Personality Development in the Paradigm of Current Neuropedagogy

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Abstract: *The importance of the article is underscored by the fact that the development of a child's personality in the paradigm of today's education requires special study, since the lack of generally accepted methods for forming key competences does not allow the competence-based approach to learning to develop fully. This article is based on the idea that the approaches, methods, systems and technologies widely known in pedagogy can be applied for their formation. The aim of the article is to show that the implementation of the problem-based approach contributes to the formation of key competences and development of a child's personality in the paradigm of today's education. The evolution of the educational paradigm, the whole education at different historical stages was formulated differently. Depending on the level of development of society, changes in economic formation and other reasons, different requirements were imposed on the result of the educational process. Currently, a new educational paradigm is being formed. This formation process is quite complicated. It is characterized by the fact that the previous paradigm based on the system of KSA (knowledge, skills, ability) no longer meets the requirements of modern education. The need, first and foremost, to organize and apply in practice an ever-growing volume of knowledge does not correspond to the orientation in learning to their reproduction. The article presents the essence of the competence approach, investigates the essence of the problem approach; presents the effectiveness of the problem approach within the competence approach; outlines the limits of the problem approach, outlines the development of personality in the paradigm of current neuropedagogy.*

Keywords: *Competence approach, problem approach, pedagogical theories, systems, technologies, knowledge, abilities and skills, practical knowledge, neuropedagogy.*

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Introduction

The educational paradigm has passed through several stages. Thus, in the pre-institutional period, it reflected the values of a closed group of people, which were transmitted by example, imitation, and compulsion. In the ancient period, it exalted civic values, which were reflected in the dominance of physical and military training, literacy training, education of an active and responsible citizen. In the Middle Ages there was the paradigm of Christian education, where the process was regulated and controlled only by the church. The classical educational paradigm emerged as a response to the growth of industrial production in the 17th century. The main goal of such education was to impart to students the system of knowledge, skills and abilities (KSA) necessary for the future profession.

The contradictions between the demands of the industrial sphere and the real level of training of graduates led to the need to revise the goals of the educational process. It has become evident that knowledge can no longer be an end in itself but can only be a means to this end.

A comparative analysis of the classical and new educational paradigms can be presented more vividly by contrasting these criteria. The main mission of education in the classical paradigm, which is to prepare the rising generation for life and work, is contrasted with the mission of education in the new paradigm: to provide conditions for personal self-determination and self-realization. Knowledge from the past ("School of Memory") is knowledge from the future ("School of Thinking"). Education as a transfer of known patterns of KSA to the student - education - the creation by a person of the image of the world in himself through the active positioning of himself in the world of object, social and spiritual culture. The subject-object, monologic relations of the teacher and the student are contrasted with the subject-subject, dialogic relations. "In response," the reproductive activity of the student is opposed to the active, creative activity of the student.

Within the new educational paradigm pedagogical theories, systems, technologies aimed at achieving a new educational result began to appear. This educational result was and is understood by researchers in different ways, for which the target orientations in these systems. theories, technologies are formulated differently.

Bibik (2013) stipulates that the system of learning should not only focus on the formation of knowledge, skills and abilities, but also one's general development. There is a belief that the developmental learning theory does not primarily involve imparting knowledge, capabilities and

skills to children, but rather conveying ways of mental actions (Kremen, 2013, p. 6; Matviienko, 2016, p. 327). Pometun's (2005) work on personality-based developmental learning focuses on the growth of each child's cognitive capabilities (p. 69). Trynus et al. (2019) have proposed assessing and cultivating the competencies of students, including initiative, creativity and self-regulation (p. 35). It is obvious that the mentioned systems, theories, technologies satisfy the new educational paradigm. the subject of this article.

The purpose of the article is to present the essence of the competence approach in the development of child personality in the paradigm of today's education; study the essence of the problem approach; present the effectiveness of the problem approach in the competence approach in child development; determine the limits of the problem approach, identifying ways of personal development in the paradigm of current neuropedagogy.

Personality development in the paradigm of current neuropedagogy

Analyzing the development of personality in the paradigm of current neuropedagogy, let us analyze the cognitive domain of personality. Here we mean such mental cognitive processes as perception, memory, attention, thinking, imagination. These processes have been studied in detail, and it is needless to say that without understanding their functioning, no effective learning is possible in principle.

All these processes are closely related, and it would be wrong to study it in isolation from each other. Neurophysiology and neuropsychology confirm these findings. But there are also relatively new discoveries in this field concerning different laterality and related differences in the course of mental processes. Undoubtedly, the differences are present. It is not necessary to fall into some categoricism about only "right-" or "left-hemisphere", because it is proved that the right and left hemispheres do not function separately, as if by themselves in people with different laterality. They have many connections that are much more complex than originally imagined. Nevertheless, one must necessarily take into account the nuances of perception and information processing by these two categories of people. Indeed, only recently have begun to appear special developments and introduce into training various technological techniques aimed at teaching left-handed people. Previously, the whole educational process, including the methodology of teaching writing, was oriented to "left-hemispheric" children. All this is important because the educational process should not be

the same for everyone, but must take into account individual differences, including laterality.

Teaching should also be multimodal - it should be based on materials of different modalities. Different representational systems should be involved, taking into account the individual characteristics of students: visual, auditory, kinesthetic. The teacher should consider the use of numerous methods and techniques to foster engagement with students in diverse content and forms of learning and cognitive activities (Matviienko, 2016, p. 328).

All pedagogical actions should be expedient and consistent. This provision is based on the regularities of the formation of a child's thinking. Neuropsychological research has shown that the brain can simultaneously analyze, synthesize the received information and operate with whole and parts. Such important thinking processes as analysis and synthesis constantly interact with each other, and their joint development requires the use of proper teaching methods and techniques. Teaching material should be presented in the mode of interaction of whole and partial, direct and reverse methods of problem solving, concretization and generalization, etc.

The brain's ability to process information simultaneously under conditions of focused attention and peripheral perception is known. In the learning process, it is possible to make good use of the peculiarities of peripheral perception and use it as an additional constructive factor. Meanwhile, peripheral perception can also be a destructive force, which is why Pankiv (2015) stresses the need to take into account the individual traits of students (p. 137).

It is very important to understand what type of memory is used in the learning process. In modern schools it is very common to use "rote learning" as a type of memorization of information. The process of memorization depends largely on the peculiarities of perception, the type of memory and the techniques used, and due to such a property of the brain as neuroplasticity, memory can and should be developed. It is important for a teacher to know that depending on which perceptual channel is dominant, it is possible to choose appropriate techniques for the most effective memorization. For example, it is better for auditory learners to use audiobooks and lectures, as well as to discuss new information in a group of students. It is necessary to recite aloud what you have heard and retell it for more effective memorization. For visual learners, outlining will be effective.

You can do this in many ways: make mind maps, sketch objects, highlight important parts in colors. Use tables and graphs. Kinesthetic people should write by hand, use motor skills. You can also link

memorization with physical exercise. Knowledge that has fallen into memory in the form of memorized information will be unstable, unproductive and chaotically scattered, which will prevent further search and reproduction.

One of the main tasks of modern education is the all-round development of a child: his/her cognitions, personality traits, social competencies using the most effective and health-saving teaching methods and technologies, taking into account the individual characteristics of each student. This task can be successfully solved with the use of neuropsychological knowledge, neuropedagogy with the application of neurodidactic methods in teaching.

The essence of the problem approach

Its emergence is associated with the emergence in 1894 experimental school, based on the theoretical provisions of Dewey (2011), in which the curriculum was replaced by game activities. Perhaps the rudiments of the problem approach should be sought in the famous Socratic method, which did not offer students knowledge in ready-made form, and used a system of leading questions so that students themselves discovered new knowledge. Nonetheless, insights by Ovcharuk (2004) can provide insight into the theoretical growth of the problem approach (pp. 58−60).

Under the problem approach in education, we understand the organization of the educational process, which provides for the creation of problem situations in the minds of students under the guidance of the teacher and the organization of active independent activity of students to solve them, which results in creative mastery of KSA and the development of mental abilities (methods of thought processes). The main purpose of this approach: the acquisition by students of KSA, mastering ways of independent activity, the formation of search and research skills and abilities, the development of cognitive and creative abilities. Didactic content in the problematic approach is purposefully created by the teacher a line of problem situations, including a contradiction requiring resolution, different views on the same issue, problems with insufficient or excessive data, questions with known errors, etc. The result of problem solving is subjectively new knowledge independently received by students. Problem solving activity is thus comparable to the creative activity conducted by a researcher scientist (Zakharenko, 2013, p. 65).

When solving exercises offered in textbooks or problem books, students often only need to recall a known solution algorithm and

implement it. In fact, this often leads to the fact that they are unable to solve problems with modified conditions. The impetus for solving such a problem, as a rule, is the desire to get a grade, to meet the authoritarian requirements of the teacher, etc.

When solving a problem, students carry out a number of actions not provided for in the exercise: they make hypotheses (in the task it is done by the author), check the hypotheses and get new knowledge, search for a solution, check the solution, its research and proof. Salganik et al. (1999) claim that due to the problematic situation, the student experiences distress which drives them to search for a solution (p. 19).

It is a massive stimulus for activity. The pedagogical problem presented by the teacher is "accepted" by the students and becomes personally significant. Motives are internal. It is obvious that in this case the activity will be more effective than in the exercises, which means that the knowledge, skills obtained in the course of solving the problem are more firmly assimilated. In addition to knowledge, the student learns new ways of doing things. As the experience of problem solving accumulates, the search for hypotheses will be less chaotic, it will be of an orderly nature. "Not each and not every characteristic of the problem is brought to the forefront. This underscores the directional, selective and conclusive nature of thought (Matviienko, 2016, p. 327).

The above allows us to conclude that the problem approach, as well as some others that have appeared in recent decades and more recently lying within the new educational paradigm. It creates the conditions for self-determination and self-realization of the individual. Involved in an active, creative activity, entering into a dialogic relationship with the teacher, who receive experience in solving non-standard problems, which will certainly benefit the individual not only in professional activities, but also in everyday life.

The essence of the competence approach

The competence approach emerged later than the problem approach. The theoretical development and implementation of the competency-based approach in practice with the necessary modifications for our country can improve the educational process.

In addition, this approach is based on a new educational paradigm. These and some other reasons served as the basis for a broad discussion of this problem in the press, at seminars and conferences of different levels and its reflection, including in the normative documents. both at the theoretical and, even more so, at the practical level.

The pedagogical community heatedly discusses issues related to the basic, content categories of the competence approach "competence" and "competence". At the moment, not only there is no unified approach to the definition, but also the question about the relationship of these concepts: whether they are identical or not, has not been solved. Moreover, along with these concepts in the literature there are such concepts that are very close to them in content as key qualifications, basic skills, universal skills, etc. (Moliako & Muzyka, 2006).

By competence we mean a set of interrelated qualities of a person (KAS, ways of activity) set in relation to a certain range of subjects and processes and necessary to act qualitatively, productively in relation to them. By competence we mean a person's possession of an appropriate competence, which includes his/her personal attitude towards it and the subject of activity.

By the competency-based approach we mean a specially organized learning process aimed not only at forming students' KSA, but also competencies.

Zolochevska (2009) specifies that it a) allows the transition from replicating knowledge to deploying and managing it, b) prioritizes the plan of augmenting flexibility to open up employment opportunities and tasks on the agenda, c) imposes interdisciplinary-integrated standards for the outcome of the learning process, d) connects goals to their practical usage in the workplace and e) tailors human behaviour to an almost limitless range of professional and personal scenarios (pp. 6–7).

The core of our research is key competencies, which are the highest level in the hierarchy of competencies. In addition to key competencies related to general (meta-disciplinary) content of education, it includes general subject competencies related to a certain range of subjects and educational areas, as well as subject competencies which are private in relation to the previous two levels and have a specific description and possibility to be formed within the framework of subjects. The acquisition of essential skills should occur in each stage of the educational process and be pervasive across all topics (Kozyr et al., 2020, p. 372).

The fact that the competency-based approach lies within the new educational paradigm is obvious, if only because the problem associated with the change in this paradigm began to be covered precisely in connection with the emergence of the competency-based approach.

The effectiveness of using the problem-based approach within the competence-based approach

Thus, we briefly showed the essence of the approaches that we consider, and noted that both satisfy the new educational paradigm.

The main reason for trying to include one approach to the other was the ratio of their target orientations, namely: the goal of the problem approach - the acquisition of KSA by students, mastering ways of independent activity, the formation of search and research skills and abilities, development of cognitive and creative abilities - lies within the broader goals of the competence approach.

To support this notion, one can refer to the words of Harashchenko et al. (2019) that a qualified expert should be able to resolve, primarily, non-standard and new tasks, actually problems (p. 1).

Among the many reasons why there was a need to develop the competence approach and introduce it into practice, one of the most important is that graduates of schools, colleges, universities, who passed the course of study successfully enough, turn out to be incompetent specialists, unable to apply their knowledge in practice. One of the reasons for this is that teaching is detached from practice, and another reason is the predominantly passive, reproductive activity of students. Problematic approach allows you to organize in such a way as to maximize inclusion in the learning process. In this case the technique is often used, showing the relationship of theory to practice.

To show the effectiveness of the problem approach to the formation of key competencies, it is necessary to analyze which of them can be formed in the learning process.

As already noted, in the process of solving problem situations students perform a number of specific actions: formulate a problem, make hypotheses regarding its solution, select among them the right one, plan their activities, implement the plan, test the hypothesis, check and examine the results. This requires comparing, summarizing, analyzing, systematizing, highlighting, etc. The actions performed by students in this case are not reproductive, they are creative, exploratory in nature. All of these can be attributed to learning and cognitive capabilities (Olefirenko, 2020, p. 280).

Thus, the problem approach contributes to its formation.

There are two types of problem situations: pedagogical and psychological. Pedagogical - is a special organization of the pedagogical process, created by the teacher to activate the activity of students through special techniques (demonstration of contradiction, novelty, importance,

beauty and other distinctive qualities of the object of knowledge). Psychological - this is a search activity of the mind; psychological discomfort. The most important thing when the teacher thinks through and organizes problem situations, so that they are transformed into the result of psychological. If the problem situation is accepted by the student, it becomes personally important to him, which will be reflected in his experiences. The interest aroused in the student affects his emotional sphere. The motives underlying this activity are internal.

Not only new knowledge, but also other aspects of the activities carried out, such as communication, acquire special value for students.

Obviously, the use of the problem approach to the humanities and social sciences, where, in fact, many of these areas are studied, will be appropriate. However, it would be wrong to limit ourselves to this. We have noted that key competences should be formed not only at all stages of education, but also in all disciplines. If the content of humanities disciplines itself contributes to the formation of socio-labor competence, what is the contribution of the subjects of the natural science cycle to the formation of this competence (Pankiv, 2015).

The problem-based approach in any subject forces students to actively engage in the learning process. They take an active stance, which cannot help but become a habit and carry over exactly to all the areas discussed above. The whole human life consists of problems. Who doesn't have them? Sometimes it seems that finally they can be overcome. And when they arise again and again, the person is not ready for them, and hence there are more of them. Psychologists say that it is easier and more interesting to live not for someone who is trying to get away from the problems (although sometimes it is useful), but for someone who perceives them as a game: I can or cannot, I will achieve or not, I will solve or not.

This also applies to family life and professional activity; everything that is talked about in the description of social and labor competence. When working with problems, in this way, a strong foundation of this competence is built in the course of the disciplines of the natural science cycle.

The problem approach also contributes to the formation of the competence of personal self-improvement. It is clear that human development, his self-improvement to a greater extent occurs in independent active activity. We have already noted that problem solving contributes to this.

The special organization of classes when using the problematic approach can stimulate students to self-analysis of their own activity, deeds, relationships, their qualities. Explicitly or subconsciously students will strive

to improve all of this. Creating and supporting such processes requires a certain professionalism on the part of the teacher. It is necessary to select the chain of problem situations so that they are not too hard or too easy. Interest, motives and intensive activity for self-improvement will only be generated when this condition is met (Berbets et al., 2021, pp. 320–322).

From all the key competences suggested by Bibik (2013), the article has yet to address general cultural competence (p. 29). Perhaps in relation to it the problem approach should be used with some additional means, allowing to master the features of universal and national culture, spiritual and moral foundations of human life, the role of science in human life, etc.

The analysis allows us to conclude: the problem-based approach allows you to form almost all key competences, with the most weighty and obvious its contribution to the learning and cognitive and information.

Problem-based learning serves as a platform for the growth of key competencies and the refining of their main characteristics (Komogorova et al., 2021, p. 178).

These include:

1) readiness to actualize competence;
2) knowledge (cognitive basis of competence);
3) experience of using knowledge;
4) attitude towards the process, content and result of competence;
5) emotional-volitional self-regulation.

The first, fourth and fifth characteristics develop due to the fact that the pedagogical problem situation turns into a psychological and psychological discomfort leads not just to readiness, but also directly to the actualization of competence. The emerged interest satisfies the need for emotional saturation, which determines the attitude to the content of competence and the object of its application. Implicitly, students acquire knowledge of the competence.

This is directly related to the experience of manifesting a particular competence. It is clear that the more often the problem-based approach is used in teaching, the more experience the students gain in actualizing the relevant competences, the more knowledge about their content.

The limits of the problem approach

Thus, we have shown the possibility and feasibility of using the problematic approach within the competence approach. However, solving problem situations in the classroom is foolish to consider the only effective

way to form key competencies. The article considers relatively two approaches: task-based and problem-based.

The author makes an unambiguous conclusion about the failure of the first, earlier, but he himself emphasizes its merits. He calls the task-based approach a huge step forward in the formation of mass education. As noted by Sarancha et al. (2021), instead of retracing the challenging journey of seeking truth across the vast array of life's situations (often probabilistic and contradictory, presenting numerous challenges encountered by humanity throughout its history), a much more efficient approach would be to provide comprehensive education in schools and high schools, equipping everyone with the essential knowledge, skills and abilities required for both life and professional endeavours within a significantly shorter timeframe (pp. 207−211).

Among the disadvantages of the problematic approach can be noted:

1) a lot of time and a lot of preliminary work of the teacher in the preparation of the lesson;

2) lower controllability of the learning process than the traditional approach;

3) inefficiency in the formation of skills.

Unfortunately, exactly what makes the problem approach attractive, namely: independent acquisition of knowledge by students, repetition of the researcher's way leads to the limitations of its application.

Obviously, it is impossible to build the learning process solely on the basis of the problem approach. That's why it makes no sense to say that the task-based approach or traditional, as it is also called, is extremely bad and should be eliminated from practice as soon as possible. It has its own advantages. At least the fact that it is more effective in the formation of skills, already justifies its existence. Time constraints do not allow using only the problem approach, but it does not detract from its advantages. Consequently, it is essential to harmoniously combine the problem approach with the task approach, and possibly some other (Kozyr et al., 2020, p. 373).

Analysis of other pedagogical theories, systems, technologies for the formation of key competencies can lead to the integration of problem-based approach to some other, which will contribute to the higher educational outcome and content of the formation of key competencies and KSA system. There are already some results in this direction: the articles show the possibility of applying the adaptive learning system to form key competences. In this case there are no mutual exclusions that do not allow combining problem-based approach and adaptive system. Moreover, their integration will undoubtedly bring more benefits than each of them

separately. Thus, it is advisable to continue work in this direction. Thus, the analysis revealed that the problem-based approach can be applied within the competence-based approach.

Such an application is possible because the main targets of the problem-based approach lie entirely within the competence-based target setting. The main advantage of this use is that it not only provides a methodology for the formation of key competencies, but also allows you to do it without hasty changes in the content of education and avoiding the traditional classroom-lesson form, which has more advantages than disadvantages.

The effectiveness of applying the problem-based approach within the competence-based approach is proved by forming a wide range of key competences, which was shown both in the general case and on a specific example.

Levels of student activity, highlighted in the problem-based approach, allows you to assess their information and learning and cognitive competence.

It is reasonable to conduct further analysis of other pedagogical systems, theories, technologies, approaches to their use to form key competences.

Conclusion

The importance of the article is to present the essence of the competence approach in the development of child personality in the paradigm of today's education and concluded that under the competence approach, we understand the learning process, aimed not only at the formation of the system of KSA in students, but also competencies, allowing to move from a focus on reproduction knowledge application and organization; flexibility in favor of expanding employment opportunities and tasks performed; interdisciplinary-integrated requirements for the result of the educational process; orientation of human activity to the infinite variety of professional and life situations.

Also, in the article investigated the essence of the problematic approach and proved that the problematic approach in learning - is the organization of educational process, which aims to create in the minds of students under the guidance of the teacher problem situations and organize active independent activity of students to solve them, resulting in a creative mastery of KSA and development of mental abilities (methods of thought processes). The main goal is the acquisition of KSA by students, mastering

the methods of independent activity, the formation of search and research skills and abilities, the development of cognitive and creative abilities.

The effectiveness of the use of the problem approach within the framework of the competence approach in child development is presented and it is proved that in the process of solving problem situations students learn to perform a number of specific actions: formulate a problem, hypothesize to solve it, select among them the right one, plan their activities, implement the plan, test the hypothesis, check and research the results, compare, generalize, analyze, systematize, highlight the main thing, etc. Actions performed by students in this case are not reproductive, they are creative, exploratory in nature. Also defined the limits of the problem approach.

Scientific novelty of the research is determined by the fact that the essence and possibility of implementation of neurodidactic approach in the educational process of current educational institutions are considered. Theoretical significance of the article is determined by its contribution to pedagogy in the sections devoted to current approaches in teaching and the possibilities of their implementation. The practical value of the study consists in the fact that the example of neurodidactic approach shows the possibilities of increasing the effectiveness of the educational process through an individual approach to learning depending on the peculiarities of the child's psychophysiological development.

Acknowledgement

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