BASIC EDUCATIONAL CONCEPTS AS THE BASIS OF PROFESSIONAL TRAINING OF IT INDUSTRY SPECIALISTS

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The article analyzes the basic educational concepts that will form the basis of modeling the professional training of IT specialists. The analysis of the leading educational concepts – personally oriented learning, educational development environment, practice-oriented learning clearly demonstrates their fundamental importance for the further modeling of the educational process of formation of value-deontological competences of future specialists in the IT industry. At the same time, we note that all these concepts have a universal (and general) character for pedagogical theory and practice, in particular for the field of professional training. Therefore, we believe that the purpose of our presentation is to single out a number of educational concepts that are of special importance for the professional training of IT specialists.

The Ukrainian and foreign practice of relevant research was analyzed, the definitions of educational concepts were interpreted and summarized. Our analysis made it possible to single out the following educational concepts – universal and special, which will serve as a theoretical and methodological basis for modeling the educational process of forming the value-deontological competences of future specialists in the IT industry.

Thus, the article points to the prospect of the selection of certain methods, techniques, technologies and forms of organization of educational activities aimed at the formation of axiological and deontological competences, which we consider factual as confirmation of the formation of future IT, precisely guided by the approaches and guidelines of the specified educational concepts – specialists of axiological culture and deontological type of thinking.

Keywords: *universal and special educational concepts, modeling of the educational process, formation of value-deontological competences, future specialists of the IT industry.*

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БАЗОВІ ОСВІТНІ КОНЦЕПЦІЇ В ОСНОВІ ПРОФЕСІЙНІЙ ПІДГОТОВЦІ ФАХІВЦІВ ІТ-ГАЛУЗІ

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У статті проаналізовано базові освітні концепції, що лежатимуть в основі моделювання професійної підготовки фахівців ІТ-галузі. Аналіз провідних освітніх концепцій – особистісно орієнтованого навчання, освітнього розвивального середовища, практико-орієнтованого навчання, наочно демонструє їхнє засадниче значення для подальшого моделювання освітнього процесу формування ціннісно-деонтологічних компетентностей майбутніх фахівців ІТ-галузі. Водночас, відзначимо, що усі ці концепції мають універсальний (й загальний) характер для педагогічної теорії і практики, зокрема для сфери професійної підготовки. Отже, вважаємо за мету нашого викладу – виокремити низку освітніх концепцій, що мають спеціальне значення для професійної підготовки фахівців ІТ-галузі.

Проаналізовано українську та зарубіжну практику відповідних досліджень, потрактовано, узагальнено дефініції освітніх концепцій. Проведений нами аналіз дозволив виокремити такі освітні концепції – універсальні й спеціальні, що виступатимуть теоретико-методологічною основою при моделюванні освітнього процесу формування ціннісно-деонтологічних компетентностей майбутніх фахівців ІТ-галузі.

Таким чином, стаття вказує на перспективність того, що саме керуючись підходами й настановами означених освітніх концепцій здійснюватиметься відбір певних методів, прийомів, технологій і форм організації освітньої діяльності спрямованої на формування аксіологічної й деонтологічної компетентностей, що розглядаються нами як фактичне як підтвердженням сформованості у майбутніх ІТ-фахівців аксіологічної культури й деонтологічного типу мислення.

Ключові слова: *універсальні та спеціальні освітні концепції, моделювання освітнього процесу, формування ціннісно-деонтологічних компетентностей, майбутні фахівці ІТ-галузі.*

Introduction of the issue. The conceptual and theoretical-methodological foundations of the educational process are the foundation on which the modern system of professional training is built. Studying these basics will provide an understanding of the essence of education, will allow a better understanding of its purpose and tasks. This helps to establish clear goals and expectations from the educational process. Also, the determination of the theoretical and methodological foundations of the educational process - the training of future IT specialists will have an impact on the improvement of pedagogical practice, will allow teachers to improve their work, develop effective teaching methods and use modern pedagogical approaches. In this way, adaptation to changes in society and technology will take place, which requires constant updating of approaches to learning and acquisition of new knowledge [7]. Understanding the conceptual foundations helps to implement changes in the educational process to meet the needs of today; ensuring the quality of education in order to effectively evaluate and improve the quality of educational programs and the learning process.

In general, learning these basics is key to improving the quality of education and training qualified IT specialists who meet the requirements of modern society and the labor market.

Current state of the issue. In our research was examined literature, that are focusing on the study of individual differences in the development of research methodology knowledge and skills among psychology students [1]. Notably, attention is drawn to fundamental aspects of preparing future professionals in the field of information technology, as discussed in Bardus's research [2]. It is interesting researching work, what also delves into the improvement of computer skill training, exploring the efficacy of behavior modeling, symbolic mental rehearsal, and the role of knowledge structures [3]. Conceptual principles of modern pedagogical technologies within

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non-linguistic higher education institutions are being investigated in many publications [7]. Vasetska and Morozova [8] delve into the conceptual principles shaping modern pedagogical technologies within non-linguistic higher education institutions. Vieno, Rogers, and Campbell [9] advocate for an expanded definition of research skills, aiming to enhance student competence across both undergraduate and master's programs. Additionally, Vuorikari, Kluzer, and Punie [10] introduce DigComp 2.2, the Digital Competence Framework for Citizens, providing novel examples of knowledge, skills, and attitudes essential in the digital landscape. Collectively, these sources offer diverse perspectives that enrich the understanding of fundamental educational elements crucial for the effective preparation of IT professionals.

Aim of research. The analysis of the leading educational concepts – personally oriented learning, educational development environment, practice-oriented learning clearly demonstrates their fundamental importance for the further modeling of the educational process of formation of value-deontological competences of future specialists in the IT industry. At the same time, we note that all these concepts have a universal (and general) character for pedagogical theory and practice, in particular for the field of professional training. Therefore, we believe that the purpose of our presentation is to single out a number of educational concepts that are of special importance for the professional training of IT specialists.

Results and discussion. Therefore, in order to organize an effective educational process of modern professional training, IT specialists should also pay attention to the theoretical and methodological guidelines voiced within the framework of the project "Assessment and Teaching of Twenty First Century Skills". In particular, project experts emphasize the following pedagogical concepts:

1. Concept of the zone of proximal development (ZPD), which was once proposed by Lev Vygotsky. This concept involves creating a space in which people learn most effectively because they have enough prior knowledge to consolidate learned more complex skills or information, but not enough to lead to a cognitive gap [5: 268]. The specified concept can be combined with the concept of creating an educational development space, within which appropriate zoning can be applied to ensure a positive learning trajectory for future specialists in the IT industry, in particular for the purpose of forming value-deontological competencies. At the same time, this organization of the educational process of professional training corresponds to the modern model of the educational process, which is focused on "increasing the quality of education, more effective use of study time, and ensuring the needs of each student in accordance with his individual capabilities and his assimilation of new technologies of professional activity" [8: 66].

2. The idea of encouraging social interaction as a fundamental factor (facilitator) of cognitive development. Social interaction is ensured by using the method of teaching in small groups, which creates conditions for the activation of students' educational work, allows them to form their own educational goals and search and choose materials and information related to the relevant task [5: 280]. This idea is of fundamental importance for the organization of the educational process of professional training of future specialists in the IT industry with the aim of forming value-deontological competencies. The thing is that it can be applied in two ways. Firstly, the skills defined by us as elements of the aforementioned competences – communication, cooperation, social and intercultural, flexibility and adaptability, critical thinking and problem solving, innovativeness, leadership and responsibility, productivity and responsibility, can be formed within the framework of social interaction in the context of project implementation value and deontological orientation when studying the disciplines of the humanitarian cycle. As a rule, in the

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Ukrainian curricula for training a specialist in the field of 12 "Information technologies" of the first (bachelor's) level, this is philosophy. Secondly, the specified skills can be formed in the process of studying specialized disciplines, which is positive from the point of view of (1) the perspective of the formation of value-deontological competences of future IT specialists, as well as (2) the efficiency of using study time.

Note that the promising idea of integrating the concepts of research training and the formation of procedural knowledge is supported by British scientists [3; 6; 9]. The idea is that, under the influence of the research environment, in an effort to solve a certain problem (task, implement some project), the student of education is interested not only in mastering the understanding and ability to perform tasks in a certain scientific field (form procedural knowledge), but also in acquiring fundamental (declarative) knowledge about this area. Thus, the acquisition of practical knowledge in a certain field involves the introduction of effective methods of mastering fundamental knowledge in the educational process [9: 644]. It should be noted that special studies prove a direct connection and a positive correlation between the fundamental knowledge (the level of their assimilation) of the student of education and the level of self-regulation and motivation regarding learning and the acquisition of professional competences [1]. This should obviously be taken into account in the process of modelling the educational process of forming the value-deontological competences of future specialists in the IT industry.

In the context of understanding the conceptual and theoretical-methodological foundations of the educational process of modern professional training, it is worth paying attention to the work carried out within the framework of the CDIO (Conceive, Design, Implement, Operate) initiative, which is supported by more than 120 well-known universities Worldwide. The main idea of CDIO is the comprehensive professional training of a specialist capable of creating new techniques and technologies, as well as managing the complete life cycle of a product, system, service or process. The idea of comprehensive training determines approaches to the organization of the educational process, in particular: 1) drawing up the curriculum using a system of mutually supporting courses; 2) active and experimental learning; 3) saturation of the process of professional training with practical courses, tasks and projects that contribute to the professional readiness of the applicant upon completion of studies; 4) special attention to the formation of 21st century skills (in particular, communication, cooperation, social and intercultural skills). Competencies obtained through programs based on CDIO standards provide graduates with the opportunity to easily adapt to the changing needs of future development and requirements [4: 3-4].

The concept of orientation of the educational process towards the professional future deserves attention. This concept was formulated by the Ukrainian researcher Iryna Bardus, who works with the problem of fundamentalization of professional training of future IT specialists for productive activities. The logic of the researcher is that the results of training in a higher education institution will meet the needs of production in the event of a reorientation of the process of professional training (in particular, IT specialists) from mainly reproductive to productive, that is, it is necessary to teach them to predict the development of their own professional sphere: "to prepare future IT- specialists for productive professional activity, it is necessary to build a training system in such a way as to teach students to independently master the required level of professional knowledge on the basis of fundamental knowledge and skills" [2: 60].

Developing this opinion in the context of solving the practical task of forming the value-deontological competences of future specialists in the IT industry, we

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will emphasize that axiological and deontological knowledge will be the fundamental knowledge for the specified competences, and the skills that are focused on the future will be the skills of the 21st century determined by us as elements of these competences: 1) learning and innovation skills; 2) life and career skills. The relevance of this approach is confirmed by the experts of the Accreditation Committee of the European Network for Quality Assurance in Computer Education (ECSaKS), who emphasize that everything is rapidly developing and changing in the digital sphere. In particular, new technologies such as artificial intelligence, virtual and augmented reality, robotics, the Internet of Things, or media disinformation and manipulation have become challenges, and this requires a response in the field of training specialists in the IT industry [10].

Our analysis made it possible to single out educational concepts - universal and special, which will act as a theoretical and methodological basis for modeling the educational process of forming value-deontological competences of future specialists in the IT industry. A generalized description of these concepts is given in Table 1.

Table 1.

Actual educational concepts for modern professional training of future specialists in the IT industry

Educational concept	Basic paradigms	Main features
Universal educational concepts:		
personally oriented training	• humanitarian • person oriented • pragmatic • integration	1) aimed at self-improvement and spiritual growth; 2) the primary task is the development of a person's personality; 3) provides the opportunity for the student to choose the forms and methods of education.
educational development environment	• humanitarian • classical • pragmatic • integration	1) based on the idea of a connection between the processes of formation of cognitive and emotional qualities of the individual and environmental influences; 2) the environment is considered as a complex organized system that includes cognitive, motivational, operational and organizational and logistical components; 3) actively applies the subject-subject approach.
practice-oriented training	• classical • pragmatic • integration	1) ensures the formation of procedural (practical) knowledge through the acquisition of skills and abilities in a certain field of activity; 2) is an effective means of forming professional and general competencies in their perfected form; 3) aimed at ensuring future effective professional activity.
Special educational concepts:		
zones of immediate development	• humanitarian • person oriented	1) ensuring continuity and non-conflict of knowledge growth; 2) involvement of a logical-structural approach; 3) using an environmental approach.

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comprehensive professional training	• classical • person oriented • pragmatic • integration	1) involvement of a system of mutually supporting courses; 2) active and experimental learning; 3) formation of 21st century skills.
orientation of the educational process towards the professional future	• humanitarian • classical • person oriented	1) reorientation of the professional training process from predominantly reproductive to productive; 2) formation of motivation and self-education skills.

Source: own development

We would like to emphasize that the selection of certain methods, techniques, technologies and forms of organization of educational activities aimed at the formation of axiological and deontological competences will be carried out precisely guided by the approaches and instructions of the specified educational concepts, which we consider as factual as confirmation of the formation of axiological culture and deontological type in future IT specialists thinking.

Conclusions and research perspectives. Summarizing the results of our research, we note:

1. The organization of the educational process, in particular in the field of professional education, is a complex methodological task, the solution of which requires taking into account current theoretical and methodological developments in pedagogical theory and practice. Solving the task of modeling the educational process of forming the value-deontological competencies of future specialists in the IT industry is no exception in this respect.

2. Modern education, combining traditional and innovative approaches, is based on a number of important paradigms: humanitarian, classical; people-oriented, pragmatic and integrative. These paradigms correlate with universal educational concepts of modern pedagogy: personally oriented learning, educational development environment, practice-oriented learning.

3. Along with these general concepts, the specific tasks of professional training of future specialists in the IT industry require the application of a number of special concepts, such as: zones of immediate development, comprehensive professional training; orientation of the educational process towards the professional future. The combined involvement of universal and special educational concepts contributes to the professionalization of future IT specialists and, at the same time, the integration of the entire spectrum of elements of value-deontological competences - knowledge, skills, abilities, values, and personal qualities.

At the end, we must note that the fundamental point of modeling the educational process of forming value-deontological competencies of future IT specialists is the definition and selection of methods, techniques, technologies, forms of educational activity organization relevant to the universal and special educational concepts described by us. We are convinced that the implementation of the relevant procedures will be as well-founded as possible if we refer to the foreign experience of professional training of future specialists in the IT industry, in particular, in the context of the formation of value-deontological competencies.

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