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The Concept of Zone of Proximal Development and its Derivatives: Problems and Prospects of Modern Interpretations

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Abstract. The study is devoted to the theoretical and methodological analysis of the concept of zone of proximal development, which is of great practical importance for education since it explains the mechanism of the influence of learning on the development of a student. Therefore, the purpose of the study is to analyse the current content and trends in the development of this concept and its derivatives. In this context, the classical ideas of L.S. Vygotsky on the zone of proximal development and the zone of present development, their indicators, and essential characteristics, including the evolution of the methodological status of the concept of zone of proximal development in psychology and pedagogy are analysed. Modern derivatives of the concept of zone of proximal development (scaffolding, zone of free movement, zone of prompted actions, zone of negative development, zone of variable development, zones of intermental development in the dialogue between teachers and students, etc.), its connections and correlation with these related and interrelated concepts are analysed. Based on the theoretical analysis, the psychological, didactic, and heuristic potential of the concept zone of proximal development is determined, in particular, its use as a methodological tool for developing projects in various fields of practice and branches of psychology. The latter is demonstrated by the example of student learning. The problem points and paradoxes of the modern understanding of the concept of zone of proximal development are also identified. The problem analysis is organised around the following subjects: the potential of the dual-plane zone of proximal development, the problem of its individualisation, the problem of social competence of interaction subjects that creates this zone, the zone of proximal development in the context of symmetrical-asymmetric learning and the quality of communication with peers in the group, the problem of the specific features of the zone of proximal development of an adult or an elderly person, the problem of moral competence and the inconsistency of the phenomenon of learning as a potential to change under external guidance. The obtained scientific results will be useful both for modern theorists of teaching and educating young people, and for teachers and psychologists working in educational institutions of various levels

Keywords: mental development, learning, L.S. Vygotsky, scaffolding, communication in the educational process, subjects of interaction

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INTRODUCTION

The global educational space of the 21st century is rapidly changing. This is primarily due to rapid transformational changes, globalisation processes, the spread of the Internet as a new form of communication, etc. These global changes lead to a transformation of the formats of modern education and upbringing. Accordingly, the assimilation of the socio-cultural experience of humanity by children and adolescents takes place in substantially new formats and contexts. Thus, *the problem of the relationship between mental development and learning* not only remains at the centre of the attention of psychologists and teachers [1; 2] but also encourages them to have a new vision and revision of current issues of modern education [3; 4; 5].

The essence of the relationship between learning and development is explained by L.S. Vygotsky through the concept of zone of proximal development (ZPD) [6].

N.N. Veresov emphasises that discussions on the cultural and historical theory of L.S. Vygotsky and the interpretation of the concept of ZPD, over time do not subside [7]. V.K. Zaretsky explains this by stating that, firstly, “the basic concepts that formed the basis of Vygotsky’s concept of development appeared only during the last 2-3 years of his life, so the cultural-historical theory should be considered as fundamentally incomplete” [8], and secondly, the concept of ZPD focuses on the main problem of Vygotsky’s concept – the relationship between learning and development. Therefore, the presented study aims to determine the theoretical and methodological content and main trends in the transformation of this concept in modern pedagogy and psychology. For this purpose, the following tasks were solved:

- 1) analyse the origins of the issue, the classical understanding of the concept of zone of proximal development, and its indicators;
- 2) reconstruct the evolution of the methodological status of the concept of ZPD in recent years;
- 3) highlight the problematic aspects and paradoxes of the interpretation of this concept in modern psychological-pedagogical research;
- 4) identify modern derivatives of the concept of ZPD, analyse its connections and correlation with these related and interrelated concepts;
- 5) determine the psychological-didactic potential and growth points of this concept;
- 6) using the example of teaching students to demonstrate the heuristic potential of the ZPD concept and the potential of its use as a methodological tool for developing projects in various fields of practice and branches of psychology;
- 7) popularise the idea of mental development and, in particular, the concept of ZPD, which focuses on the problem of the relationship between learning and development.

The discussion that follows is organised around **six subjects**: origins of the problem of ZPD in psychology; classical interpretation of the zone of proximal and present development in the theory of L.S. Vygotsky; modern understanding of the concept of ZPD in the papers of Western

psychologists; generalising interpretation of the main provisions on ZPD from the standpoint of their modern psychological-pedagogical importance; evolution of the theoretical status of the concept of ZPD and the emergence of its derivatives, and the relationship between the concepts of ZPD and derived concepts, problems, and paradoxes of modern understanding and interpretation of the concept of ZPD, in particular, the problem of blurring its content and volume, and modern examples of using the concept of ZPD in teaching students of higher educational institutions. A systematic analysis of these subjects in the totality of their interrelations and mutual influences is a scientific originality of this study.

ORIGINS OF THE PROBLEM AND IDEAS OF L.S. VYGOTSKY

The problems of correlation between development and learning in psychology are presented in the following main approaches [9]:

- development and learning are independent processes;
- learning is actually the development itself, these concepts are synonymous and can be understood as the development of conditionally reflex connections or as the establishment of associations and skills;
- learning is an external condition for development, as it builds on development with maturation;
- learning goes ahead of the development and contributes to the emergence of mental neoplasms in it.

Ukrainian and Western researchers believe that the last of these approaches is the most productive and substantiated. The main ideas of this approach are laid down in the papers of Lev Semenovich Vygotsky, one of the key figures in the psychology of the 20th century. He developed the original theory of the relationship between the mental development and learning of a child [1; 6; 10]. The problem of child development was the passion of L.S. Vygotsky and in the last years of his life, most of his scientific papers were connected with this central issue [11]. The concept he created is far from easily accessible. However, despite this, it remains the subject of considerable attention from researchers and encourages them to review and solve current issues of modern education [3; 5].

As noted by the author [12], L.S. Vygotsky shared the concern expressed by Zh. Piaget, regarding the relationship between development and learning: when a teacher offers new learning content, they must consider the current level of development of the child, that is, the structures based on which the child will assign this new content. However, the goal of the brilliant project of L.S. Vygotsky was to define higher mental functions as cultural entities and suggest another requirement for learning: good learning is learning that goes ahead of development [2; 10].

Vygotsky needed to explain the complex relationship between learning and development without going back to the reductionist concept of development. Complex forms of conscious activity (writing practice, various procedures for solving arithmetic problems, etc.) were developed historically by

mankind and objectified by it in culture in the form of papers, tools and instrumental systems [12]. The child must rebuild these forms of activity to re-assign them, meeting the expectations of adults and in cooperation with them [2; 13; 14]. Thus, learning is interpreted in Vygotsky's theory as a process of transmitting to the child the socio-cultural experience of humanity, which is ahead of its development, stimulates this process, creates a long-term development plan, while relying on the current level of development of the child [12]. The essence of this relationship between learning and development is explained by L.S. Vygotsky through the concept of ZPD.

CLASSICAL INTERPRETATION OF ZPD IN THE THEORY OF L.S. VYGOTSKY

The concept of zone of proximal development was extremely important for the development of the cultural and historical theory of mental development, moreover, according to V.K. Zaretsky, the concept of ZPD was its core and epicentre [8, p. 38]. The main idea is that the phenomenon of the zone of proximal development radically distinguishes humans from animals [15]. The animal learns by training,

while in children the main thing is development through cooperation and imitation through school education, which is the source of all specifically human properties of consciousness [15, p. 355]. This means that learning is not a simple accumulation of conditioned reflexes, as in animals, but a fundamental driving force that encourages the development of processes that would not have been possible without it. That is why, according to modern researchers, the ZPD is the intersection point between the child and their socio-cultural environment [16; 17].

In the classical sense, the child's ZPD is interpreted as the distance between the level of its present development (it is determined through tasks solved by the child independently) and the level of its potential development (it is determined through tasks solved by it under the guidance of an adult) [6, p. 399-400; 12] (Fig. 1). Conventionally, ZPD is understood as something that the child does not know how to do on their own but can learn with the help of an adult who directs the child's activities, or more competent partners-children [12]. Thus, learning organised based on properly organised assistance (mainly from an adult) goes ahead of development and leads it [18].

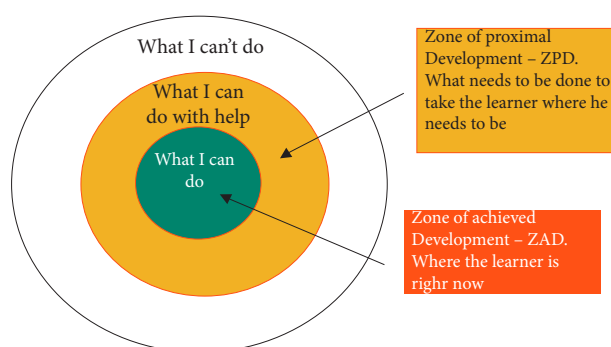


Figure 1. Schematic image of the ZPD

Source: [19]

In other words, in this process, *two levels of a child's mental development* interact:

- the first is *the level of present development*, within which the child independently, without the help of an adult, uses the acquired knowledge, skills, and abilities to solve practical problems;
- the second is *the level of proximal development*, within which the carrier of socio-cultural experience is an adult, in cooperation with whom the child gradually learns to solve the tasks set.

Based on the generalisation of theoretical achievements of L.S. Vygotsky and his followers, researchers [9] determined the indicators of the zone of current and proximal development of the child.

Indicators of the level of present development of the student are:

- *learning ability*, i.e., the student's knowledge, operation of separate isolated learning actions, skills;
- *development* of mental abilities, i.e. (1) the presence of formed educational activities, in particular, independent

definition of tasks, creation of generalised guidelines in educational activities, its variability, realistic self-assessment in this activity, and (2) characteristics of mental development, in particular, abstract and dialectical thinking, the ability to interiorise, internal action plan, possession of such operations of thinking as comparison, analysis, synthesis, abstraction, optimal qualities of the mind;

- *good manners*, i.e. the child's moral knowledge and beliefs, their motivation to learn, goals and emotions in learning, moral actions in behaviour and learning, consistency of knowledge, beliefs, and behaviour.

Indicators of the zone of proximal development of the student are:

- *learning ability*, i.e. the ability to learn new knowledge, the speed of formation of new concepts and methods of educational activities, the ability to perceive and process new information, receptivity to the help of others, activity and speed of orientation in new conditions, the ability to transfer the acquired experience to new conditions, to switch from one method of educational work to another, pace, performance, endurance;

- *development* of mental abilities, in particular, the response to the urge to further cognitive development that occurs externally, switching from one plan of mental actions to others;

- *good manners*, i.e. response to external motivation for personal development, orientation activity in new social conditions, flexibility of behaviour, transfer of behaviours to new conditions) [9].

According to the concept of L.S. Vygotsky, teaching a child what they are not able to learn, as it does not rely on the zone of their present development, is just as useless as teaching them what they can already do on their own. Therewith, the basis of learning should be the *active* involvement of students themselves in the process of acquiring knowledge, gradual development in cooperation with adults of the ability to independently acquire knowledge. Thus, the defining component of a child's development in the process of learning activities is the assimilation of knowledge, methods of activity, objects, and ways of using them, which cannot be discovered by a child without *cooperation* with adults [12].

MODERN UNDERSTANDING OF THE CONCEPT OF ZPD IN THE PAPERS OF WESTERN RESEARCHERS

As noted by the authors (for example, [8; 20; 21]), interest in the theoretical development of the concept of ZPD has recently been constantly growing. According to N. Veresov, it retains the status of one of the most used by Western (primarily English-speaking) researchers [7]. The first thing they correlate to the name Lev Vygotsky is the concept of the zone of proximal development [8; 15; 22]. N. Veresov estimated that the number of publications devoted to ZPD is constantly growing. For example, over the past 5 years, Web of Science alone has offered 215 studies, not to mention Scopus, PsycInfo, and PsychLIT [7]. A.A. Margolis, who has analysed the indicators of publications related to ZPD in various research databases over the past 20 years, also recorded their continuous growth. The author notes that the number of publications in Web of Science increased from 10-20 to 70-90 per year, and the Russian scientific citation index (RSCI) recorded an increase from 1-2 publications in 2002-2003 to almost 500 in 2019 [23].

Some researchers question the place of the concept of ZPD in the theory of L.S. Vygotsky and substantially reduce the meaning of this concept [24]. However, despite criticism, this concept continues to gain popularity in modern Western psychology and pedagogy. As G. Wells notes, a substantial part of modern Western researchers adhere to the classical understanding of ZPD [25]. They interpret ZPD as an emerging, open, reciprocal trait of the student [25], as a place where learning and development intersect [26]. M. Shokouhi, N. Shakouri emphasise that "Vygotsky was right in his definition of the concept of ZPD as a zone beyond which a child can move from their current to the potential level of development" [27, p. 63]. According to W.E. Dunn and J.P. Lantolf, ZPD is a "dialectical unity of

development and learning, in which it is learning that determines the leading path of mental development, which, in turn, prepares the basis for further learning" [28, p. 422]. J. Valsiner and R. van der Veer emphasise that the concept of ZPD, which was developed by Vygotsky in the context of the instrumental method, emphasises the importance of reducing the distance between the past and the future, social facilitation, play, fantasy, and social interaction in the process of internalisation as the assimilation of new experience by a child [29, p. 39]. The authors, simultaneously, discuss the so-called methodological paradox, which Vygotsky proposed through the concept of ZPD. It is stated that by acting through learning in the present, the ZPD focuses on near or future psychological functioning. Thus, a direct empirical study of ZPD is impossible, since it can only be detected retrospectively when future abilities become a reality [29].

H. Daniels, in turn, interprets the concept of ZPD as a scientific attempt to understand the effect of the contradiction between the internal capabilities of a child and external needs, which is the driving force behind its development. According to H. Daniels, the concept of ZPD was created by Vygotsky as a metaphor to help explain the way in which social and collaborative (participatory) learning occurs, highlighting the general genetic law of cultural development that asserts the primacy of the social in development. He assumes that L.S. Vygotsky sought to develop a theoretical concept that would explain the nature of man as creating themselves from the outside [21].

Some Western researchers believe that ZPD is the most well-known and popular part of Vygotsky's theory that can be effectively used in learning [30]. However, as noted by N. Veresov, the situation with understanding ZPD as a concept that explains the development issue, has not changed recently. As before, English-language literature is dominated by either arbitrarily fragmentary or simplified interpretations of this scientific construct [7]. The concept of ZPD is often interpreted incorrectly or remains unclear at all. N. Veresov makes a reasonable conclusion that it remains in Western science a concept that, in comparison with others, is most often used, but simultaneously the least understood [31].

GENERALISING INTERPRETATION OF THE MAIN PROVISIONS ON ZPD FROM THE STANDPOINT OF THEIR MODERN PSYCHOLOGICAL-PEDAGOGICAL MEANING

The growing interest in the concept of ZPD is associated with the prospects for its application in practical work, in particular, attempts to build specific types of educational practice based on the idea of ZPD [8; 20; 21].

The modern understanding of the concept of ZPD is connected, on the one hand, with new practices of the pedagogical process as cooperation between a child (group of children) and an adult (teacher), on the other – with the interpretation of teaching as a *reflexive-activity process* of understanding educational tasks and strategies for solving them. The well-established provisions on ZPD have recently acquired a new understanding in the papers of

E.E. Kravtsova [14], G.A. Zuckerman [16], V.K. Zaretsky [8; 32], I.A. Kotlyar [33; 34], and other Ukrainian [35; 36] and Western [37; 38] researchers. Based on these papers, it is possible to provide a generalising interpretation of the basic provisions on ZPD from the standpoint of their modern psychological-pedagogical meaning. These main theses reflect the *didactic* value of the idea of L.S. Vygotsky, based on which, it is possible to distinguish practical pedagogical procedures that will contribute to the development of the child in the learning process, and not only explain the functioning of some mechanisms of the appearance of neoplasms in development. Modern *psychological-didactic understanding of the concept of ZPD* was summarised by the author in previous studies [12] in the following provisions:

1. ZPD is directly related to the processes of learning and mental development, learning should focus on ZPD, somewhat *exceeding* the available cognitive capabilities of children.

2. According to the mechanism of implementation of the ZPD, it manifests itself in *imitation* and its special form – *cooperation*, and in this capacity, it is connected with the process of acquiring auxiliary, cultural means by the child.

3. The boundary between the area of present development (i.e., what is currently available and can be independently implemented) and the ZPD is the first *difficult task*, which the child is not able to perform independently, when they need the help of an adult.

4. If the child is not able to complete the task (action), they find themselves in a *problem situation*, that is, they cannot do what needs to be done on their own. Cooperation between a child and an adult when learning within the ZPD is conducted in a problematic situation, which the child can fulfil with the help of an adult.

5. In the course of a child's mental development, there is a constant contradiction between two aspects of their activity – motivational and operational. ZPD is a psychological space for resolving this contradiction.

6. ZPD is a special form of interaction in which the action of an adult is aimed at generating and maintaining the *initiative action* of a child. The interaction of the ones who can and know with the ones who do not is an abbreviated form of joint action that can create a ZPD. A developed form of such interaction is the *cooperation of equal*, but different, represented in the relationship between an adult and a group of children. The real dynamics of these relationships are determined by their emotional-semantic unity.

7. Development acts as a process of transition from the joint performance of complex but accessible tasks to the child, to their independent performance (without the help of an adult). This transition is *the measure of the effectiveness of help* of an adult: if the child becomes able to do independently what yesterday did only in cooperation with an adult, then the help was effective. If this does not happen, the adult should rethink what methods of assistance and how they use them.

8. ZPD is an area bounded on two sides: on the one hand, the border runs where the child is able to successfully act independently, on the other – where they cannot successfully act even in cooperation with an adult. In other words,

the ZPD area has a border beyond which lies the zone of current inaccessibility, that is, what a child cannot do even in cooperation with an adult. Thus, there is both a lower threshold and an upper threshold of learning, and only in this interval lies the *optimal period* of learning certain subject content.

9. the ZPD area is formed by actions that the child can *understand*, but is unable to perform, that is, it is a zone within which the child acts intelligently and meaningfully with the help of an adult. If they cannot interact meaningfully, cooperation cannot be implemented. Therefore, the role of activity-reflexive processes is decisive here.

10. The diagnostic potential of ZPD lies in the possibility of *measuring* the level reached by the child when they solve problems not by themselves, but together with an adult, and thereby determines the possibilities of transition from what the child can do to what they do not. ZPD is the leading methodological technique in the diagnosis of children's mental development and the study of their individual differences.

11. The concept of ZPD can also be extended to other aspects of the individual (not only mental development).

EVOLUTION OF THE THEORETICAL STATUS OF THE CONCEPT OF ZPD AND THE EMERGENCE OF ITS DERIVATIVES

L.S. Vygotsky had very little time to demonstrate the potential of the ZPD concept to implement his ideas, so it is not surprising that the debate about this concept has not subsided to this day. Due to Vygotsky's brilliant inspiration, the concept of ZPD is a construct that is constantly developing [27, p. 63]. However, it is often sought to be applied in contexts that go beyond its classical understanding, in particular, within the framework of the child's intellectual development (for example, [39; 40]). That is why, despite the presence of classical, well-established provisions, in modern psychology and didactics there are numerous *paradoxes* in the understanding and interpretation of the concept of ZPD.

H. Daniels notes that in recent years, concepts have emerged in science that are *derivatives* of the classic ZPD construct proposed by Vygotsky but have different conceptual accents and connotations. The process of emergence of new concepts, in his opinion, is due to the following factors: (1) the growing interest of researchers in the concept of ZPD, (2) the possibility of its application in educational practice, (3) the impossibility of its unambiguous and direct operationalisation [21]. These derived concepts include:

- the concept of scaffolding – assistance to a student originating from an adult [41];
- Zone of Free Movement and Zone of Prompted Action [42-44];
- Zone of Negative Development [45-48];
- Zone of Variable Development [45];
- Intermental Development Zone, which arise through the dialogue between the teacher and students [42; 49; 50];
- multiple zones of proximal development of children of different ages in a single community of students [51; 52];

- Zone of Free Movement (ZFM) [42];
- the Fifth Dimension of M. Cole, etc. [21].

In this study, the first three constructs that are the most commonly used and operated in psychology and pedagogy: Scaffolding, ZFM-ZPA and Zone of Negative Development are analysed in more detail.

THE CONCEPT OF ZPD AND SCAFFOLDING

Recently in psychology, quite often the *reduction of the concept of ZPD* is observed, associated with an attempt to interpret it exclusively in the context of didactics. This trend is present in the papers of foreign researchers in various disciplines and one of the manifestations of this trend can be considered the concept of *Scaffolding* (for example, [53; 54]).

Notably, the concept of scaffolding and the zone of proximal development, which occupy a central place in western psychological-pedagogical research, have been interpreted for many decades as interrelated and sometimes, identical [27; 51].

The concept of scaffolding was introduced by J. Bruner [41]. He describes scaffolding as:

– educational and cognitive support that teachers provide to students to help them solve problems that they cannot solve on their own;

– as a form of vicar consciousness (vicar learning), in which students go beyond themselves through involvement in the teacher's consciousness.

D. Morgan and P. Skaggs explain the relationship between the concepts of scaffolding and ZPD this way. Scaffolding offers temporary and flexible support that can be quickly and easily assembled and disassembled after completing a learning task. As a result, the student's ZPD expands, and the support is moved to the edge of the new learning boundary. Giving students the most difficult tasks that they can complete with minimal resistance is the best way to succeed in learning [55]. M.E. Poehner, J.P. Lantolf give an interesting example of the differences between these concepts. In their opinion, scaffolding involves engineering efforts of *expert advisor* to offer something to students, help, and with the phenomenon of ZPD, an analogy of gardening can rather be drawn, which requires the gardener to pay equally close attention to those plants that have already given fruit and flowers and to those that have only buds and change their activities accordingly. Consideration of what is not yet there, but could be, if properly cherished, is, in their opinion, a crucial feature of Vygotsky's conceptualisation of ZPD [26, p. 32].

According to most Western researchers, scaffolding reflects the assistance that an adult provides to a child in the process of cooperation [27; 52]. In other words, scaffolding consists of actions, instructions, tools, and resources to complete a new task or master a new skill. Help gradually decreases as it becomes unnecessary. After that, the student will be able to complete the task independently [56].

C.A. Stone, who thoroughly investigated the meaning of the metaphor of scaffolding [57, p. 345], defends this metaphor, providing certain arguments. However, simultaneously, he believes that it adds little to the original concept

of ZPD [57, p. 351]. The most substantial criticism is based on the following argument: this metaphor cannot generate any new ideas, because scaffolding is a static object [58]. The metaphor of scaffolding is static, so it does not reflect the dialectical connection between beginning and development. According to J. Xi and J.P. Lantolf, the concept of ZPD is deeply dialectical, so the static concept of scaffolding weakens the power of Vygotsky's theory [59].

Some English-speaking researchers, on the contrary, interpret the term scaffolding as conceptual and introduce the metaphor of scaffolding into the status of the theoretical concept [60]. Therewith, a comparative analysis of the content of the concepts of ZPD, teacher activity, learning ability, scaffolding [7; 23; 61], and a thorough analysis of Vygotsky's texts and interpretations of the concepts of ZPD and scaffolding in the English-language literature led to a number of critical comments on the identification of these concepts. Thus, N. Veresov notes that this identification deprives the ZPD of its essential content [7]. J. Xi and J.P. Lantolf argue that any of these identities is partial at best and superficial at worst [59]. The general opinion is that the concept of ZPD was proposed by L.S. Vygotsky in the context of analysing the child's mental (mainly cognitive) development and therefore cannot be adequately understood outside of this general context [23; 37, p. 45-46]. The main argument against this identification can be the understanding and interpretation of the child's development in play and through play as a form of symbolic reflection and transformation of reality [59; 62].

THE CONCEPT OF ZPD AND ZFM-ZPA

J. Valsiner [43] notes that some examples of the use of the concept of ZPD in western psychology simply served the purpose of designating complex phenomena with an equally complex concept. He believes that the concept of ZPD itself does not bring substantial clarity or understanding to the problem of linking development and learning, so he reconstructed the concept of ZPD as a system of zones that goes beyond its classical ideas, in particular:

a) a zone of free movement that is available to the child now and corresponds to the level of its current capabilities (Zone of Prompted Action – ZPA);

b) zones of prompted actions and activities, that is, those that do not require the child to them perform mandatory, are not associated with any consequences for the child in case of disagreement, and are encouraged by adults in a sufficiently free form (Zone of Prompted Action – ZPA).

Later J. Valsiner and P.E. Hill suggested considering them as interrelated concepts [44]. According to J. Valsiner & R. Van der Veer [63; 64], ZFM structures a child's access to different areas of the environment, to different objects in these zones, and to different ways of influencing these objects. The boundaries of ZFM are those parts, where it is constantly either restored or redefined. ZFM is a variable structure of adult-child relationships with the environment that guides (outlines boundaries but does not strictly define) the development of child actions in the areas that are

expected in a given culture. Thus, ZFM is a socially built cognitive structure of the child's relationship with the environment. It is socially built because it is based on the system of meanings of adult representatives of culture and because it is the result of interaction between an adult and a child. It is a cognitive structure because it organises the relationship between the child and the environment based on the knowledge, beliefs, and meanings used by cultural representatives in activities. Therewith, ZFM is to some extent a braking mechanism. Its function is to *restrict* a child's actions in a specifically structured environment.

ZFM has subzones that further organise the child's relationship with the environment. One of these zones – Zone of Prompted Action (ZPA) – is an action promotion zone in which the caregiver (adult) tries to promote certain actions of the child with certain subjects. The child can but is not required to comply with the adult's requirements and respond to their efforts. If the child does not follow the instructions, adults should not take any penalties or restrictive measures. This contrasts with the behaviour of an adult when a child *crosses the boundaries of ZFM* when an adult acts to restore or redefine existing boundaries. Van der Veer & Valsiner emphasise that ZFM and ZPA are mechanisms by which the child's degrees of freedom of action are selectively regulated in the environment of the social and subject environment. Their special organisation channels the child's actions in certain areas [65]. In another paper, D.C. Holland and J. Valsiner [66] argue that the concept of ZPD by L.S. Vygotsky is closely associated with ZPA (zone of present development).

They offer three different analogies. *Firstly*, parents can suggest action patterns at a time when the child is just starting to perform them in cooperation with the adult; in this case, ZPA coincides with ZPD. *Secondly*, parents may try to promote certain patterns of the child's actions at a time when the child's developmental history has not yet prepared them. In this case, ZPA and ZPD do not overlap. *Thirdly*, parents may choose not to encourage or allow certain activities that the child might have performed with the help of others. In this case, the ZPD is located outside of ZFM. If the ZFM limit is not reconfigured to include a set of actions in the ZPD, then the parental socialisation strategy eliminates the possibility of developing skills in the child in these possible but unactualised actions.

ZPD AND ZONES OF VARIABLE AND NEGATIVE DEVELOPMENT

In the context of modern approaches to group learning and understanding the mechanisms of spontaneous socialisation, the concept of zones of variable development is of interest. This refers to zones that arise when a child interacts with other children of different ages and subcultures in the absence of direct control from adults [45; 52]. According to the author, the concept of zone of variable development opens up new prospects for analysing the developmental interaction not only between a child and an adult but also between children in a group.

Another interesting idea of a development zone that suppresses and delays development is designated as a “*negative development zone*” [45-48]. American researchers, for example, describe areas of negative development that are created by the biased attitude of the US school teachers towards students representing national minorities [46]. A.N. Poddyakov introduces the concept of zones of negative, suppressed development that arise in conditions of ineffective adult help. This is something that the subject could have learned and developed in themselves, but did not as a result of various reasons, for example, erroneous adult help, pedagogical errors, etc. This phenomenon also takes place because any learning and assistance is not only progressive development, but also limiting and cutting off certain ways of development [46].

Thus, modern authors make a certain contribution to the concept of ZPD as an addition to Vygotsky's concept. This allows moving from a real understanding of the ZPD concept to a potential level, which can be implemented as IDZ, ZFM, and ZPA. The future fate of the ZPD concept will depend on how new proposals (such as IDZ – Intermental Development Zone, ZFM, and ZPA) can serve as both potential levels for their participants and levels of present development for others, through which other opportunities can be realised.

PROBLEMS AND PARADOXES OF MODERN UNDERSTANDING AND INTERPRETATION OF THE CONCEPT OF ZPD

Based on the preliminary analysis, it can be emphasised that the blurring of the content and scope of the classical concept of ZPD is the main problem. The author agrees with G.A. Zuckerman's opinion that the vaguer and more amorphous a concept becomes, the less explanatory power it has [16], and the more it may weaken the importance and stability of Vygotsky's theory in general. According to R.D. Pea [60], the concept of ZPD becomes too broad in its meaning, too blurry, and therefore loses its potential [60, p. 423].

Multiple ZPD interpretations give rise to other numerous **paradoxes and problematic issues** which do not have an exhaustive answer but are worth paying attention to for researchers and practitioners in further didactic research in modern transformational conditions. In other words, how and in what aspects the concept of ZPD can allow for improving and transforming pedagogical practices that are rapidly changing, adapting learning and upbringing to new conditions.

The first problem consists in the potential two-plane nature of the ZPD phenomenon. L.S. Vygotsky [15] believed that the concept of ZPD can be extended to other aspects of the individual. In other words, the potential of the classical concept of ZPD lies in the fact that it characterises not only the mental development of the child. According to M.S. Veggetti, it includes purely cognitive, motivational, and emotional content [67]. In the cognitive aspect, it reflects a certain amount of knowledge that the student cannot build (find, deduce) themselves, but is able to assimilate

if they are obtained from another, more competent subject based on the knowledge and strategies already available to the student. In motivational and emotional terms, the concept of ZPD reflects a focus on a significant other, someone who is respected for possession of the material, and possibly respected and loved as a person in general, a willingness to accept part of their values, follow this person and obey their guidance (at least within the limits sufficient for the success of assimilation) [33].

M.R. Ginzburg emphasises that changes in the zone of proximal development are a logical consequence of the transition from joint activities of a child with an adult to activities that are conducted individually. In his opinion, “in the present development of the child, the motivational component has already been removed, and the operational component has already been mastered. In the process of developing a new ability, both of these components work, thereby determining the zone of proximal development. Both in the absence of a motive and in the complete absence of appropriate operational mechanisms, it makes no sense mentioning the zone of proximal development” [36, p. 148].

Thus, the rhetorical question of whether someone who is not a reference and an insignificant person can teach takes on a special emphasis. It brings the study back to the role of the teacher in the development of value-semantic formations of personal and cognitive development. The second rhetorical question – is it possible to teach someone who does not want (is not ready) to learn – turns into a problem of forming internal motivation and leads back to the concept of ZPD in the aspect of not only operationalising the content of learning and its methods (how? in what way? by what means?), but also in the aspect of the adult’s ability to contribute to the development of intrinsic (internal) motivation for the activity.

M. Levykh emphasises that ZPD can successfully promote learning and development only when it is understood and used in the context of a holistic concept of cultural development, which provides for a three-way relationship between emotions, possession of behaviour, and personality, for example, in his doctoral dissertation on “Personality, emotions, and behavioural mastery in the thought of Lev Vygotsky” he analyses in detail the relationship between the concept of cultural development, socio-cultural, and historical context of development, human emotions, personality, possession of their behaviour, and the application of these concepts in the educational environment [68].

The second problem is associated with factors of individual variability of ZPD in different people. The question of the sources and determinants of the zone of proximal development does not have an exhaustive answer [69]. Why does it vary so much for different children? What exactly does it characterise in development, an indicator of what preliminary events and processes occur in the current situation? Admittedly, there is every reason to talk not about one zone of proximal development in a particular person, but about the fact that both children and adults have many different zones of proximal development. Moreover, a

person in relation to certain content may have a substantial zone of proximal development, while in relation to other content or other forms of activity, a person (in the context of ZPD) may be incompetent and need substantial external help. G.A. Zuckerman rightly defines ZPD as “a space of potential development opportunities, supported by educational interaction or not” [16, p. 65]. Individualisation of mental development as its expressed feature brings the problem of learning as a space for realising unique potential opportunities for each child back. “The teacher will thus assume the role of a development agent” [70].

The third problem consists in determining the level of social competence of the subjects of interaction that creates the ZPD. It is part of the problem of communication and interpersonal relationships in the educational process. The concept of ZPD in the concept of L.S. Vygotsky was developed in the context of a predominantly microsocial level of analysis – the level of the closest interpersonal relationships and paired, dyadic teacher–student interactions. An important aspect of care that an adult (experienced *other*) provides in the zone of proximal development is connected with the communication of two subjects of interaction. The interaction of a child and an adult actually creates a ZPD.

However, to respond to the teacher’s request (informational, problematic, communicative, etc.), the child must have communication skills at the appropriate level (for example, *be able to* ask for help, accept help, etc.) and it is necessary that the student *wants to* accept this help (for example, had a desire to make contact, desire, interest to get this help). According to G. Kravtsov and E. Kravtsova, the scope of the zone of proximal development is directly related to this aspect [1]. In other words, a small zone of proximal development or even the absence of any subject and operational content in the zone of proximal development can be associated not only with problems of a subject nature, but also with communication difficulties. Thus, the ZPD is defined as both the social competence already achieved and the social competence that develops in the learning process.

In this regard, it is extremely productive that the ZPD is actually defined and described not in the language of the content of tasks, but in the language of *types of assistance*, which to a certain extent helps the child to solve the problem [14; 16; 25; 71]. It is the types of assistance (types of interaction) that are the typology of learning, within which the question of where learning leads to development can be honestly answered [16, p. 66].

The fourth problem can be defined as a problem of the content and quality of communication between two subjects of interaction, which creates a ZPD. American researchers on the example of learning a foreign language show that the contradiction between the current abilities of the student and the requirements of the educational task is solved through communication and cooperation between two subjects of interaction – the intermediary (adult) and the student (M. Poehner, J. Lantolf) [26].

If the interaction of a child and an adult creates a zone of proximal development, this brings up the question

of whether it is possible to learn from a teacher (an adult in general) who is not liked and causes negative emotions (for example, fear, aversion). Is it possible to have the desire to ask for help and accept it, to understand the desires and requirements of such a teacher? Thus, the quality of communication and, in the context of this, the personality of the teacher themselves is of unmatched importance in the process of implementing the ZPD resource. The teacher is a symbolic chain between the past and the future, between the ZPD resource and the child's current ZPD resource. In the context of socialisation in general, it can be stated that the teacher implements the connection between the resource of modern human culture and modern childhood culture. This vision brings the attention back to the role of the teacher in the development of value-semantic formations of personal and cognitive development, and further – to the problem of compatibility of teachers and students in educational interaction. According to the author, it makes sense to assume the presence of different levels of compatibility (or incompatibility) – perceptual, communicative (discursive), value, which at different stages of interaction contribute to the development of the child or, conversely, inhibit it.

Recent ideas about the development of Vygotsky's concept suggest that people learn from others not necessarily because they are more competent, but because they think differently. N. Mercer, based on the concepts of scaffolding and ZPD, in a series of papers [42; 49; 50] proposed his own concept that explains how interpersonal communication can help human learning and intellectual development. This concept is based on the concept of the intermental development zone (IDZ). According to him, this concept aims to explain the way in which the interactive process of teaching and learning is based on maintaining a framework of context or shared knowledge created by participants through language and joint actions. This contextual frame supports the mutual orientation of participants to a common task; and in the case of productive interaction between teacher and student, this frame will be precisely tuned to increase the student's understanding as they progress in learning activities [42].

According to N. Mercer [50], the concept of IDZ also explains the nature of the communication process in which the so-called vicarious consciousness and the concept of scaffolding by J. Bruner are realised. Unlike Vygotsky's original proposal, IDZ is not a characteristic of individual abilities, but rather a dialogical phenomenon that is created and maintained between people in joint interaction. He emphasises that IDZ embodies the following requirements, which can be related to symmetric and asymmetric teaching and learning:

- 1) any joint, purposeful task should include the creation and maintenance of a dynamic contextual framework – the framework of joint knowledge and understanding;
- 2) the use of language in joint activities creates this framework and simultaneously depends on the creation of this contextual framework;
- 3) the success of any joint attempt will depend on the

feasibility of communication strategies that participants use to pool their intellectual resources.

In addition, one of the important techniques that can be used to develop speech and thinking is to use existing ideas to move on and form new ones. N. Mercer noticed a consistency in how conversations are used as a tool for developing thinking. He notes that teachers often use the following techniques:

- Summary – analysing what the other person has already experienced, and then preparing the basis for further development.
- Elicitation – questioning and encouraging the other person to remember what they already know and possibly think about it.
- Reformulation and repetition – a technique of paraphrasing what was said to clarify and emphasise the idea.

It is interesting that through these techniques, it is possible to pull out ideas, and not impose own ideas on another person. These techniques encourage ideas and allow people to think out loud and develop conceptual understanding using a form of linguistic scaffolding through IDZ construction.

N. Mercer [50] offers a metaphorical image of IDZ as a kind of bubble, in which the teacher and student move through time. IDZ is a dynamic, reflexive support of a purposeful, shared consciousness of teacher and student, focused on the task at hand and dedicated to the goal of learning. It is built in a conversation based on explicit references to shared experiences, but it can also be supported by indirect, implicit references to shared knowledge that can only be understood by participants. Its existence depends on the contextual efforts of the participants. If the dialogue of participants cannot keep their intelligence, their minds in mutual harmony and focus on the task, then the IDZ bubble bursts, and learning stops [50, p. 38].

The fifth problem – is an understanding of the movement of ZPD in the context of symmetric-asymmetric learning and the quality of communication with peers in the group. The related concepts of scaffolding and ZPD were originally applied to the context of asymmetric teaching and learning, in which a teacher or adult supports a student, usually a child, in achieving tasks beyond their ability to work independently. Western researchers [52] note that these concepts need to be rethought if they are to be applied to a different social context, such as symmetric learning among peer groups. Their analysis, based on data from 2 experimental studies in groups of children from Mexico and the United Kingdom, shows a way to apply the concept of ZPD and scaffolding to understand how different groups of children use language to support collaborative thinking and learning. In both studies, they determined that the ideas of scaffolding and ZPD for symmetric learning required rethinking these concepts as characteristics of dynamic processes in dialogues.

Vygotsky has written extensively about collaborating with peers, but he mostly refers to more capable peers, implying that intellectual asymmetry must exist between participants in any collaborative learning activity. However, as

noted by American researchers [72], learning also takes place in collaboration between students who have a similar level of conceptual understanding. That is, learning and development can also be the result of symmetrical interactions.

The sixth problem – is the problem of moral competence and the contradictory essence of learning as the ability to develop under external guidance, which is analysed in the papers of A.N. Poddyakov [46; 47]. As noted, ZPD is defined by both cognitive abilities to learn and process new information (learning ability in a narrow cognitive sense) and emotional-motivational saturation (which provides a motivational component of learning activities). Paradoxically, according to researchers, ZPD is also determined by the already achieved level of moral competence of a person, and the moral competence that develops in the learning process.

Hence, there is a debatable question about the hidden, negative meaning of the concepts of learning ability and zone of proximal development. According to A.N. Poddyakov [46], it depends on the ability to understand the desires and requirements of the teacher, and the willingness (or unwillingness) to follow these other people's desires and requirements. Too broad ZPD of a child can mean not only their ability to learn new information but also their almost unlimited ability to follow people who are more competent and calculating than themselves, meet any external requirements [73]. This, in turn, means that a person is "more other-shaped than self-created" [74, p. 134]. This is the contradictory essence of learning ability, if understood as the ability to develop under someone else's guidance [73].

Research results indicate, for example, that focusing on the zone of proximal development can lead to negative results. Thus, deviant and delinquent adolescents have a special content of ZPD and, with some external assistance, implement antisocial behaviour and illegal actions [46; 47]. Therefore, the concepts of moral responsibility and moral action are necessary and most important additions to the concepts of pedagogical competence (teacher's side), learning (learning ability), and ZPD (student's side) [75].

Therefore, one of the limitations of many studies of ZPD as scaffolding created by the teacher, which allows the student to master new content, is the lack of connection between the growth of responsibility of the student and the growth of their competence. In particular, the concept of ZPD reflects the growth of the student's competence under the educational guidance of an adult, but not the growth of their responsibility for their increasingly improved actions.

The seventh problem is associated with age-related features of mental development, in particular, with the possible specific features of the ZPD of an adult or an elderly person. Features of ZPD in the process of mastering, for example, new professional knowledge, in particular, its specific features due to age-related features of development in adulthood and old age, is one of the most controversial issues that does not have an exhaustive answer and concerns many researchers and practitioners. Individualisation of mental development in periods of adulthood and old age leads back to the problem of formal and informal (professional and not) adult education as a space for realising their potential. There is reason to believe that adult ZPD is associated on the one hand with a sense of self-efficacy, and on the other – with a willingness to leave the comfort zone.

MODERN EXAMPLES OF USING THE CONCEPT OF ZPD IN LEARNING

The pedagogical potential of the concept of ZPD on the example of teaching students of higher educational institutions is considered below. Researchers list the reasons why it is extremely important to consider the zone of proximal development of students [20; 76; 77]:

1. ZPD guides the process of preparing learning sessions and events.
2. Allows adjusting teaching and learning strategies in accordance with the improvement of students' knowledge and skills.
3. Promotes *experiencing success*, a successful experience that helps to attract and motivate students in the learning process.
4. Allows gradually increasing the requirements for students so that they achieve success at increasingly high levels of learning.
5. Serves as a reference point for measuring the amount of assistance that will be offered to students, so that it can then be gradually reduced.

Further, the most interesting aspect of this approach, in the opinion of the study, is mentioned. Attention is focused on *creating a sense of self-efficacy* in students who, in the process of independent learning with the correct help of a teacher, acquire *confidence* in the possibility of solving the problem (action) [17]. According to research by Canadian researchers, the relationship between ZPD and the emergence of a sense of self-efficacy appears through the phenomenon of experiencing success (Fig. 2).

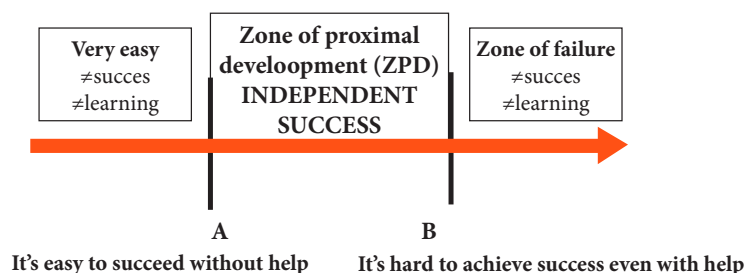


Figure 2. The relationship between ZPD and self-efficacy

Source: according to studies [76; 77]

Bandura once explained this mechanism as follows. When learning takes place at the beginning of the ZPD, students succeed on their own or with a little help. This increases their positive self-perception and experience of their own competence, giving them an advantage in solving more complex problems and problems [78]. Then, when a student, with the help of a teacher, successfully completes a more complex task that is more advanced in their ZPD, and they succeed several times, they can take on more complex tasks that previously were outside of their ZPD. G. Vergnaud believes that this is how the ZPD moves along the line of student personality development and learning progress [76]. A sense of self-efficacy arises from experiencing success in solving relatively accessible and then more complex tasks. According to M. McCaslin Rohrkemper, the emphasis should be placed on the motivational component of initial activity [79]. “The role of a teacher is to allow a young person to manage their autonomy” [80, p. 4], supporting their independent, autonomous learning. It’s about experiencing autonomous success – success realised independently.

In this regard, **the eighth problem** can be considered. How are the concepts of ZPD and getting out of the comfort zone related? According to L.S. Vygotsky, any subject of education and upbringing requires more from the child than they can give at the moment. Thus, learning activities force the child to go beyond their limits, so learning does not exclude discomfort, even if it ultimately brings some pleasure [15].

In the previous example, this can be explained as follows. Symbolically, the ZPD of students is located between two points on the line of gradual development. Point A (on the left) corresponds to the current degree of development, and point B (on the right) corresponds to the most likely development in the near future [76] (Fig. 3). The first part of the ZPD is located in the student’s comfort zone, while the second part is a zone of challenge, discomfort, imbalance, contradiction. Thus, the path of development is the progress from simple and easy tasks (to form a student’s sense of self-efficacy) to a progressive increase in the complexity of tasks, to tasks-challenges that are performed with the support of a teacher.

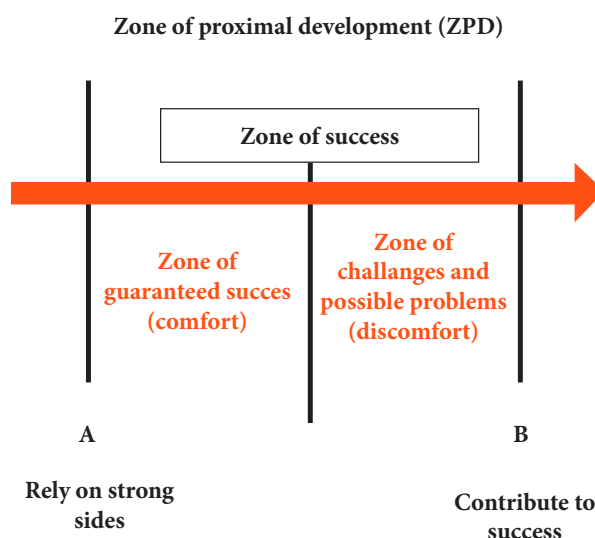


Figure 3. Relationship between ZPD and comfort – discomfort zones

Source: developed according to studies [76; 77]

The paradox of ZPD is that the larger the area of discomfort, the greater the chance of success, but the greater the chance of failure. The general logic of moving along the path of ZPD is that the closer to the area of discomfort, the more help from an adult the child needs. Ideally, the zone of discomfort should become a zone of possible success, and not a zone of failure or defeat. The role of the teacher is to build a balanced movement from point A to point B. One of the methodological techniques for achieving this is, for example, to offer the student several tasks of the same level of difficulty, gradually reducing the help provided.

Thus, although it is often necessary to take small steps [81], it seems that a teacher who wants to promote the cognitive development of their students should offer them

tasks that can create an imbalance of the latter [82]. In other words, they must put them in front of a contradiction. Consequently, the student’s ZPD moves forward to increasingly complex tasks, thereby opening up opportunities for a higher level of development, i.e. challenges that previously would have led to failure will now lead to success [76].

Returning to the problem of ZPD of an adult, an increasing variety of zones of proximal adult development in the conditions of different *types of social interactions* can be assumed (for example, assistance and counteraction, interaction at the level of horizontal and hierarchical interaction, in the context of formal and non-formal learning, etc.) and they have various coping resources. This problem is a promising area of future research in today’s lifelong learning society.

CONCLUSIONS

The problem of the dialectical unity of development and learning and their relationships remains the cornerstone of modern psychology and pedagogy. The quintessence of this problem is the concept of the zone of proximal development, which has become popular in modern Western and Ukrainian psychology and pedagogy in recent years. Disputes and debates about the content of this concept do not subside. They are related to the potential of its application in modern educational practice and simultaneously the impossibility of its unambiguous and consistent operationalisation. Therefore, the concept of ZPD is constantly developing and transforming.

The evolution of the theoretical and methodological status of the concept of ZPD in recent years in modern psychological-pedagogical research is associated with new practices of the pedagogical process as (1) cooperation of a child (group of children) and an adult (teacher) and (2) cooperation of children (group of children) among themselves. This evolution follows the path, on the one hand, of blurring its content, the appearance of simplified, or rather fragmentary interpretations, and on the other – the emergence of its derivatives, that is, similar in content concepts that are derived from the classical concept of ZPD, but have other conceptual accents (for example, the concept of scaffolding, zone of free movement and zone of prompted actions, zone of negative development, zone of variable development, zones of intermental (interpsychic) development in the dialogue between teachers and students, etc.).

On the one hand, the outlined terminological mobility of the content of the concept of ZPD indicates its viability, productivity, and pedagogical potential. On the other hand, (1) the transformation of the content, scope, and essential features of the classical concept of ZPD and (2) the associated inevitable threats of loss of its classical explanatory potential can be considered. This situation gives rise to numerous paradoxes and problematic questions of modern understanding and interpretation of the concept of ZPD, which do not have an exhaustive answer but should be paid attention to by researchers and practitioners in further didactic research. Among them can be noted: the potential of two-plane ZPD (unity of affective and intellectual fields), a pronounced individual character of ZPD, social competence, content and quality of communication between two subjects of interaction that creates ZPD (for example, teachers and students), symmetrical-asymmetric learning and the quality of communication with peers in the group, the essence of ZPD in conditions of different types of social interactions, the contradictory essence of learning as the ability to develop under someone else's guidance, the problem of the specific features of ZPD of an adult or an elderly person, the ratio of ZPD and the zone of psychological comfort and discomfort during learning, its dependence on a sense of their own self-efficacy. Theoretical analysis proves that it is becoming increasingly interdisciplinary, including social, age, cultural, and pedagogical aspects.

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Поняття «зона найближчого розвитку» та його деривати: проблеми та перспективи сучасних інтерпретацій

Анотація. Статтю присвячено теоретико-методологічному аналізу поняття «зона найближчого розвитку», яке має значне практичне значення для освіти, оскільки пояснює механізм впливу навчання на розвиток учня. Тому робота має на меті проаналізувати сучасний зміст та тенденції розвитку цього поняття та його дериватів. У цьому контексті проаналізовано класичні ідеї Л.С. Виготського щодо зони найближчого розвитку та зони актуального розвитку, їхніх показників та сутнісних характеристик, а також еволюція методологічного статусу поняття «зона найближчого розвитку» в психології та педагогіці. Проаналізовано сучасні деривати поняття «зона найближчого розвитку» («scaffolding», «зона вільного руху», «зона заохочуваних дій», «зона негативного розвитку», «зона варіативного розвитку», «зони міжментального розвитку в діалозі викладача і учнів» тощо), його зв'язки та співвідношення із цими спорідненими та взаємопов'язаними поняттями. На основі теоретичного аналізу визначено психолого-дидактичний та евристичний потенціал концепції «зона найближчого розвитку», зокрема щодо використання її як методологічного інструменту для розробки проектів у різних сферах практики та галузях психології. Останнє продемонстровано на прикладі навчання студентів. Визначено також проблемні моменти та парадокси сучасного розуміння поняття «зона найближчого розвитку». Проблемний аналіз організовано навколо таких тем: потенціал двоплановості зони найближчого розвитку, проблема її індивідуалізації, проблема соціальної компетентності суб'єктів взаємодії, яка створює цю зону, зона найближчого розвитку в контексті симетричного-асиметричного навчання та якості спілкування з однолітками в групі, проблема специфіки зони найближчого розвитку дорослої людини або людини похилого віку, проблема моральної компетентності та суперечливості феномену навченості як потенціалу змінюватися під зовнішнім керівництвом. Отримані наукові результати будуть корисні як для сучасних теоретиків навчання та виховання молоді, так і для педагогів та психологів, які працюють у закладах освіти різного рівня

Ключові слова: психічний розвиток, навчання, Л.С. Виготський, scaffolding, спілкування в навчальному процесі, суб'єкти взаємодії