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PRODUCTIVE LEARNING ENVIRONMENT AS AN EFFECTIVE MEANS OF STUDENTS' EFFICIENCY ENHANCEMENT
ПРОДУКТИВНЕ НАВЧАННЯ ЯК ЕФЕКТИВНИЙ ЗАСІБ ПІДВИЩЕННЯ ЕФЕКТИВНОСТІ ДІЯЛЬНОСТІ СТУДЕНТІВ

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Abstract. As an education paradigm, productive learning has emerged quite recently. However, it has already managed to achieve the outstanding results and has been increasing its popularity all over the world. It has been defined that the main aim of productive learning is to qualitatively modify the students' styles of learning as to orient them toward creating a completely new learning product. Thus, productive learning fosters the students' creativity. However, it is the teacher's task to create such a learning environment that one can consider productive. It has been justified that in order to create a productive learning environment, the teacher should take into account various factors. Thus, the students should be provided with the opportunity to nurture their own personal and educational interests, choose their own educational routes and, therefore, acquire the necessary professional knowledge, abilities and skills. So, it has been concluded that productive learning is a multifaceted dimension that is nevertheless aimed at one thing, i.e., generating the specialists of the new times.

Keywords: productive learning, learning product, productive learning environment, project method.

Introduction

Today's modern society is characterized by rapid changes in all spheres of human life and requires people able to quickly adapt to changing situations, independently acquire the necessary knowledge, skillfully apply it in practice to solve various problems, think critically, competently process information, engage in self-regulated learning. In this regard, it is important to nurture the independence of an individual as a personal quality that provides the best opportunity for their development as a free subject of social and professional activities. Nowadays, students are to graduate having achieved expected learning outcomes, which is why it is necessary to ensure the integration of theoretical training in practical experience. Productive learning has become the first attempt to reach a new level of creatively organized education based on students' interests and aspirations. According to I. Pidlasyi, "productive are those knowledge and skills, relying on which graduates may find strong support for the future. They are always necessary, effective, durable and topical" (Pidlasyi, 2010, p. 5) [14, p. 5].

To begin with, the term "productive learning" was first suggested by German scholars and educators I. Böhm and J. Schneider (1994; 1996) [1; 2]. In modern pedagogical literature the term has been used for a long time and, particularly, in combination with "productive thinking", "productive intelligence". But today, productive learning is defined as the education process implemented through

individual routes that are structured as a series of steps with clearly outlined results being those actions that productively orient individuals in different life situations. S. Lillejord & O. Dysthe (2008) [6] argue that productive learning ties into a cluster of concepts on activity and transformation and illuminates the relation between learning processes and learning products.

According to research by P. Hager (2001) [4], productive learning dimensions are: 1) productive learning reconsiders all existing patterns and rules; 2) productive learning includes creation of a new learning mode, that simultaneously modifies the learning environment where it takes place, so the process and the product of learning connect; 3) productive learning involves social, cultural and political construction of an individual identity; 4) productive learning is focused on holistic personality development.

With reference to the project launched by The Research Council of Norway" on productive learning, namely, "TRANSFORM: The Transformation of Productive Learning Practice" (2008) [6] "it (productive learning) highlights an alternative to unproductive and reproductive learning and has in this respect an explanatory power for educational practice, for instance on how technology is integrated and utilized. For example, productive learning is related to the ability to use knowledge and skills in new contexts, the connection between a learning community and its learning resources, engagement in rich interaction, or the creation of new knowledge. A focus on productive learning therefore may be used to question traditional or taken for granted educational practices (p. 2).

Thus, one cannot create a new product without considering what has been created, and, consequently, productive learning is a personality-oriented process, the result of which is the emergence of a subjectively new material or an intellectual product. The internal result of the process consists in qualitative changes in the nature of the students' mental activity, whereas the external result is the creation of a material or an informational product of the activity. Productive learning represents creativity in the process of individuals' self-determination, when a socially useful product is being created that has practical value for education and self-education. This corresponds to the definition of productive learning as a productive organization of the personal and social activity that reveals the search-based, creative, transformative nature of learning, as a result of which the individual gains the accumulated social experience as a subjectively new product.

In accordance with J. Dewey's theory, productive learning represents the constructivist approach to learning, based on J. Piaget's theory of cognitive development, L. Vyhotskyi's theory of sociocultural development, J. Bruner's theory of discovery learning, which determines the transition from the philosophy of behaviourism to the philosophy of constructivism. The learning based on the construction of knowledge supported by analysis and reflection and on the assimilation of incoming information by setting and implementing learning goals by the students with the support of their teachers, is opposed to the explanatory-informative (declarative) method of teaching and is the answer to increasing volumes of incoming educational information as well as requirements for the students' knowledge. The students' past experiences, namely, existing cognitive structures of

thinking are of great significance as for the construction of a new cognitive activity, and, therefore, the basis of productive learning is competency-based learning. When the students construct their own knowledge, other processes take place, namely, reflection, intellectual tension, insight, nonlinear thinking, visual modeling, anticipation, problem solving, reasoning etc.

In compliance with the modern concept of productive learning, the process of constructing knowledge is carried out under the following conditions: 1) increasing the role of each participant in development of a learning initiative to obtain a certain learning product and properly evaluate it; 2) establishing a close connection between "a learning community" and "real life in the learning community" to ensure openness and flexibility of the productive learning system; 3) changing the role of the teacher toward counseling and cooperation; 4) creating an appropriate learning environment in accordance with new technologies. At the same time, the goals of productive learning reflecting the main conditions for effectiveness of the education process are: 1) the practice ensuring productive learning, 2) productivity of all learning activities, 3) comprehension (reflection) of learning activities with a view to evaluate their achievements (Böhm, Schneider, 1996).

The third goal is of particular importance, since it gives internal significance to the education process and stimulates the students' motivation toward further advancement in learning. For instance, the use of productive methods in teaching mathematics in a higher education institution results in the students' constructing mathematical exercises, which represent a subjectively new intellectual intangible product that has practical value for education in general and self-regulated learning, in particular. And, above all, the student's goal is not to simply construct a mathematical exercise, but to present the exact solution to it. In the process of learning, the students become the subjects of the process and under the teacher's supervision they independently acquire knowledge. The creativity manifested in this process as the main feature of the education process is not just an "activity" but also a mechanism for the development of personality, since internal changes in the personality's psychology, namely, uncontrolled spontaneity, variability of the state of consciousness, become essential.

Based on the mentioned above, we have deduced, in our opinion, the most precise goals of productive learning and they are: 1) creating the complex of optimal conditions for students' complex development; 2) ensuring sustainable intellectual activities; 3) developing the integrated system of knowledge and skills in the education process; 4) nurturing intersubjective partnership between the teacher and the student; 5) encouraging the student to acquire those skills needed for personal development, interpersonal communication, interaction and self-determination; 6) obtaining a particular learning product as a result of the students' self-regulated subject-based activity accorded with standard requirements for learning; 7) creating the activity-based approach to learning and, therefore, developing the students' skills to assert themselves through regular productive activities; 8) providing students with the opportunity to ensure self-realization of their subject-based interests; 9) ensuring the students' practical success in self-regulated learning.

The main conditions for effective learning in the system of productive learning

are: 1) motivation toward learning; 2) a favourable and comfortable learning environment; 3) the use of methods that correspond to different styles and ways of learning; 4) the use of subjective experience; 5) creating challenging situations for success; 6) having control over the process of learning; 7) the opportunities to test new knowledge in practice; 8) sufficient time for acquiring new knowledge and skills; 9) the ability to comprehend efficiency of the acquired knowledge and skills. As a result, productive learning allows to solve a number of important pedagogical issues, namely, 1) to enhance motivation toward learning; 2) to speed up the learning process; 3) to increase the students' activity during the learning process; 4) to establish feedback; 5) to ensure the students' understanding of learning goals; 6) to create favourable conditions for problem-based learning; 7) to carry out educational and research activities; 8) to apply to the differentiated approach to individual training.

So, we have justified the ontology of productive learning as an education paradigm, defined its most precise goals and scope, yet it is of vital importance to outline signposts to create a productive learning environment. Therefore, **the purpose** of the article is to analyze the principles and stages of productive learning to provide relevant recommendations on how to build a productive learning environment.

While researching, we have used the methods of deduction, induction, systematization and generalization.

Principles of productive learning

According to I. Böhm and J. Schneider, the definition of productive learning within each of educational projects is a variation of the general definition adopted in the International Network of Productive Schools (Institut für produktives Lernen in Europa, 2017). From this it follows that every productive educational project has the fundamental principles of alternative learning in the practice of any educational form. Thus, productive learning is based on three defining principles that invest personal-biographical, cultural and social context in the education process so that the learning personality may develop the spectrum of general education on the basis of activity and experience: 1) personality-oriented; 2) problem- and practice-oriented; 3) cultural.

The personality-oriented principle of productive learning takes into account the connection between the education process including the disciplines of the corresponding educational direction and the individuality of the learners and their development. The personality-oriented significance of learning activities may go beyond the boundaries of this activity. For instance, a specific, obvious activity can only be a means to become closer to the most important activity. Young people are increasingly inclined to creative activities and to the creative use of functional actions. They understand that in such a way they can create the opportunity for self-discovery, for the disclosure of their abilities and, accordingly, for the development of personality. The problem - and practice-oriented principle of productive learning considers training in the context of processes and structures of the relevant field of activity. Productive learning arises from the experience of productive activity in real social situations and leads to it (experience). The acquired experience becomes the

basis for one's own positioning in public reality due to (professional) activity. The cultural principle of productive learning within the pedagogical aspect treats teaching in terms of professional guidance, socially significant and cultural orientation. The professional orientation of productive learning emphasizes that professional knowledge is an instrument; the students should be aware of what professional knowledge and skills they need to understand and make their practice productive. Knowledge is given not as a traditional occupation systematically, but as a means for a goal related to productive activities. Due to this, the instrumental nature of the subject, science and professionalism in relation to activity in practice becomes visible to the students.

So, we can see that the advantage of productive learning lies in shifting the emphasis from the learning process to the product of learning and self-regulated learning based on the students' own experience of productive activity. In this regard, the forming of universal skills (abilities, competencies) in the learning process within the framework of productive educational projects is evident.

According to N. Krylova (2008) [12], implementing productive projects, the students receive a variety of experiences, namely, manifestations of initiative, self-determination and self-realization and master practical universal skills: a) modern production and economic relations; b) their own education (to consciously and purposefully define the current and prospective tasks of education for themselves, to consciously build and implement a chosen training program; c) self-determination, self-organization and self-discipline (to responsibly relate to planning and organization of their practical and educational activities, to rationally allocate time and organize different types of activities); d) communication (to communicate and establish contacts with people of different professions, different ages, different interests); e) development of cultural interests and organization of leisure (to plan and organize joint leisure activities in the group).

So, we can conclude that the model of productive learning is one of the most promising models in the organization of the education process at the stage of its profiling: it combines the individual interests of the students, their active professional search, motivation and the desire to demonstrate their abilities and desire to take responsibility for the content of their education. So, conditions are created for the development of democratic citizenship of youth, for the forming of a triune professional, managerial and social experience. Modern educational technologies on the basis of productive learning methods take into account the existing requirements for the organization of training and education of the students and, of course, assume the students' subject position in the cognitive process, provide the opportunity for freedom of choice, individual aspirations and personal development.

The stages of productive learning

V. Pavliuk (2016) states that productive learning consists of such stages as orientation, realization and systematization (p. 8). However, while teaching many disciplines, the advantages of productive learning are not used, unfortunately, to their full capacity. In addition, the application of productive teaching methods requires high-level competences from teachers.

So, first of all, learners master reproductive activities, i.e. they learn how to

participate in various types of learning situations. At this stage, rules and algorithms are realized in different combinations – from exact copying and retelling to applying them in typical situations. When it comes to learning foreign languages, for one thing, this reproductive stage becomes a prerequisite for learning any new material. So, whether students are to learn a new vocabulary, a new grammatical structure or a cliché, teachers may not avoid the reproductive stage. Reproductive activities are characterized by a precise description of rules and familiar conditions. After the students have mastered these techniques and learned how to use them, they start searching for other areas where they can apply their obtained skills. Thus, the productive activity originates on the basis of the reproductive activity. Therefore, at the productive stage the students always create something new compared with the knowledge they have acquired earlier, i.e., they generate new information or new directions of the learning activity.

So, one can conclude about the interconnection between reproductive and productive activities as they are different paths of the same mastering process. At the same time, they can be divided into smaller parts. Thus, V. Bespalko (1995) [10] suggested to consider mastering as a process consisting of four levels. The first level called "knowledge – acquaintances" involves the ability to teach the learners to identify those subjects, phenomena and data they already know. The second level called "knowledge – copies" assumes the ability to retell and reproduce the information that has been obtained and analyzed before. The third level called "knowledge – skills" includes the ability to put the obtained knowledge into practice. The fourth level called "knowledge – transformations" (creativity) means the ability to use the obtained knowledge to solve new tasks and issues.

It is worth noting that in the psychology of creativity there are three main approaches to the problem of creative skills as the main integrative factor of readiness for creativity. The first one is an individual giftedness when motivation and personal traits play the main role. According to the second approach, creative skills (creativity) should be considered as a freestanding factor that is not related to intelligence. The third approach suggests that a high level of intellectual development is a result of a high level of creativity and vice versa.

The forming of creativity is possible only in a specially organized environment and the teacher's task is to create such an environment. Equally, mathematics teaching in a higher education institution is based on the methodology of the students' independent constructing mathematical exercises. The main difference between this training and the traditional one is the position of the student: in the case of traditional learning, the teacher is the subject of learning, and the student is the object; in the case of productive learning, the student is the subject who is able to manage on their own. The student is included in the active thinking process, their main task is not only to comprehend formulas and rules of transformation, but also to independently determine the conditions for applying the formulas, that is, to construct exercises that will allow to apply a certain formula to perform these actions. Independently constructing a task, performing it and comprehending the result, the students educate themselves.

Pedagogical psychology determines those conditions that contribute to the

forming of creativity in learning. J. Bruner (1960) [3] distinguishes four groups of conditions that promote learning through discovery: an attitude, a state of the need, comprehending the specifics and a variety of training. Accordingly, the basic pedagogical condition for forming creativity in learning is the presence of a creative environment, namely, stimulating the situation of success, tolerance to uncertainty of the obtained result, willingness to discuss the multiplicity of solutions to the problem, popularization of creative behaviour.

The forming of students' creativity undergoes the following stages: the motivation- and value-based stage (models of solutions, a wide field of associations as the basis of creativity); the preparatory stage (convergent thinking training: origination of hypotheses, analysis of support tools, verification of the solution's adequacy); the content- and research-based stage (divergent thinking development: visual modeling, actualization of solutions' multiplicity, intuition and prediction of results, insight, hypothesis testing, accounting of probable and improbable circumstances); the axiological stage (assessment of the hypotheses' validity, conclusions in accordance with the results of testing, analysis of generalizations and reflexive control, verification of results). The reflexive component being obligatory in productive learning outlines reflective features of personality: self-analysis, self-knowledge, self-esteem, self-regulation, self-development, which represent systemic components of pedagogical reflection. The formed reflective features of personality also represent a subjectively new intellectual product, which is the result of productive learning and has practical value.

Productive learning allows students to participate in evaluation of their own activities, i.e., self-evaluation. Self-evaluation occurs when evaluating each type of activity, which implies a permanent exit into a reflective position in relation to their activities. Evaluating other students' activities also implies a reflexive interpretation of the result obtained, that is, access to the position of the observer and a view of the situation "from the outside" in order to rethink their own and others' activities. Based on the information received about the quality of their knowledge (the teacher's knowledge evaluation and their ability to evaluate the results of other students), the students take a reflective position, comprehending their educational activity and their attitude towards it, resulting in the self-development of the students' intellectual sphere as a goal of modern higher education.

Personal learning environment of students as the main factor enhancing their learning productivity

To solve one of the challenges of modern education, i.e., to improve its quality, one should implement new innovative approaches and promote the use of information and communication technologies (ICT). The volume of unstructured information that students are not able to handle is constantly growing. The task of the instructor is to structure the information. In connection with this, there appears a problem of creating a personal learning environment of students based on ICT and aimed at fostering their creative skills, combining their personal, social and professional development.

The model of learning that reflects the subject-based professional and social context of future profession is being integrated into professional theoretical and practical training of the students, indeed, with the help of information technologies.

The transition from learning to professional activity is carried out due to the activity-based approach.

The main peculiarity of this methodology is a repeated increase in "information support", availability of an appropriate learning environment and an interactive nature of the learning process. The learning environment where modern information and communication technologies are necessary and natural means of the students' cognitive activities, a reliable assistant in solving learning and professional tasks, storing and organizing information, preparing report documentation etc. is a personal learning environment of students. This environment is a tool for creating a personalized learning network where students can interact not only with their peers, but also their partners in joint activities. This significantly extends the range of their communications as well as provide them with professional information.

Based on the research findings of such scholars as A. Khutorskoi (2003) [11], M. Bashmakov et al. (2000) [9], methodology of professional and practical training of future specialists should be based on productive learning. Creating a learning product, corresponding to a prototype of their professional activity, the students develop relevant competencies – of a citizen, a producer, a consumer, a user of information, etc. The information competency includes competences in the field of information and communication technologies and ensures the students' ability to navigate the information space, possess and operate information in accordance with the needs of modern labour market. Thus, the personal learning environment of students that includes access to new information technologies allows combining personal, social and professional development of students.

Building a productive learning environment

Thus, a productive learning environment is of great importance to the students' emotional, social and, mainly, academic success in a higher education institution. Therefore, while creating a one, educators should consider many different components. First of all, a positive learning environment means a comfortable and safe atmosphere encouraging risk-taking and orienting toward a positive interaction, namely, an open conversation, respect, trust etc.

It must be noted that educators should develop a positive learning environment for their students from the very start. Having analyzed numerous sources, we outlined the most important data, in our opinion, that may be used by educators all over the world to enhance the productivity of learning and, as a result, promote their students' academic progress as well social and emotional wellbeing.

According to modern educational theories, a learning environment provides modeling of professional activity implementing training and developmental functions in forming the student's personality based on involving in sociocultural experiences, traditions and values of society. In a broad sense, a multifaceted concept of a learning environment is a combination of factors that determine the content and technologies of learning and personality development (normative and legal documents regulating relations in the sphere of education, target setting, requirements for education, models of pedagogical activity and the potential of the teaching staff; material and technical support, methodological and information bases within education institutions), sociocultural and economic conditions influencing education, scientific support, types

of interpersonal relationships, interaction between the individual and the environment.

Both forming and development of an internal learning environment within a higher education institution is one of the main strategic tasks for the institution's adapting to rapidly changing external conditions. A new competency-based model for professional training of specialists in accordance with the leading education standards is different from the traditional lecture-seminar model that is formulated as their willingness to successfully perform professional activities on the basis of acquired knowledge, skills and personal qualities. Thus, a learning environment should provide conditions for effective productive learning and research, realize the need for social activity as well as creativity.

As a dynamic integrity, a learning environment in a higher education institution should include information, social, technological components; value-oriented, programmatic-strategic, knowledge-based, technological components; pedagogical, organizational-administrative, intellectual, material-technical, information-methodical, cultural-leisure components; scientific, material-technical, ecological, educational-methodical, communicative components (UNESCO Report, 2010) [8].

The information component is identified as the most important segment of a learning environment, since information activity is not only applied, but also has independent significance developing certain personal qualities that require specific knowledge and skills while working with information (search, storage, processing, systematization, analysis, evaluation).

Many educators believe that the correctly organized learning and information environment of a higher education institution allows the students to adapt it according to their needs and this is its fundamental difference from a real information environment in which such adaptation is not always possible. The information environment within a higher education institution needs to be improved, otherwise it will not be able to fulfill its mission, namely, to promote the students' self-development. The infrastructure of the information environment should include a library; a learning microenvironment (academic disciplines, elective courses, electronic textbooks, manuals, distance learning system); Internet classes; technical support of the education process.

One of the modern means of organizing learning aimed at developing the students' creative qualities is independent work as the most important component of the education process in a higher education institution. The basis of the student's independent work is the information environment. Thus, due to independent work that involves performing various tasks with the use of modern technologies the students master basic methods of learning and cognitive activities as well as become acquainted with creative approaches to solving educational, scientific and professional tasks. In addition, the rational organization of independent work, its systematic, expedient planning contribute to mastering the necessary abilities and skills, studying, assimilating and systematizing the acquired knowledge, ensuring a high level of academic progress during learning and developing skills to improve professionalism.

In our opinion, special attention should be paid to the use of the project method

as the most significant component of individual (pair, group) independent work related to implementation of a set of targeted measures to create a new product (services) within the established time and quality. The project method is used to form the students' universal ability to solve emerging problems in their professional activity (daily life). The main goal of using the project method in higher education is to develop project thinking among students. M. Zhuravleva et al. (2014) [15] note that project-based learning is aimed at the following tasks: *educational* (namely, training a specialist as a member of society); *pedagogical* (namely, professional training of highly qualified specialists); *research- and production-based* (namely, forming the students' constant professional readiness, motivation for personal and professional self-development).

Thus, the learning environment is considered productive as long as it ensures the students' readiness for constant updating of knowledge, personal and professional self-development, generation of new knowledge, skillful application of knowledge in practice for solving professional problems; orientation in an ever-increasing flow of information, the use of modern technologies for its analysis, transformation and application in professional activities; mobility in the labour market; the ability to critical and creative thinking; sociability, contactability, the ability to work in various social groups (teams); achieving the set goals; quick adaptation to changing life and professional situations, taking into account the analysis of the existing problems.

Conclusion

So, productive learning is gradually replacing a traditional model of teaching, namely, the teachers and students' roles are being modified since the latter are considered to be the subjects of the education process now. The students are granted with the opportunity to create their own learning products, in other words, creativity has become central to students' academic progress. Creativity as a phenomenon is rather complex and requires further revealing its specificity. The teachers, in their turn, have become facilitators of the education process. By no means it diminishes the importance of their role in education in general, since it updates their abilities adjusting them to modern needs of the labour market and thus enabling them to reconsider their own professional responsibilities. Due to the latest information and communication technologies both teachers and students may improve the education process as they are encouraged to choose their own education routes. As it has been mentioned above, productive learning can be realized only within a favourable learning environment. It is a responsible task and requires the teachers to be highly qualified and most precise while creating it. They should consider numerous factors that may influence the outcomes of the education process and balance them.

Within this paper we have aimed to outline the most fundamental information about productive learning to provide relevant suggestions as how to create the most favourable environment for productive learning. However, the subject has an extremely broad scope, involves various aspects and contexts and still needs its potential to be revealed.

Анотація. Продуктивне навчання як парадигма освіти має на меті якісно змінити стилі навчання учнів, щоб орієнтувати їх на створення абсолютно нового навчального

продукту; сприяє розвитку творчої майстерності студентів. Завдання учителя – створити таке навчальне середовище, яке можна вважати продуктивним. Виправдано, що для створення продуктивного навчального середовища учитель повинен враховувати різні фактори. У публікації обґрунтовано, що студентам слід надавати можливість виховувати власні особисті й освітні інтереси, вибирати власні навчальні маршрути і, отже, придбати необхідні професійні знання, вміння й навички, що дозволяє зробити прогнозований висновок про те, що продуктивне навчання є багатогранним виміром, який спрямований насамперед на формування генерації фахівців нового часу.

Самооцінка виникає при оцінці кожного виду діяльності, що передбачає постійний вихід у відбивну позицію стосовно їх діяльності. Оцінка діяльності інших студентів також передбачає рефлексивне тлумачення отриманого результату, тобто доступ до позиції спостерігача та погляду на ситуацію «ззовні», з метою переосмислення власної та інших дій (що дозволяє на основі отриманої інформації про якість своїх знань усвідомити свою освітню діяльність та своє ставлення до неї, розвиток інтелектуальної сфери як цілі сучасної вищої освіти.

Продуктивне навчання поступово заміщує традиційну модель навчання, а саме, вчителі та ролі студентів змінюються, оскільки останні розглядаються як суб'єкти процесу навчання зараз. Студенти отримують можливість створювати свої навчальні продукти, іншими словами, креативність стала центральною для академічного прогресу студентів. Творчість як явище досить складне і вимагає подальшого розкриття своєї специфіки. Вчителі виконують функцію посередників у процесі навчання, одночасно з виконанням головної ролі в освіті в цілому, оскільки він оновлює свої здібності, адаптуючи їх до сучасних потреб ринку праці, що дозволяє їм переглянути власні професійні обов'язки. Завдяки новітнім інформаційним та комунікаційним технологіям, як вчителі, так і студенти можуть вдосконалити навчальний процес, оскільки це дозволяє вибрати власні навчальні маршрути.

Ключові слова: продуктивне навчання, навчальний продукт, навчально-виробниче середовище, проектний метод.

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