
МЕТОДОЛОГІЯ І ТЕОРІЯ ПЕДАГОГІКИ

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ІНТЕГРАЦІЯ У НАВЧАННІ: ОСНОВНІ МЕТОДИ, СТРУКТУРА ТА ФУНКЦІЇ. ЗАГАЛЬНИЙ ОГЛЯД ТА АНАЛІЗ

Рух України до інтеграції в європейський та світовий науковий та освітній простір спричинює зміни парадигм і підходів до викладання у закладах освіти всіх рівнів, що може призвести до сучасних трансформацій навчання. Актуальність статті обумовлена необхідністю системного розуміння понять «інтеграція» та «інтегроване навчання» в освітньому процесі, оскільки міжпредметні зв'язки відіграють важливу роль у сучасному світі, тому що фахівець сьогодні повинен бути всебічно розвиненим та володіти цілою низкою знань та навичок, здатним виконувати кілька завдань одночасно й вирішувати нагальні проблеми. Метою статті є визначення термінів «інтеграція» та «інтегроване навчання» у контексті освітнього процесу. У статті вирішена низка завдань: проаналізовано та порівняно різні точки зору щодо інтеграції й інтегрованого навчання зарубіжних і вітчизняних учених та результати, отримані внаслідок цього. Результатом процесу інтеграції у навчанні є його гуманізація та той факт, що інтеграція є складовою частиною змістовно-мовного інтегрованого навчання. Переваги інтегрованого підходу у навчанні є очевидними, оскільки завдяки цьому створюються сучасні підручники, розробляються сучасні освітні технології та змінюється зміст освітнього компоненту, що призводить до необхідності розуміти потреби студента та робить навчальний процес особистісно орієнтованим. У статті характеризуються методи, форми, прийоми та засоби інтеграції. Завдяки пізнавальному та творчому методам навчання формуються інтегративні блоки проблемного навчання: інтегративне спостереження, евристичне дослідження, розробка, прогнозування й аналіз. Інтеграція може бути

предметною, проблемною, горизонтальною та вертикальною, що дозволяє засвоїти тему з різних сторін. Крім того, інтеграція виконує освітню, виховну, розвивальну, психологічну, методологічну та організаційну функції.

Ключові слова: інтеграція, інтегроване навчання, пізнавальний метод, функції інтеграції, міжпредметні зв'язки, орієнтований на студента, предметна інтеграція, проблемна інтеграція, горизонтальна інтеграція, вертикальна інтеграція.

Introduction and topicality of the subject. Following the strategy of integrating into the European Community Ukrainian graduates must be competitive on the international labor market, versatile and learned which is provided by the integrated approach to teaching the English language combined with a wide range of subjects depending on the major such as Information Technology, Economics, Culture Studies etc.

The necessity to increase the level of specialist professional training for various branches of industry is stated in a number of documents adopted by the Government like «The National Strategy of the Development of Education in Ukraine for the Period up to the Year of 2021» (2013), the Law of Ukraine «On Higher Education» (2014), «On Education» (2017) and others. In Ukraine, the principle of integration has been claimed as the main principle of education reform along with the principles of humanization and differentiation [9].

The research objective and tasks. The research aim is to elucidate the notion of «integration» in education and define methods, structure and functions of integration in the process of teaching and learning.

The research methods and sources. The set of data subject to analysis comprises fundamental research papers in pedagogy, teaching foreign languages methodology by prominent foreign and Ukrainian scholars. Theoretical methods including synthesis and analysis are used.

Analysis of the latest research. Nowadays, the idea of integrated lessons is being developed actively by both foreign (T. M. Gulaia and S. A. Romanova, P. Ball, M.-H. Cho and Y. Cho, D. Coyle, Ph. Hood, D. Marsh, J. A. Goris, E. Griva, K. R. Mahan, R. Wilkinson) and Ukrainian (L. Zaitseva, M. H. Ivanchuk, T. A. Ianovska, O. B. Bihych, L. A. Zenia, N. Karpenko, I. M. Kozlovska, V. Smelianska) scholars and educators who consider this idea relevant in teaching methods in secondary and higher schools.

Presentation of the main material. D. Marsh considers integration a constituent part of Content-Language Integrated Learning (CLIL), «which refers to situations where subjects, or parts of subjects, are taught through a foreign language with dual-focused aims, namely the learning of content and the simultaneous learning of a foreign language» [19]. It is necessary to note that Ukrainian scientists support and develop his ideas. For instance, A. Kotkovets defines integration as «the process of interpenetration, consolidation, unification of knowledge manifested through unity with the process of differentiation. The integration of education content is the process of forming unity between its homogeneous elements by identifying the same type of entities and patterns in them» [7], which is accompanied by knowledge generalization and complexity. This approach does not violate the logic of each subject but at the same time it «provides the potential for possible interaction between them», coordination and interdisciplinary links, considers the degree of integration and analyzes integrated programs. In addition, the scientist explores the advantages of an integrated approach to teaching English and the main conditions for its successful application.

V. I. Smirnov argues that modern educational processes require certain humanization, which in turn is reflected not only a) in creating advanced and sophisticated textbooks; b) in modern pedagogical technologies taking both students individual needs and their creative collaboration with teachers into account; c) in reorganization of teacher's activities based on active interaction with students, realization of their subjective position in the process of personality-oriented learning; d) in changing the educational component content in the form of integration and integrity of academic disciplines as well [13, p. 105].

A. L. Babenko systematizes, theoretically generalizes and clarifies the system of concepts and terms used in integrated education. The scientist does not only reveal different approaches to understanding the essence of «integration», but he also clarifies, expands and deepens the meaning of the concept of «integrated lesson» and determines their essential characteristics and differences from conventional classes [1].

The term «integration» is polysemantic. The Explanatory Dictionary of the Ukrainian Language defines integration as «combining something into a single whole» [25, p. 237]. The Large Explanatory Dictionary of Modern Ukrainian states that integration is unifying «any separate parts; combining and coordinating the actions of the whole system different parts; the process of organizing, coordinating and combining structures and functions in the whole organism» [21, p. 500]. The Pedagogical Dictionary edited by M. D. Yarmachenko interprets integration as «a concept that means both coherence of individual differentiated parts and functions of the system, the body as a whole, and the process leading to such a state» [23, p. 229].

The Sociological and Pedagogical Dictionary gives the following definition: «integration is a development process, which is associated with the integration of previously heterogeneous parts and elements, and in the course of integration processes in the already formed system, or in the new system, resulting from previously unrelated elements, increases volume and intensity of interrelations and interactions between elements, which can lead, in particular to new management levels» [24, p. 94]. The Short Terminology Dictionary on Pedagogy defines «integration» as «selection and integration of educational material on different subjects» [22, p. 26].

Since modern pedagogical science considers integration as one of the main didactic principles, which in general determines the organization of educational systems, the Short Terminology Dictionary on Pedagogy identifies different types of integration: thematic integration, when the selection and integration of material from different subjects aiming at comprehensive study of cross-cutting important topics, and full integration, when integrated courses based on the unification of knowledge from different subjects are carried out [22, p. 26].

A. L. Kotkovets interprets «integration of learning» as «the selection and integration of educational material from different subjects to learn cross-cutting important topics in a unified, systematic and multisided way, to create an integrated content of education that is the subjects that would be united knowledge from different fields in a single whole» [7]. Such approach allows students to acquire a certain amount of knowledge on several topics or even subjects within relatively short-term time.

Learning integration is the process and result of an inextricably linked whole in the process of learning a foreign language. The correct establishment of interdisciplinary ties and their skillful use are necessary to form the student's mind flexibility, to activate the learning process and make it practice-oriented. The integration of learning makes it possible to integrate all the knowledge and skills acquired in different classes into a single system, as well as to gain new knowledge in the course of these connections. An integrated approach allows you to teach in the real world of communicative functions within the speech act, indicating that language is necessary in everyday situations to express praise, apology, information, inquiries. Fragmentary knowledge does not contribute to comprehending native speakers.

L. Zaitseva highlights the problem of implementing an integrated approach in preschool education and characterizes the different types of integration, substantiating the principle of activity-mediated cognitive integrity. The scientist shares K. Yu. Kolesina, Yu. M. Kolyagin and A. V. Mironov's viewpoints that real integration is possible on condition that the concepts under consideration will be connected with the methods of cognition [3, p. 55]. According to L. Smirnova, principles specific to the use of an integrative method teaching *English as a Foreign Language* and *English for Specific Purposes* include: a) use of a foreign language for learning and communication equally; b) choice of subject depends on the language studied by future professionals; c) all types of skills use and development: reading, listening, writing, speaking [14, p. 492].

The choice of integrated methods depends on the teaching purpose and its content.

It should be kept in mind that teaching is student-centered, as the latter must master not only necessary knowledge, but also develop spiritually and physically, become a specialist, who will be able to both apply the acquired knowledge and analyze life and professional situations due to interdisciplinary knowledge obtained in the higher educational establishment. Integrated methods in higher education combine lectures, seminars and practical classes, round tables, laboratory classes, a wide range of industrial practice, both passive and active (depending on the university direction and professional orientation). Nowadays, when higher education is being reformed the latter is quite relevant, as university graduates know nothing about economic processes and do not always have the appropriate skills to use them in product manufacturing, so closer ties with business leaders and labor market specialists in Ukraine are taken into consideration.

A. M. Silveister believes that the didactic aspect of knowledge integration involves determining methods (a system of methodological and logical approaches to the formation of different types integrated objects preferably used), forms (registration means of the integrated knowledge results), tools (mechanisms for implementing integration into the educational process), ways (realization of specific content by specific methods) and means (a set of all methods, forms, tools, structuring educational material due to the teaching elements integrated transformation) [12, p. 172].

According to A. Khutorsky's classification, productive teaching methods fall into cognitive, knowing and creative [16], thanks to which it is possible to form integrative blocks of problem-based learning: integrative vision, heuristic research, development, forecasting and analysis.

In our opinion, E. O. Yamburg's adaptive school (E. O. Yamburg is a famous Russian educator) echoes A. Khutorsky's ideas. He singles out two educational philosophies: cognitive (it directs the teacher to subject programs, fixed results, subjected assessment, students' selection aimed at their further specialized training) and person-oriented [18]. In those institutions that adhere to the person-oriented education philosophy, students are closely monitored, their personal development is discussed, much attention is paid to their individual interests and needs. Adaptive school involves harmonization of two educational philosophies, two approaches. Its sound integration and mutual complement are critical instead of their mechanical combination [13, p. 577].

At the present stage of higher professional education development, which is improved through the integration of knowledge, interdisciplinary links are relevant. Integration is the process which results in creating a closely connected whole. In education, it can be carried out by merging subjects, summarizing the basics of science, the disclosure of complex educational topics and problems into a single synthesized course.

O. B. Tarnopolsky considers Content and Language Integrated Learning (CLIL) in teaching as a constituent part of special disciplines content in the concept of language learning and draws the following conclusions: a) CLIL is closely related to the content of professional disciplines; b) learning through the content of interdisciplinary subjects has significant advantages; c) it is advisable to master language and communication through major content [15, p. 25]. The researcher agrees with D. Coyle that CLIL «is any learning of a foreign language, when it is used as a means for teaching and learning by pupils / students of extracurricular content» [15, p. 24].

K. A. Nikolashina believes that the integration structure includes objects, the connection part (the objects name between which the connection is established); connection direction (direction line from one subject to another) [11]. In our opinion, the structure of integration resonates with M. H. Ivanchuk's theory, who distinguishes the following degrees of integration: subject (integrators are complex research objects or complex problems), problem (integrators are general research methods), horizontal (in Natural Sciences) and vertical (among groups of sciences) [4, p. 53–55].

Ye. K. Medvedok also speaks about the levels of didactic integration, emphasizing a) interdisciplinary integration in the educational process due to «the interdisciplinary links»; b) synthesis of interconnected sciences grounded on the basic one, in which each

science has its own scientific status; c) the level of appropriateness, which ends with the development of a new discipline and has an integrated nature and its own subject of study [8, p. 172].

L. A. Sazhko, analyzing foreign language teaching, believes that the process of mastering a foreign language is integrated in its essence, and integration is manifested at several levels: the goal setting level, the content definition level, the level of learning process organization, the level of learning tools usage, the level of modern learning technologies application [11].

Ye. H. Boyko in her article «Integrated Approach to Learning in the Educational Process» analyzes the stages of implementation of learning content interdisciplinary integration and increase of its effectiveness after using integration methods of teaching content [2, p. 92–97]. The author believes that integrated courses, integrated textbooks, integrated tasks and integrated classes influence young learners' teaching greatly [2, p. 94]. The scientist identifies the stages of interdisciplinary integration of learning content from simple to complex ones, emphasizing the vertical and horizontal interdisciplinary links. According to Ye. H. Boyko, a horizontal interdisciplinary connection occurs when integrated subjects are studied in time (during a week or a month). In addition, the scientist shares O. Rafalska's viewpoint [20], believing that the vertical link is present if the integrated subjects are studied during one lesson, one day [2, p. 95].

Thus, all researchers agree that integration of learning should be carried out from simple to complex, distinguishing between horizontal and vertical levels of interdisciplinary links.

Since integration is a constituent part of the educational and training process, it performs the following educational functions: educational, upbringing, developmental, psychological, methodological, organizational. Moreover, integration can have different forms: subject-image, cognitive, ideological, activity, conceptual [17, p. 50].

According to A. M. Silveister, the integration of subject knowledge related to Natural Sciences, performs the following functions in teaching Physics:

- methodological (students' viewpoints and modern ideas about nature value are formed);
- educational (student's knowledge system, depth, awareness and flexibility are formed);
- developing (the integrated approach to the students' development of systematic and creative thinking, the formation of their cognitive activity and independence are relevant);
- upbringing (the integrated approach to students' upbringing and education, based on various subjects);
- organizational (improving the educational material content, teaching methods and forms);
- psychological (it provides an increase in theoretical generalization, creates an appropriate basis for knowledge perception, associative systems and images are created rapidly) [12, p. 175].

However, in our opinion, the above-mentioned functions can take place in the process of knowledge integration from any subjects.

Conclusions and research perspectives. Thus, after analyzing material and viewpoints on integration in education, its methods, structure and functions, we can draw the conclusion that integrated approach to teaching English as a Foreign Language and English for Specific Purposes is very crucial and perspective, especially combined with the methodology of scaffolding where teacher's help is gradually decreasing disappearing completely. Moreover, scaffolding can be employed to teach various aspects and skills of English: speaking, listening, reading and writing. Such skills are necessary for developing, mastering and analyzing literary and scientific text content, general and academic writing when teacher's help can be hardly overestimated due to scaffolding allowing students to become more and more independent and confident in their skills, abilities and knowledge, do their best and get the highest grades and results.

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INTEGRATION IN EDUCATION: MAIN METHODS, STRUCTURE AND FUNCTIONS. GENERAL REVIEW AND ANALYSIS

Ukraine's movement towards integration into European and world scientific and educational space causes changes in paradigms and approaches to teaching in all-level educational institutions, which can lead to modern learning transformations. Topicality of the article is due to the necessity of system comprehending the notions of «integration» and «integrated learning» in the process of education as interdisciplinary links play a great role in contemporary world because modern professionals should be versatile and possess a wide range of skills and knowledge to be multitasking and able to solve burning problems. The aim of the article is to define the terms of «integration» and «integrated learning» in the context of the education process. A set of tasks has been solved in the presented article: various viewpoints on integration and integrated learning have been analyzed and compared including both foreign and Ukrainian scholars' scientific results. The process of integration in education results in humanization and being a constituent part of content-language integrated learning. The advantages of integrated approach are evident as the latter helps to create advanced and sophisticated textbooks, modern educational technologies and change educational component content, which lead to the necessity of understanding students' needs making the teaching process student-centered and student-oriented. The integration methods, forms, tools and means are characterized. Cognitive and creative teaching methods make it possible to form integrative blocks of problem-based learning: integrative vision, heuristic research, development, forecasting and analysis. Integration can be subject, problem, horizontal and vertical, which lets master the topic from different angles. In addition, integration performs educational, upbringing, developmental, psychological, methodological and organizational functions.

Key words: integration, integrated learning, cognitive method, functions of integration, interdisciplinary links, student-centered, subject integration, problem integration, horizontal integration, vertical integration.