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ДИНАМІЧНА ОЦІНКА ТЕОРЕТИЧНИХ ОСНОВ І ОПИС ЗАВДАННЯ

У статті розглядаються діагностичні проблеми когнітивного розвитку, з використанням процедури: завдання-допомога-завдання. Подається теоретична модель, яка базується на трьох концепціях: Л. С. Виготського, Р. Касе (Case) і А. Бандури. Спільною рисою цих теорій є роль соціальних факторів у розвитку дитини. Друга частина розкриває якісну та кількісну характеристику набору пізнавальних завдань.

Ключові слова: оцінка, зона актуального та найближчого розвитку, пізнавальні здібності, завдання

В статье рассматриваются проблемы диагностики когнитивного развития, с использованием процедуры: задача-помощь-задача. Описывается теоретическая модель, которая базирует на трех концепциях: Л. С. Выготского, Р. Касе (Case) и А. Бандуры. Общей чертой этих теорий является роль социальных факторов в развитии ребенка. Вторую часть посвящено качественной и количественной характеристике набора познавательных задач.

Ключевые слова: оценка, зона актуального и ближайшего развития, познавательные способности, задача

Theoretical basis of assessment

The model of the child cognitive development assessment was developed on the basis of three concepts: L.S. Vygotsky's sociocultural theory of cognitive development [1971], A. Bandura's theory of social learning [1977], and R. Case's theory of cognitive change [1985]. What these concepts have in common is the recognition of the importance of social environment for child development. According to socio-cultural theory, child/adult interactions are fundamental for mental development. Cognitive change theory, in turn, regards social interactions as one of the sources for a child to gather experiences. And in social learning theory, the focus is on the person whose behaviors a child is to reproduce. The model of cognitive development assessment is composed of three links, each of which is justified in one of the above theories [Diagram].

However, fundamental for the entire construct is L.S. Vygotsky's concept of the "Zone of Proximal Development," which distinguishes two main areas: actual and proximal development. Their borders are defined by tasks of different difficulty. The Zone of Actual Development (ZAD) includes the problems which a child is able to solve independently, they reflect "the level of development of a child's mental functions that has been established as a result of certain already completed developmental cycles" [Vygotsky 1971, p. 541]. This psychologist maintained that the assessment of the actual developmental level does not give a complete picture of a child's abilities. In his opinion, it is necessary to determine the Zone of Proximal Development (ZPD), i.e. the problems which a student cannot solve independently, but which he/she is able to solve under guidance or with help from others. "By using this method we can take account of not only the cycles and maturation processes that have already been completed but also those processes that are currently in a state of formation, that are just beginning to mature and develop" [Vygotsky 1971, p. 541]. L.S. Vygotsky's theoretical construction of developmental zones can be expanded by the Zone of Distal Development (ZDD) as this area includes the tasks given by the teacher which are too difficult for a child.

In accordance with the defined borders of the developmental zones, the model of educational assessment provides for giving dosed support in case of difficulties. In most tasks, support will be graded in two successive stages:

1. the assessor carries out a given task using a method which is proximal to the child, by trial and error most frequently, and
2. the assessor and the child carry out the task together, using a method which is proximal to the child, the assessor uses verbal prompts and provides hand-over-hand assistance - if it is necessary and if the child allows him/her to do that.

Thus, such diagnosis includes components of controlled, strictly dosed instruction. We can then follow the process of a child's learning depending on the type and amount of support given. In his turn, R. Case [1985] claims that support in solving problems increases reciprocal regulation of child/adult interactions. Therefore, the interaction between the assessor and the assessed does not end up at the moment the assessed gives a wrong answer but it becomes more dynamic: the assessor begins to use cues which make solving the problem easier [Sternberg 2001]. The approach that takes into consideration the teacher's and the child's two-way shared activity will be called interactive assessment.

The sources and situations which promote learning are well described in R. Case's cognitive change theory. They correspond to L.S. Vygotsky's

developmental zones. The tasks which an individual performs independently, in the course of his/her own activity, i.e. while he/she is solving problems and exploring independently, delimit the borders of his/her actual capabilities. And the tasks performed with the assistance of another person delimit the capacity of proximal capabilities. They show a store of social experiences gathered as a result of interaction and imitation. Changes in behavior during the performance of a task depend on the interrelation between cognitive development (cognitive abilities) and learning processes.

Educational diagnosis will be based on the use of learning by observation and imitation of the teacher's behaviors, who will be - in accordance with A. Bandura's terminology [1977] - hereinafter referred to as a "model." According to observational learning theory, it is this "model" - a person whose behavior is to be reproduced - that is a fundamental link in the whole social learning process.

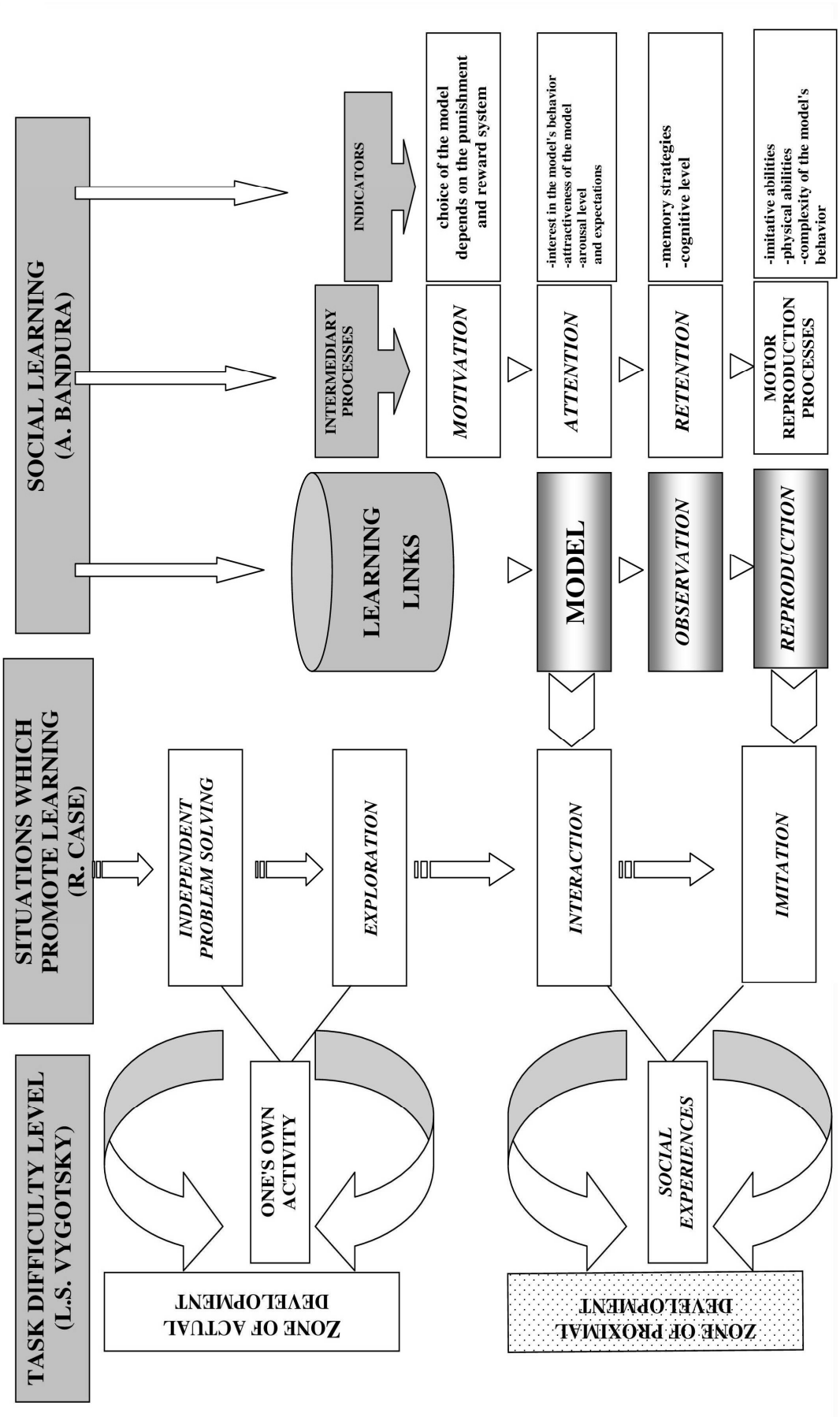
Attention and retention processes, motor reproduction and motivation processes are intermediary factors in the reproduction process. Attention processes determine how attentively a child observes a "model's" behavior. Interest in the "model's" behavior and his/her attractiveness, the observer's arousal level and his/her expectations are examples of indicators of these processes. Retention processes determine if modeled information will be remembered. Memory strategies and a child's cognitive functioning are examples of their indicators. Motor reproduction processes determine the quality of the reproduction of the "model's" behaviors by the observer.

His/her physical and imitative abilities, and also the complexity of the "model's" behavior are examples of their indicators. Motivation processes are of overriding importance to attention, retention and motor reproduction processes as they determine the choice of the model to be imitated, which, according to A. Bandura [1977], depends on rewards and punishments given to the "model" or the observer.

Care was taken so that the teacher to be imitated had characteristics which would be attractive to the child. It was assumed that his/her friendly attitude, colorful and developmental age-appropriate toys shown one by one in a familiar place would promote the child's attention and prompt him/her into action. It was also expected that the assessed children would be able to remember modeled information (strategy to solve a problem) for a certain period of time (1-2 minutes). Also, care was taken so that the complexity level of the teacher's behaviors was appropriate to children's developmental age. Moreover, it was made sure that all the assessed children had a good level of motor abilities.

Diagram 1

THEORETICAL MODEL OF EDUCATIONAL ASSESSMENT [Kulesza 2004, p. 64]



There is one issue that remains, i.e. the issue of conditions in which modeling is most effective. It was assumed that the child's (observer's) behavior would be influenced first of all by vicarious consequences of the adult's behaviors. In this case, vicarious reinforcements would be: performed activity, its final result (blocks have been placed inside the box, a doll has been assembled, etc.), teacher's emotional behavior (happy when a task has been performed, "infects" with positive emotions), attending to the child in a non-judgmental way.

The imitation of a problem-solving strategy modeled by the adult would be a result of changes in the child's behavior during assessment. The studies conducted by A. Bandura [1989] proved that modeling provides a basic system of rules of conduct and does not come down to copying only.

In R. Case's cognitive change theory [1985], imitation is regarded as a socially facilitated form of exploration, and if it is accompanied by active information processing, it is of benefit to the child. Most tasks provide for the demonstration of the trial and error method, i.e. comparing consistently individual elements and rejecting wrong matches. This strategy provides a child with a model of effective problem solving on the basis of active information processing.

L.S. Vygotsky's discussions on imitation show that a child can imitate actions that go well beyond the limits of his/her own capabilities; thus at first, the level of his/her understanding of what he/she imitates might be low. However, with time, "learning to imitate under adult guidance, he/she is capable of (...) doing much more with understanding, independently" [1971, p. 542]. The above observations confirm the validity of the use of teaching/learning methods in educational diagnosis that are based on observing the way a problem is solved, modeled by the teacher, and imitating him/her.

Cognitive change depends on the subject's own activity, his/her experience in solving problems, exploratory tendencies and curiosity about the world [Piaget & Inhelder 1996]. That is why the assessment will take into account the strategy the child uses, trying to carry out a task. A literature review and the results of the author's own studies indicate that there are four types of methods which show exploratory activity, the store of experiences, and task difficulty levels:

1. Doing things by force, chaotic actions, e.g. the child tries to place the blocks in the box (busy box/shape sorter), pushing them into the holes by force. Ineffective method;

2. Trial and error method, e.g. successive attempts to fit a block into a hole. Effective but time-consuming method;

3. Hands-on measuring or approximation method. The child brings the elements closer one to another, he/she measures them, because, for example, he/she cannot correctly estimate the shape of a block and a hole from a long

distance yet. Effective method, the task is performed quickly;

4. Visual discrimination method, e.g. correct estimation of the shape of blocks and holes from a distance. Effective and the fastest method for solving problems that require visual discrimination and synthesizing [cf. Kulesza 2002, pp. 249-250].

Description of the Set of Cognitive Tasks

Cognitive abilities are understood as a manifestation of crystallized intelligence which is a combination of many different abilities. Measurement always takes place as these abilities develop, and the measurement results show their present level. And global intelligence is regarded as intellectual potential "which - as experiences are gained - crystallizes in individual abilities (...)" [Matczak 1994, p. 15].

Types of cognitive abilities

The tasks for the basic set were chosen with the aim of expressing: firstly, the diversification of abilities, and secondly, the growth of competence within one ability, e.g. when visual analysis and synthesis are tested, a child is asked to assemble a picture from two, three and five pieces. The Set of Cognitive Tasks has 11 batteries (parts), each of which has a different number of items. Each battery tests abilities which - as developmental psychology findings prove - are an achievement characteristic of preschool age.

The batteries in the Set measure:

1. Basic ability to perceive shapes and colors:

A. Ability to perceive the correspondence between the shapes of geometric figures, to understand "the same" concept, to perceive the correspondence between the shape of the base of a solid figure and the shape of a hole,

B. Ability to perceive colors and to identify them by choosing objects in corresponding colors, ability to understand "the same" concept;

2. Ability to match a color name to a colored object (passive and active knowledge);

3. Ability to perceive the size of objects and to order them from the largest to the smallest one, visual-motor coordination;

4. Ability to synthesize parts (spatial elements) into a whole, ability to combine elements;

5. Ability to perceive an object as a larger one and as a smaller one at the same time in a row of objects arranged from the smallest to the largest (if A>B and B>C, C<A);

6. Perception of objects in pictures:

A. Ability to indentify objects, "the same" concept,

B. Ability to synthesize pieces into an object;

The Set of Cognitive Tasks is described in the book *Rozwój poznawczy dzieci z lekkim i umiarkowanym stopniem upośledzenia umysłowego – diagnoza i wspomaganie. Studia empiryczne* [Cognitive Development of Children with Mild and Moderate Mental Disabilities - Diagnosis and Support. Empirical Studies.] (2004, published by APS, p. 78-102).

7. Ability to perceive spatial relationships between figures of different shapes, spatial imagination;

8. Ability to classify objects nonverbally, ability to generalize, ability to perceive pictures grouped in sets as similar and different at the same time;

9. Ability to perceive a specific number of objects, amount/number correspondence, ability to understand the concept of "as many/as much";

10. Ability to perform addition and subtraction operations;

11. Ability to perceive relationships and to understand cause-effect relationships between elements.

Numerous publications were used in selecting tasks for the Set, but *Otbor detey v specyalnye doshkolnye uchrezdenya* by A.A. Venger, G.L. Vygotskaya and E.I. Leongard [1972, p. 53-67], was the leading book. The list of the batteries in the Set together with the developmental criterion is shown in the table 1 [Kulesza 2004, p. 81].

Table 1

Set of Cognitive Tasks

Item no.	Task batteries		Developmental criterion	No. of Task in the Set
1	A. match geometric shapes and solid figures by shape	geometric shapes: circle, square, triangle (3)	No. of elements, method	1, 2
		solid figures with a circular, square, triangular, or rectangular base (4)		
	B. match blocks by color	red, green, yellow, blue	No. of elements, method	3, 4
2	match a color name to a colored object	passive knowledge of 2, 4, 5 colors and more	No. of elements, method	5, 6, 7, 8, 9
		active knowledge of 4 colors and more		
3	arrange elements from largest to smallest	3, 5, 6 elements and more	No. of elements, Method	10, 11, 12, 13
4	put together a toy from pieces	3, 4, 6, 8, 10 and 12 pieces	No. of elements, method	14, 15, 16, 17, 18
5	add an element to a sequence arranged by size	7-element sequence	Method	19
6	A. match pictures	2, 4 and 6 pairs	No. of elements,	20, 21, 22,

	B. put together a picture from pieces	2, 3 and 5 pieces	method	23, 24, 25
7	imitate spatial arrangements of blocks	3 arrangements - parallel actions 3 arrangements - according to a given pattern	Method	26, 27
8	sort pictures according to criterion	by class: animals, clothes, vehicles by color (4 and 7 colors) by shape (4 and 6 shapes)	No. of groups, method	28, 29, 30, 31, 32, 33, 34
9	copy the amount and number of elements	much/many and from 1 to	No. of elements, method	35, 36, 37, 38, 39
10	add and subtract elements	from 3 to 10 elements	No. of elements, method	40, 41, 42
11	arrange pictures in sequence of events	3- and 5-piece stories	No. of elements, method	43, 44

Percentage distribution of skills measured in the Set's batteries is shown in Diagram 2 [Kulesza 2004, p. 80].

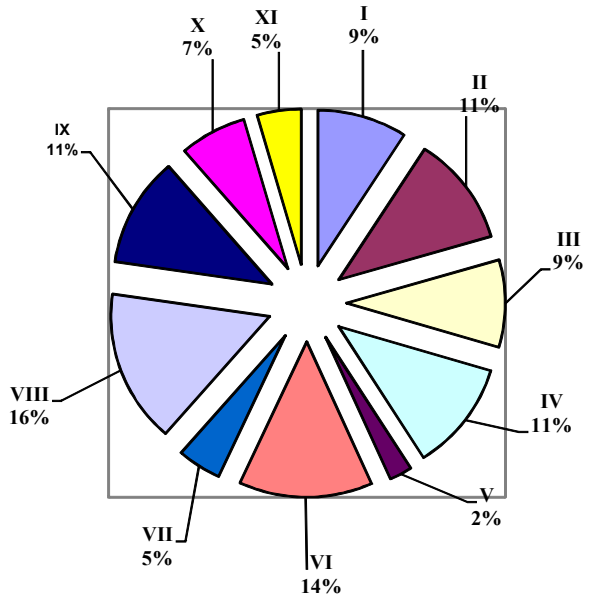


Diagram 2. Percentage distribution of individual batteries in the Set

The Set of Cognitive Tasks includes items designed for preschool children with normative intellectual development and for children with mild and moderate intellectual disability. Following the theoretical model, the aim was to establish the kind and number of tasks that would determine the zones of current and the closest development of children in four age groups whose developmental age corresponded to the following age brackets: 3 years – 3 years 11 months, 4 years – 4 years 11 months, 5 years – 5 years 11 months and 6 years – 6 years 11 months.

In the selection of tests for developmental age groups four aspects were taken into consideration: the level of difficulty, accuracy in terms of contents, discriminatory power and the impact of items on the reliability coefficient for the whole. Final versions of sets for individual groups were evaluated in terms of their reliability (absolute stability and internal coherence). Moreover, the entire Set of Cognitive Trials was analysed in terms of its diagnostic, forecasting and theoretical accuracy.

Conclusion

The theoretical model describes in detail successive steps of the diagnostic process, it takes into consideration situations which promote learning, presents the types, mechanisms and indicators of learning. It is expected that the results of the assessment conducted according to this model will give the teacher a broader knowledge of a child's present and potential abilities, and of the type and amount of support he/she needs. The proposed model has the advantages of "diagnosis for development", whose main objective is to determine a child's sensitivity to the teacher's intervention, and to plan the most immediate developmental tasks.

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The article discusses the issue of the assessment of cognitive development with the use of the task-support-task procedure. A theoretical model of diagnosis based on the concept by L.S. Vygotsky, R. Case, and A. Bandura was developed and described. What these concepts have in common is the recognition of the importance of social environment for child development. The fundamental role in the assessment plays Vygotskian concept of Proximal Zone of Development. The second part is dedicated to a qualitative and quantitative description of a set of cognitive tasks.

Keywords: assessment, zone of actual and proximal development, cognitive ability, task.

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Х.В. Лепех

ПСИХОЛОГІЧНА ГОТОВНІСТЬ ДО ШКОЛИ ДІТЕЙ З АУТИЗМОМ

У статті проаналізовано поняття психологічної готовності до навчання, визначено і описано рівні психосоціальної зрілості, тривожності, словниковий запасу у аутичних дітей, а також здорових дітей.

Ключові слова: "аутична дитина", готовність до школи, психосоціальна зрілість,тривожність, словниковий запас.

В статье проанализированы понятие психологической готовности к обучению, определены и описаны уровни психосоциальной зрелости,