed before either in terms of quality, quantity, or other criteria of novelty. Any innovation in education must be implemented in practice to reveal its effectiveness or vice versa. After all, educational innovations are primarily aimed at increasing the productivity and effectiveness of student learning. However, the introduction of something new often meets resistance among the participants of the educational process, because it involves their "exiting the comfort zone" (Fullan, 2007), or the introduction of so-called "pseudo-innovations" that are not effective.

"…Innovation requires three major steps: an idea, its implementation, and the outcome that results from the execution of the idea and produces a change. In education, innovation can appear as a new pedagogic theory, methodological approach, teaching technique, instructional tool, learning process, or institutional structure that, when implemented, produces a significant change in teaching and learning, which leads to better student learning. So, innovations in education are intended to raise productivity and efficiency of learning and/or improve learning quality" (Serdyukov, 2017).

Modern scientists prioritize seven innovative approaches to the future:
- Formative analytics,
- Teachback,
- Place-based learning,
- Learning with robots,
- Learning with drones,

- Citizen inquiry. (Herodotou, Sharples, Gaved, et al., 2019)

Pedagogy offers different classifications of innovations according to different criteria. Without detailed presentation (since they do not have an accepted common approach), we will describe several of them, which are, in our opinion, the most popular, for example, in Ukrainian education.

Thus, according to the technological approach, they differentiate productive (fundamentally new products) and procedural innovations (new methods and technologies of training organizations).

In addition, educational innovations are classified according to the level of innovativeness of changes, the nature of novelty: 1) zero-level innovations, which provide for the practical regeneration of the primary properties of the system (reproduction of the traditional educational system or its elements); 2) innovations of the first level, which are characterized by quantitative changes in the system without changing quality; 3) innovations of the second level, regrouping of system elements and organizational changes (for example, innovations regarding the combination of pedagogical techniques or their use in non-traditional conditions of the educational environment); 4) innovations of the third level, characterized by adaptive changes of the educational system in new conditions without going beyond the boundaries of the old model of education; 5) innovations of the fourth level, which contain a new version of the solution (most often – simple qualitative changes in individual components of the educational system, which provide some expansion of its functional capabilities); 6) innovations of the fifth level, which initiate the creation of educational systems of the "new generation" (change of all or most of the primary properties of the system); 7) innovations of the sixth level, as a result of which educational systems of a new type are created with a qualitative change in the functional properties of the system while preserving the system-forming functional principle; 8) innovations of the seventh level, which is the highest key characteristic of educational systems, during which the basic functional principle of the system changes (Pidlasyi, 1998, p. 13).

3. DISTANCE LEARNING: AN INNOVATIVE APPROACH TO TEACHING

Distance education, as a large-scale innovation, has made students' and teachers' lives easier in the conditions of the coronavirus pandemic. Today, remote technologies are an irreplaceable form of education for Ukrainian students who, unfortunately, are suffering due to the aggressive Russian invasion of the country. Therefore, this form of education is an involuntary and necessary step to preserve education in relatively peaceful regions, as well as for those students who continue their education as forcibly displaced from the war zone and are staying temporarily in other regions of Ukraine or abroad.

294 students of Vasyl Stefanyk Precarpathian National University (Ukraine) took part in the questionnaire regarding their attitude to distance (remote) learning. Almost half of them (47.6%) responded positively to distance learning in war conditions, and 41.5% partially support it. The rest of the respondents are threatened by danger to life or health under the existing circumstances (Fig. 1).

Taking into consideration the fact that the survey was conducted during the second month after the beginning of large-scale military aggression by Russia, some young people still could not concentrate on their studies and experienced (or are still experiencing) deep psycho-emotional stress, and fear, depression, etc.

WHAT IS YOUR OPINION ABOUT DISTANCE LEARNING IN MODERN CONDITIONS?

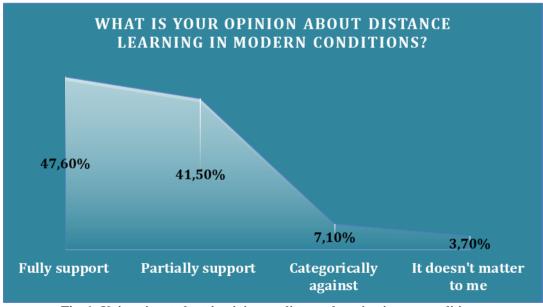| Fully support	Partially support	Categorically against	It doesn't matter to me
47,60%	41,50%	7,10%	3,70%

Fig. 1: University students' opinion on distance learning in war conditions.

Distance learning is quite a serious challenge for all participants in the educational process. At the same time, such education encourages teachers to creatively search for optimal opportunities for introducing modern technologies, new teaching methods, digital resources, improving digital literacy and competence, etc. (Cabero-Almenara, Guillén-Gámez, Ruiz-Palmero, & Palacios-Rodríguez, 2021).

This allows not only to convey educational information to students, but also to involve them in effective team interaction, dialogic learning (including online), and diversifying the educational process (Fomin, Budnyk & Matsuk et al., 2020). Thus, it is about creating a comfortable developmental environment in an educational institution, which primarily aims at preserving and strengthening students' health (Smolinska, Budnyk & Voitovych, 2020) using modern digital technologies (Budnyk, Matveieva & Fomin et al., 2021).

The effectiveness of the implementation and use of digital technologies in education is usually evaluated by the following indicators: «improved and enhanced teaching and learning; digital maturation, including tackling the first and second digital divide; data-driven decision making and evidence-based education; and AI in education» (Gabriel, Marrone, Van Sebille, et al, 2022).

One of the innovations of our century is e-textbooks and working with them in distance learning (Budnyk, Kachak, & Blyznyuk, 2021). Modern students consider compactness (57.5%) and ease of use (47.7%) to be the most important advantages of e-books. 110 respondents (respectively 71.9%) indicated the possibility of downloading hundreds or thousands of e-manuals on an e-device. In addition, it is important to note that reading e-books is possible using low light thanks to the options for adjusting fonts and screen brightness (33.3%); they are often free, so students can save money (39.9%).

But there are also drawbacks to using electronic books and textbooks in educational activities, as noted by the respondents(Fig. 2).
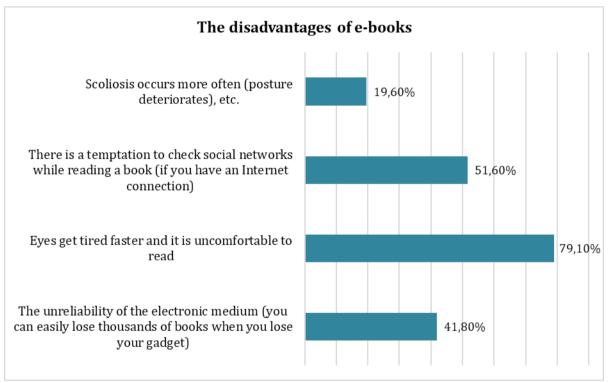

The disadvantages of e-books

- Scoliosis occurs more often (posture deteriorates), etc. — 19,60%
- There is a temptation to check social networks while reading a book (if you have an Internet connection) — 51,60%
- Eyes get tired faster and it is uncomfortable to read — 79,10%
- The unreliability of the electronic medium (you can easily lose thousands of books when you lose your gadget) — 41,80%

Fig.2: Negative aspects of the practical use of electronic devices in education (according to students).

Today many people talk about the necessity of introducing social reading. 43.1% of the respondents support this idea, while the greater part of students (52.9%) still have a neutral attitude to this method of reading, when separate parts of the book can be discussed in a network environment. Prestigious American schools use e-textbooks for teamwork to understand the text. It increases awareness and memorization.

Another innovation worth adapting to distance/blended learning is Inquiry-Based Learning (Akkus, Gunel, & Hand, 2007). Moreover, it is not only about STEAM education, but also social sciences and humanitarian studies, which should focus on the development of critical thinking, practical skills to use the acquired knowledge in practice, skills of experimentation based on gained knowledge, and social skills, etc. For this purpose, there are also enough interesting digital tools, and virtual laboratories for innovative educational activities in the online format. Therefore, digital innovations for distance education are necessary not only in special conditions (war, pandemics, etc). The ability to respond to social challenges and the ability to adapt to new conditions of the education environment determine future education.

4. MANAGEMENT OF THE PROCESS OF INTRODUCING EDUCATIONAL INNOVATIONS INTO PRACTICE

In the context of the study of the outlined problem, it is important to emphasize the importance of the principal's activity in terms of increasing innovativeness and the positive image of the educational institution. The specificity of such interaction in a professional pedagogical environment is characterized by a certain set of management situations - a system of external conditions concerning the subject of interaction, which motivates or mediates this activity. Meeting the requirements of the management system in the field of innovation implementation creates prerequisites for its transformation or development, and going beyond the limits of the situation takes place when the subject forms and begins to implement new requirements. It is worth paying attention to the peculiarities of the management situation, which in a certain way determine the principal's behavior and is characterized by the relations of the constituent elements (Table 1).

The principal's responsibilities in the structure of managerial interaction are as follows: high internal motivation, a high level of responsibility for making and implementing professional decisions, organizing feedback, the ability to promote his/her activities and the institution, a specific style, innovative and predictive thinking, etc. At the same time, he/she must prove to be an initiative leader and agent of educational changes (Halim, Senin, & Manaf, 2009).

Table 1: Parametric model of the innovative image of the educational institution

Internal parameters of the innovative image of the educational institution	*The main characteristics according to the specified parameters*
Relationships between team members	Humane, respectful attitude towards each member of the team
Communication and interaction	Mutual assistance, partnerships
Attitude to pedagogical activities	Creative focus on innovative activity
Dominant values	Personality development, spiritual values, self-actualization
Attitude to the goal of joint activities	Positive, team-oriented, partnership-oriented
Prevailing emotional tone (modality)	Optimistic major tone, psychological comfort
Emotional response to negative events	Experience, empathy, active search for reserves to overcome negative phenomena
General emotional and personal feelings of each member of the team	Safe feelings
External parameters of the innovative image of the educational institution	*The main characteristics according to the specified parameters*
Science and technology development	Complication of the mental activity of an individual, tension, influence on relationships in an educational institution
Socio-economic organization	Pragmatization of attitude towards others, colleagues
The activity of management institutions in the education system	Decreasing external control
Regional features of education management departments	Decentralization of the education system, increasing the importance of the microclimate, professional environment in each team
Interaction of self-governing institution of an educational institution with district and city organizations	Peculiarities of the influence at a specific stage of the society's development

Planning an innovative development strategy for an educational institution is a kind of search for answers to the following basic questions: What are the strengths and weaknesses, opportunities and risks facing the institution? What do you want the educational institution (university) to look like in the future? What should be done step by step to achieve the goal and overcome possible obstacles? Perhaps the most important condition for the introduction of innovations at the university is the principal's steady focus on qualitatively new changes and renewal of his/her activities in all strategic areas.

In the context of psychological-pedagogical interaction among the educational institution staff, the principal as an education manager forms a common vision of a qualitatively new level of the institution's work, predicts the phased implementation of this vision and the evaluation of progressive changes. In case of innovation in a specific educational institution has a positive effect and shows sustainability, it should be publicly presented and proposed for use in other educational institutions.

At different stages of educational changes, M. Fullan notes, there are usually three components that influence the achievement of a result in the implementation of a new program or policy, namely: 1) use of new or revised materials such as curriculum materials or technologies; 2) new teaching approaches or strategies; 3) the alteration of beliefs or attitudes. However, success depends on the principal's management competence, because educational innovation "must be properly led and managed" (Fullan, 2007).

In managing the process of introducing educational innovations at the university level, it is important to have the criteria and skills to evaluate them in practice.

In education, we can estimate the effect of innovation via learning outcomes or exam results, teacher formative and summative, formal and informal assessments, and student self-assessment. Innovation can also be computed using such factors as productivity (more learning outcomes in a given time), time efficiency (shorter time on studying the same material), or cost efficiency (less expense per student) data (Serdyukov, 2017).

In addition, we can take into account students' success, their admission to post – graduate schools for Ph.D., the level of university graduates' professional employment, their work productivity and career growth, etc. After all, the new (innovative) model of university management should ensure the coordination of the university interests, the state, business, and the socio-cultural sphere in adapting the system to the processes of the formation of a new economy (Buga, 2016).

5. CONCLUSIONS

Innovation is the main form of education development, and management of the process of introducing innovations into practice, which includes creating conditions for its reproduction, serves as the main mechanism for determining its quality.

Modern university education in different countries needs "effective innovations of scale that can help produce high – quality learning outcomes across the system and for all students", and "deep, multifaceted, and comprehensive innovations, both tangible and intangible, have the capacity to quickly generate scalable effects" (Serdyukov, 2017). The effectiveness and productivity of any education innovation are confirmed by the practical implementation and proper management of this process.

The development and support of educational innovations in Ukraine during the difficult period of Russian military aggression is an extremely important area of activity of universities and governing bodies. The principle of innovation in the management of an educational institution is, first of all, a change of the principal's tasks, goals, content, organizational forms, methods of work, and orientation towards partnership interaction in a professional environment. Therefore, regardless of the difficult conditions of wartime, modern Ukrainian universities are oriented towards integration into the European (world) space of education and such principles as patriotism, solidarity, compliance with social challenges regarding the development of science and technology, partnership, sustainability, innovation, compliance with international and national professional quality standards for the training of highly qualified specialists.

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