

INNOVATIVE LEARNING STRATEGIES IN MODERN PEDAGOGY

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Abstract: During the pandemic, emerge new and modified learning strategies, which actualize the research problem of innovation in modern pedagogy. The development of information and communication technologies in the educational sphere due to the needs of different participants (administrations of educational institutions, students, parents, and teachers) has led to the rapid development of digital tools and their use in learning activities. The article aimed to identify practical features of innovative learning strategies in modern pedagogy. The methodology was built on the method of content analysis of the Strategy for Development of Higher Education in Ukraine for 2022–2032, which highlighted the main conceptual foundations of innovative learning strategies. Innovative learning strategies in modern pedagogy provide an orientation on the research of students' innovative activities per the needs of different stakeholders, proactive learning, cooperation at the national and international levels, European standards of teaching, and student-centered learning to develop competencies of future specialists. Focusing on students and their active inclusion in learning activities using multimedia technologies (video conferences, virtual services, and platforms, knowledge control tools) will be the main strategic goal of universities. These strategies will also include the requirements and needs of labor markets, collaboration between educational institutions and the private sector to stimulate research activities.

Keywords: innovative strategies, learning strategies, innovative pedagogy.

1 Introduction

During the pandemic, emerge new and modified learning strategies, which actualize the problem of research innovation in modern pedagogy. The development of information and communication technologies in the education sphere due to the needs of different participants (administrations of educational institutions, students, parents, and teachers) has led to the rapid development of digital tools and their use in learning activities. Strategies in education have been significantly modified through the digitalization of educational processes, and new teaching methods are emerging mainly through technological transformation. An example of changing strategies is the organization of learning activities during the pandemic at Oxford University accordingly Business Continuity Planning (BCP) framework, which combines synchronous and asynchronous learning styles, various digital technologies for the interaction of educators and students. The Oxford practice demonstrates the emergence of innovative digital learning strategies based on the virtual service Centre for Teaching and Learning (Oxford University, 2021a) and the Flexible and Inclusive Teaching model (Oxford University, 2021b), where different technologies are combined to conduct classes (Panopto, Teams, Canvas, Vevox programs). These new strategies involve course planning based on Oxford's leadership templates of hybrid, virtual, personalized courses. Innovative strategies also involve solving the problem of effective communication, interaction, interactivity, and active involvement of students in the educational process.

This article aims to identify practical features of innovative learning strategies in modern pedagogy.

2 Literature review

Konst & Kairisto-Mertanen (2020) examine the evolution of a pedagogical strategy concept called innovative pedagogy based on constructivism, which involves learning and teaching in universities of applied sciences based on students' knowledge creation, and their learning models and learning strategies. In this way, students continually develop prior knowledge and skills and have the opportunity to contribute to the content of their learning through individual learning plans within educational provisions. Vannatta & Beyerbach (2000) found that university professors viewed constructivism as an effective approach to integrating technology as a learning tool, thereby increasing the skill level of its use and engaging students in meaningful learning. During the pandemic, technology-based blended learning strategies (Safar & AIKhezzi, 2013), augmented by new practices in the use of digital tools, have proliferated. Innovative blended learning strategies are studied by Petronzi & Petronzi (2020). The authors describe combinations of asynchronous (flexible, autonomous) and synchronous learning styles and collaboration between participants in HEIs. These new learning styles can be seen in the context of the concept of constructivism because the combination of independent and group work, teamwork, discussion, and debate during synchronous classes promotes active learning. Innovative learning strategies have also provided centralized technical support for teachers using a specific set of digital tools in lectures, seminars, discussions, and student collaboration within groups (Bao, 2020).

Within the concept of constructivism, new approaches to learning with technology in HEIs are emerging. Technological, Pedagogical, and Content Knowledge (TPACK) frameworks (Dysart & Weckerle, 2015) are among the approaches for educators to use technology in alignment with higher education learning and content strategies. TPACK provides a knowledge framework for educators about the use of technology during instruction (Niess, 2016).

Other key elements of innovative pedagogy in universities of applied sciences include learning processes and professional growth, which involves the students' growth through a variety of learning processes, and gradual development into qualified experts. For example, Turku University of Applied Sciences (TUAS) began implementing an innovative learning strategy in 2006 to develop the competencies students need in real life. The first Finnish innovation strategy held universities responsible for the students' competencies demanded in the labor market (Kettunen, 2011). A set of "soft skills" was included in the needed competencies in professional development. Learning strategies included research on skills necessary for the labor market, employers' expectations and requirements, and their incorporation into curricula (Marin-Garcia et al., 2016; Keinänen, Ursin and Nissinen, 2018).

Hattie, J. A., & Donoghue, G. M. (2016), based on a meta-analysis of 228 studies, identified the most effective learning strategies whose effectiveness depends on the stage of learning. The authors identified learning strategies that help students learn better (structure thinking, plan learning, set goals, monitor the process, and assess progress and outcomes). It indicates the prevalence of learner-centered and student-centered strategies in education, developing their knowledge and skills within a constructivist framework.

Boekaerts (1997) identifies three main learning strategies:

- 1) cognitive strategies, which include processing materials to deepen understanding of the field under study;

- 2) metacognitive strategies, such as planning to regulate learning;
- 3) motivational strategies, which include self-efficacy to self-motivate learning. The emergence of technology and new ways to access learning materials has led to the fourth strategy identification – management (search, navigation, assessment) (Dignath, Buettner & Langfeldt, 2008).

Davis, Chen, Hauff & Houben (2018) conducted a systematic review of scalable learning strategies (strategies that promote active learning in digital environments) based on 126 articles and determined that Cooperative Learning, Simulations & Gaming, and Interactive Multimedia are the most effective. Active learning strategies involve engaging learners and students in learning through activity and class discussion as opposed to passive listening to materials (Freeman et al., 2014). ICTs facilitate the integration of active learning strategies, including the active use of learning platforms, online services (SRS), social media, and video conferencing technologies. These digital media facilitate the implementation of active learning strategies through a gamified approach, which increases motivation, interactivity, and student engagement, and promotes productivity and performance through the ability to tailor courses to students' interests (Kopcha et al., 2016; Subhash & Cudney, 2018).

The technology implementation affects learning strategies since current strategic learning activities or educators' actions depend on the digital tool type and its use in a particular learning context. For example, the use of delivery technologies (simple multimedia) will indicate a learning strategy focused on digital content and the transfer of knowledge from the teacher to the student. At the same time, the use of technology to engage the student and the student in discussion, discussion, and teamwork, for testing knowledge means the implementation of a strategy focused on the formation of knowledge by the students themselves (strategies focused on the personality and the formation of their conclusions) (Kirkwood & Price, 2013). Therefore, educators need to perceive the use of technology as a component of student-centered learning to achieve better learning outcomes (Glassett & Schrum, 2009; Kim et al., 2013).

Thus, the literature discusses different types of instructional strategies, including technology-based innovations that modify traditional constructivist strategies. In general, learning is focused on the creation of knowledge by students within the framework of the pedagogical theory of constructivism. Therefore, innovative strategies (collaboration and cooperation, gamification, interactive multimedia) are being increasingly empirically studied in the literature.

3 Methodology

The study used the content analysis method of the Higher Education Development Strategy in Ukraine for 2022–2032, which highlighted the main conceptual foundations of innovative learning strategies: focus on students' research innovation per the needs of different stakeholders, student innovation, proactive learning, national and international cooperation, European learning standards, student-centered learning to develop the competencies of future professionals.

4 Results

4.1 Innovative learning strategies in pedagogy: how the pandemic affects on changes in educational activity strategies

The COVID-19 coronavirus quarantine and pandemic have forced all countries to review their learning strategies. According to the order of the Ministry of Education and Science of Ukraine from March 16, 2020, № 406 "On organizational measures to prevent the spread of coronavirus COVID-19" and the official letter from March 25, 2020, № 1/9-176 "On the specifics of the educational process during the quarantine", the educational institutions are operating remotely. Nowadays, distance education takes its socially significant place all over the world

and in all educational institutions in Ukraine. This form of the educational process is not new to our country. In Ukraine, distance learning has been actively implemented since 2002. Many universities in Ukraine implemented MOODLE software platform (distance learning management system), which allows distance learning.

Distance learning is a form of education that requires the use of modern information and communication technologies and allows learning at a distance without personal contact between the teacher and the student. Under such conditions, the emphasis on learning is shifted to the independent work of the student, and the teacher acts as the organizer of the learning process, the consultant. All this prompts the search for new means of learning that meet the requirements and needs of the educational process. Also, distance learning expands the opportunities for quality education and allows you to diversify the learning process, which is also a factor in increasing interest in the discipline and motivation.

The advantage of distance learning can be considered its flexibility – an individual approach to teaching and learning material depending on the characteristics of training, experience, and students' abilities. The convenience of studying at any time creates an opportunity for a student to independently organize a personal learning process to address the repetition of material or related disciplines. An undoubted advantage of distance learning is its cost-effectiveness. There is an opportunity to conduct simultaneous training for many people since the premises of educational institutions are not involved. Virtual mobility and the absence of borders allow you to get an education regardless of the location in any world educational institution.

Distance form of education is "an individualized educational process, which occurs mainly with the mediated interaction of remote participants of the educational process in a specialized environment, functioning based on modern psychological and pedagogical and information and communication technologies". The basis of the distance education form is a controlled intensive/purposeful self-study of the student, who can study in a convenient place, on a schedule, under the guidance of experienced teachers-mentors (without visiting the university due to pandemic). Today distance education helps students to develop such qualities as independence, mobility, and responsibility and develops self-education skills, which are very highly valued in the labor market.

The first experience of distance education under the conditions of quarantine restrictions determined the expediency and necessity of finding new educational platforms which would allow direct teacher-student contact, which would provide, first of all, assistance to a student in mastering basic knowledge, activate, and motivate creative work, acquired by students with practical activities.

The developing interactive learning strategy has been actively used in Ukrainian universities to promote the student's involvement as an active participant in the educational process. To assess the entry-level of students' knowledge, the class begins with an oral questioning and discussion of the class topic. The content chosen by the department (presentations, educational films on the topic, links to useful educational resources, and other educational and methodical materials) is freely taught by the teacher during the virtual class on a particular topic and gives current assignments to the students. It makes it possible to ensure the necessary level of students' preparedness and carry out a systematic assessment of their knowledge and current discussions on certain issues during mastering the training material. This format corresponds to the actual classroom work of the teacher and the student.

Microsoft Teams allows conducting online lectures of the highest quality and in the most efficient way. During the lessons, the instructors show the students the virtual programs on the corresponding topic of the lesson. For better mastering of the lesson's topic, situational tasks with an experimental direction

are considered and discussed, as well as video clips. Computer animations and videos are also excellent means of visualizing complex learning processes. Also, participants of the educational process communicate with each other in the Microsoft Teams chat room. The final control of students' knowledge is carried out through distance learning technologies with the help of Moodle platform, which is already in operation and justified at the present moment. The students were tested, and also teachers evaluated the results of verbal answers during online lessons in Microsoft Teams. Assessment for the practical training, as an average for the performance of tasks, is put in the electronic logbook of the university's automated management system. The students are remotely held negative grades and missed practical lessons according to the schedule of debugging, which is placed in the DLS Moodle.

The main difficulty faced by the teacher when working with the group is the difference in the initial level of student preparation, which can vary significantly. The short period of study of the discipline and the high intensity of each lesson complicate the students' process adaptation with a low initial level of knowledge, which leads to a decrease in motivation to learn. Visibility and systematization of the material through diagrams, drawings, and tables facilitate the perception and memorization of difficult-to-understand material. On the website of universities, students can find theoretical material, which is placed as text materials, as well as video content and presentations on sections of different disciplines.

4.2 Future transformations of innovative learning strategies in pedagogy

On April 14, 2022, on the Cabinet of Ministers of Ukraine website, there was published the order of February 23, 2022, № 286-p "On approval of the development strategy of higher education in Ukraine for 2022–2032 years". The strategy implies goals and objectives as part of the higher education system reform. Within the set goals, the tasks related to the development and implementation of innovative strategies of training in pedagogy should be highlighted (Ministry of Education and Science of Ukraine, 2022a):

- A. The goal "Management efficiency in the higher education system" implies the following tasks: modernization of the network, enlargement of higher education institutions, and support of research universities. It means that learning strategies should focus on research and collaboration within the newly enlarged network of institutions.
- B. The goal "Trust of citizens, state and business in educational, scientific, innovative activities of higher education institutions", which provides for the following objectives: expanding the scope of external independent evaluation, targeted placement, and competition; promoting research and consulting for business by institutions of higher education; creating conditions for the development of public-private partnerships in higher education; implementing effective mechanisms for identifying violations of academic virtue and procedures for academic accountability. It means transforming learning strategies and shifting the focus to student innovation, proactive learning.
- C. The goal "Provision of quality educational and scientific activity, competitive higher education", which provides for the following tasks: support of national and international students' academic mobility, as well as referrals to foreign universities; providing particular support for residents of the temporarily occupied territories, vulnerable and disadvantaged groups; creating special conditions for those entering with outstanding achievements; promoting the use of innovative technologies and the latest learning tools in the educational process, the development of research infrastructures. These tasks directly imply the use of innovation in university teaching strategies and the strengthening of cooperation on an international scale.

- D. The goal "Higher education internationalization in Ukraine", provides for harmonization of the structure of higher education per the obligations of the member countries of the European Higher Education Area; development of the national system of qualifications; simplification of procedures for the recognition of foreign educational qualifications. These tasks indicate the importance of the European standards of education, which assume the borrowing of the educational activities' strategies of the leading EU countries. Higher education institutions will form learning strategies to develop the skills needed to live and work in a multicultural environment that will attract foreign students to the quality of education and learning conditions.
- E. The goal "Attractiveness of higher education institutions for learning and academic careers", which will include:
 - 1) adherence to student-centered approaches in the organization of the educational process;
 - 2) expansion of cross-enrollment, general, interdisciplinary, and dual programs, dual and other forms of education;
 - 3) development of general competencies, legal culture, motor activity, sports, and student competitions;
 - 4) development of management training programs for executives and prospective leaders in higher education (personnel reserve), trainings to support reforms;
 - 5) conducting communication campaigns to support the reforms in higher education system, etc.

These goals indicate a shift in emphasis towards active learning strategies, where students are the main center of the education system, whose competencies must be developed in the learning process. The goal achievement will include the following results:

- 1) student-centered learning will allow higher education applicants to form their own sets of competencies, and adult education will become a conscious need for development;
- 2) working conditions, opportunities for personal and professional development, and inclusion in social processes will ensure a highly attractive academic career;
- 3) higher education administrators will ensure exemplary management and achievement of goals.

Attention should be paid to the operational goal "Preparation of specialists in demand: The system of higher education satisfies the needs of the economy in qualified specialists", which provides for the formation of a system for monitoring the supply and demand for specialists with higher education at the labor market; formation of priorities for training specialists with higher education, in particular IT specialties, based on labor market monitoring; providing first jobs for graduates with higher education at the expense of the budget. This means taking into account the needs and requirements of the labor markets for specialists during educational training, which will affect the training strategies. It should be noted that, in the Ukrainian educational practice, there are similar cases of taking into account the requirements of the labor market in the IT sphere (Ministry of Education and Science of Ukraine, 2022b).

Separate attention is paid to the goal "Modern knowledge-intensive knowledge: Scientific research and innovations determine the content and development of educational programs", which involves the introduction of research results (creative achievements) in educational programs; creating conditions for higher education applicants to participate in scientific research, initiation, and implementation of innovative projects; promoting the use of innovative technologies and the latest learning tools in the educational process, the research process development (Ministry of Education and Science of Ukraine, 2022b).

5 Discussion

The pandemic caused by the coronavirus spread (SARS-CoV-2) has caused significant changes in the higher education organization and the innovative strategies implementation and teaching methods to ensure student achievements. In the new educational environment, distance or online learning has become the new norm, and higher education institutions are addressing the challenges of actively transitioning to a digital learning environment and updating their digital infrastructure (Schneider & Council, 2021). As a consequence, learning strategies built on a combination of digital technologies and the use of digital tools in the educational process are increasing significantly (Goudeau et al., 2021). According to UNESCO, unprecedented disruptions in the delivery of educational services through COVID-19 have affected more than 220 million students in higher education worldwide (2021).

Synchronous and asynchronous learning styles are evolving at major world universities, providing elasticity to the educational process. At the higher education level, the administrations organize flexible personalized learning, providing instructors with a list of technologies for learning according to the classes type (lecture, seminar, individual work, group work). Students have the option of synchronous or asynchronous viewing of learning materials. Teachers are allowed to form electronic quality material thanks to the list of online learning support technologies.

Technological and technical support for a digital learning model is based on an inclusive, flexible approach that provides unified teaching and learning for students:

- 1) developed digital templates for different types of traditional classes (lectures, small group work, individual consultations, laboratory work);
- 2) developed digital tools for conducting learning activities;
- 3) developed a unified procedure for support and accompaniment of teachers and students;
- 4) approval of asynchronous and synchronous stages of learning within different disciplines.

In this case, learning strategies become more flexible, and the flexibility of distance learning was provided by:

- 1) the ability of the teacher to determine, combine the proposed digital learning tools (Panopto, Canvas, Teams, Vevox);
- 2) the ability of the teacher and students asynchronously to conduct certain stages of learning activities (for example, viewing presentational learning materials).

6 Conclusions

Innovative learning strategies in modern pedagogy provide orientation on the students' research innovative activities per the different stakeholders' needs, students' innovative activities, proactive learning, national and international cooperation, European learning standards, and student-centered learning to develop future specialists' competencies. A student-centered and active involvement in learning activities using multimedia technologies (video conferencing, virtual services and platforms, knowledge control tools) will be the main strategic goal of universities. These strategies will also consider the requirements and needs of labor markets, cooperation between educational institutions and the private sector to stimulate research activities.

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