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METHODOLOGICAL PRINCIPLES OF ASSESSING THE LEVEL OF CREATIVE THINKING IN PRIMARY SCHOOL PUPILS IN THE CONTEXT OF THE CONCEPT OF THE NEW UKRAINIAN SCHOOL

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The article analyzes the place of creative thinking in the context of the competency paradigm of primary education and grounds the need for comprehensive diagnostics of creative thinking at the age of 6-10.

The relevance of the study stems from the general scientific, socio-pedagogical, socio-cultural imperatives of the modern educational process, which reveals the situation regarding the modernization of the primary education system, which is in a state of constant renewal, focusing on the formation of a competent, creative and technologically literate personality, capable of independent thinking and creative self-expression in diverse activities and life conditions. This is expressed in the triad of development goals for participants in the educational process: a harmonious personality, a creative specialist-innovator, a citizen-patriot.

Approaches to assessing creative thinking are systematized as a combination of psychometric, pedagogical-observational and interactive-digital methods. Indicators (originality, flexibility, speed, elaboration) and a three-level interpretation of the results are presented. A generalized classification of methods for assessing creative thinking in younger schoolchildren is presented. The criterion framework for assessment at the indicator level focuses on originality, flexibility, speed, and detailing as interrelated indicators that reflect both the productive and procedural aspects of creative thinking.

It is shown that the role of the teacher is to moderate open educational situations that involve different trajectories of solving problem situations, in formative feedback that increases the level of thinking strategies and presupposes the combining of assessment data with lesson planning in accordance with the competency guidelines of primary education.

Examples of tasks and principles for collecting multi-source evidence (test answers, portfolio, "digital trail") are described. The emphasis is made on the cultural and linguistic adaptation of tools and formative feedback. Practical guidelines for the teacher are proposed for combining methods and

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planning to support and develop creativity in all participants in educational process. The results can be integrated into the daily practice of the New Ukrainian School (NUS).

Keywords: *creativity; creative thinking; competence, harmonious personality, assessment; primary school; NUS.*

МЕТОДИЧНІ ЗАСАДИ ОЦІНЮВАННЯ РІВНЯ ТВОРЧОГО МИСЛЕННЯ УЧНІВ ПОЧАТКОВОЇ ШКОЛИ У КОНТЕКСТІ КОНЦЕПЦІЇ НОВОЇ УКРАЇНСЬКОЇ ШКОЛИ

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У статті проаналізовано місце творчого мислення у контексті компетентнісної парадигми початкової освіти та обґрунтовано потребу комплексної діагностики творчого мислення у віці 6-10 років.

Актуальність дослідження випливає із загальнонаукових, соціально-педагогічних, соціокультурних імперативів сучасного освітнього процесу, який виявляє ситуацію щодо модернізації системи початкової освіти, яка перебуває у стані постійного оновлення, орієнтуючись на формування компетентної, творчої та технологічно грамотної особистості, здатної до самостійного мислення і творчого самовираження у різнобічних діяльнісних, життєвих умовах. Це знаходить вираження у тріаді цілей розвитку учасників освітнього процесу: гармонійної особистості, творчого фахівця-інноватора, громадянина-патріота.

Систематизовано підходи до оцінювання творчого мислення як поєднання психометричних, педагогічно-спостережних та інтерактивно-цифрових методів. Подано індикатори (оригінальність, гнучкість, швидкість, розробленість) і трирівневу інтерпретацію результатів. Представлено узагальнену класифікацію методів оцінювання творчого мислення молодших школярів. Критеріальна рамка оцінювання на рівні показників зосереджується на оригінальності, гнучкості, швидкості та деталізації як взаємопов'язаних індикаторах, що відображають як продуктивний, так і процесуальний бік творчого мислення.

Показано, що роль учителя полягає в модерації відкритих освітніх ситуацій, що передбачають різні траєкторії вирішення проблемних ситуацій, у формувальному зворотному зв'язку, який підвищує рівень мисленнєві стратегії, та передбачає поєднання оцінювальних даних із плануванням уроку відповідно до компетентнісних орієнтирів початкової освіти.

Описано приклади завдань і принципи збирання багатоджерельних доказів (тестові відповіді, портфоліо, "цифровий слід"). Наголошено на культурно-мовній адаптації інструментів і формувальному зворотному зв'язку. Запропоновано практичні орієнтири для вчителя щодо поєднання методів і планування підтримки і розвитку креативності всіх учасників освітнього процесу. Результати можуть бути інтегровані у щоденну практику Нової української школи.

Ключові слова: *творчість; творче мислення; компетентність, гармонійна особистість, оцінювання; початкова школа; НУШ.*

Introduction of the issue. Modern primary education in Ukraine is based on the principles of competency-based, personality oriented and activity-based approaches, which are defined in the State Standard of Primary Education. The main goal of the educational process is not only the transfer of knowledge, but also the formation of key competencies that allow the schoolchildren to navigate in a rapidly changing world, develop critical thinking, creativity, communication skills and digital literacy.

Each educational field – language and literature, mathematics, science, art, technology and information – contributes to the development of a holistic, independent, creative personality, capable of effectively using knowledge in practice.

The primary education system is in a state of constant renewal, focusing on the formation of a competent, creative and technologically literate personality, capable of independent thinking and creative self-expression. Here we outline

the three goals for the development of participants in the educational process: a harmonious personality, a creative specialist-innovator, a citizen-patriot.

According to the provisions of the NUS, an important direction of the educational process is the development of the schoolchildren's creative potential as a prerequisite for their further personality and professional development.

Creative thinking in primary school pupils appears *not only as a desirable personality trait, but also as a structural component of the holistic competence of schoolchildren,* without which it is impossible to achieve the goal of modern education. The pedagogical logic of the NUS emphasizes the transition from reproductive methods of learning to activity-based ones, where pupils' intellectual initiative, the ability to generate and verify ideas, transfer methods of actions to new situations, and arguments for non-standard solutions become the central learning outcomes.

The requirements of the State Standard of Primary Education, interpreted through the prism of a competency-based approach, raise creativity from the level of an "option" to the level of a requirement: creativity integrates cognitive, communicative, and value-semantic spheres, which makes it possible to integrate academic subjects into a single spatial-semantic field of practical experience. Under such conditions, the assessment of creative thinking should be systematic, process-oriented, and consider the psychological characteristics of junior schoolchildren. The outlined approach should not only record the outcomes (*original answers, variety of thinking and activity strategies*), but also track the dynamics of mental operations, the motivational and emotional sphere, readiness for cognitive risk, and the transfer of creative methods to educational and life situations.

Current state of the issue. In this context, psychological studies are important, which show that children under the age of five give up to 90% of original answers during relevant tests, seven-year-olds – up to 20%, and adults – only 2% [14; 18]. E. Torrens, studying the features of creative thinking in different segments of the population, showed that creativity has a peak at the age of 3.5 to 4.5 years, and also grows in the first three years of schooling, decreases in the next few years and then can receive an impetus for development under certain conditions [12; 18]. The evolutionary and qualitative algorithm of this development can be illustrated by a Japanese proverb (quoted by Masahiro Yokotani), according to which *"When you are ten, they call you a prodigy. When you are fifteen, they call you a genius. But as soon as you turn twenty, you are just an ordinary person".*

Under such conditions, there is a need for a systematic approach to assessing the level of creative thinking in primary school pupils, when certain methodological tools, separated from the pedagogical context, create the illusion of accuracy, but lose validity when the teacher does not see the connection between 1) diagnostic indicators and 2) the organization of the lesson, as well as 3) the socio-pedagogical environment, 4) forms of interaction between participants in the educational process and 5) the assessment procedures [6: 26].

At the same time, in the practice of primary school, there is a certain shortage of methods adapted to Ukrainian conditions: there are no local norms for different age groups, descriptions of linguistic and cultural modifications of tasks, procedures for ensuring ethical safety during individual and group testing, as well as clear algorithms for pedagogical interpretation of results in the context of the NUS concept. This necessitates the combining of psychometric tools with pedagogical observations, portfolio analysis, project games, and digital artifacts, prioritizing multi-source data collection and formative feedback in the context of an adaptive educational process [1: 31].

An analytical review of scientific literature shows that the classical approaches to the study of creative thinking, initiated by J. Guilford (structure of intelligence and divergent operations of the thinking process) [11;

14] and developed by P. Torrens (operationalization of originality, flexibility, speed and elaboration of the content of mental operations) [18], reveal the main characteristic/function of creativity as a complex adaptive system [16] and *non-pragmatic activity* associated with the *internal motivation* (which, as a *supra-situational non-adaptive activity*, appears as a cornerstone of creative activity) [2: 221; 13; 17].

The effects of *associativity* [10] and *bisociation* [4; 15] are also important here, as a mechanism of combinatorics of meanings, which allows developing principles for constructing assessment tools.

Further developments in the Eurasian space have highlighted the role of intellectual and personality regulators of creative activity, in particular intellectual initiative, tolerance for uncertainty, and motivation to complicate the tasks [3].

The Ukrainian research context specifies these provisions taking into account the *goals of primary school*:

1) O. Savchenko's didactic approaches demonstrate how the organization of educational activities and the typology of tasks influence the formation of creative ways of action [7];

2) O. Pometun's developments in the field of activity and competence-based learning show the mechanisms of transferring creative strategies to different subject areas;

3) N. Bibik's methodological guidelines allow for the coordination of creative tasks with the expected results of the educational program;

4) special psychodiagnostic tools presuppose focusing attention on the age sensitivity of creativity indicators in primary school age and outline the procedures for interpreting the results for pedagogical practice [8].

The current stage of the development of social and educational space is characterized by the convergence of cognitive diagnostic methods with interactive/adaptive and IT-oriented forms of assessment: digital programming environments, educational designing forms and multimedia creative tasks create a certain "result of activity" being the subject to qualitative and quantitative analysis (variability, complexity, transfer, reflection).

At the same time, the problem of validity and cultural and linguistic adequacy of foreign tests for Ukrainian schoolchildren arises: translation and adaptation should be accompanied by expert assessment of content, testing on representative samples, establishing the local standards and verification of construct validity in comparison with pedagogical observations, achievements in learning activity as well as portfolio data.

Thus, the optimal strategy is a diverse methodological and multi-source assessment with a clear procedure of pedagogical interpretation, where standardized indicators of divergent and creative thinking are combined with the analytics of real learning outcomes and the dynamics of individual progress, which allows to reconcile the scientific correctness of diagnostics with the humanistic logic of the NUS [1: 114].

The aim of the research. The purpose of the article is to theoretically substantiate, define and systematize methods for assessing the level of creative thinking in primary school pupils in the context of the concept of the NUS.

Results and discussion. On this basis, it has been planned to carry out the comparative characteristics of the methods according to key indicators (originality, flexibility, speed, elaboration, transfer) and psychometric parameters (validity, reliability, sensitivity, cultural and linguistic adequacy), as well as to develop practical recommendations for their pedagogically appropriate application in the educational process of the NUS.

It has been planned to develop the algorithms for using standardized and pedagogical-observational tools in various assessment models, to offer guidelines for building local norms and interpretative levels for primary school age, to integrate IT-oriented means of improving the level of educational activity, and to determine ethical and organizational conditions that

ensure the correctness of diagnostics and formative feedback to support the individual trajectory of pupils' creative development.

It is important to note that the theoretical principles of assessing creative thinking in younger schoolchildren are based on the understanding of creativity as a dynamic cognitive and personality quality that combines the ability to generate ideas and improve the methods of their implementation in the educational and social activities of pupils.

In the *structure of creative thinking* relevant to the age capabilities of 6-10 year children, it is advisable to distinguish indicators of originality (being different with a template solutions) based on 1) semantic expediency, 2) flexibility as the ability to change the approaches and move between categories, 3) speed as the rate of generating semantically relevant ideas, 4) and elaboration as the ability to detail, combine and bring the idea to a workable product [5].

Such a four-component model is consistent with modern psychological and pedagogical approaches, in which creativity is interpreted as an integral mechanism for overcoming uncertainty, managing cognitive risk, and transferring methods/ways of action to new conditions, which is especially emphasized in scientific works devoted to functioning the creative thinking in situations of information uncertainty, as well as in domestic courses and manuals on the psychology of creativity.

Thus, the psychological and pedagogical principles of diagnostics in primary school age provide for an orientation to the activity nature of children's creativity, a combination of individual and group forms of testing, sensitivity to the linguistic and cultural context of tasks, and compliance with the ethical requirements of safe assessment.

Assessment situations should be included in the educational environment of the NUS as being stimulating, gaming and researching, with the advantage of open-ended tasks that allow for a plurality of correct answers and require the children to reflect on their own way of activity. At the same time, the results of the diagnostics should be interpreted in a pedagogical context, that is, they should be linked to further construction of the content, methods and forms of learning, taking into account the expected results and key competencies described in the methodological guidelines for primary school teachers [9].

These guidelines are based on V. Molyako's research, according to which human life can be considered as a continuous process of solving various activity tasks. Creative thinking is a special form of this process, since it is aimed at creating new ideas, approaches, technologies and ways of solving problems. Its essence lies in structural and functional analysis of information, the formation of new cognitive constructs and creating effective ways to achieving goals.

In this regard, the question arises of developing creative thinking through updating teaching methods and forming an educational environment that will contribute to the generation of non-standard solutions of problem situations and constructive interaction in collective/team activities.

Developing an effective plan to solve a complex problem requires a thorough analysis of the available information. A correct understanding of the problem situation allows one to put forward productive assumptions, clarify the initial conditions and determine the optimal ways to find a solution. In this case, the use of the principles of *analogy, combination and reconstruction* plays an important role, which contributes to the creation of new conceptual structures (thinking models) and to the prediction of possible scenarios, which helps to avoid erroneous actions, inadequate decisions and to overcome the effects of information overload.

The ability to adequately interpret information, correctly formulate problems and think logically is the basis for solving any problems. To do this, it is necessary to deeply investigate the structure of the problem situation, identify new relevant information and build hypotheses that

can be presented in the form of *visual, verbal, symbolic* models. Such cognitive actions contribute to 1) the awareness of the essence of the problem, 2) the formulation of new conditions for the problem, 3) the choice of an effective strategy for its solution.

In the process of thinking, the transfiguration of acquired knowledge and experience occurs, which are used to find the optimal solution. This structural-functional analysis of information involves comparing the obtained data with the requirements of the problem task at each stage of its solution. Intermediate results and the final solution must be logically grounded, which is ensured through self-reflection and correction of one's own thinking.

The emergence of certain ideas in the creative process can be compared to lightning – the result of the accumulation of a large amount of energy, which at a certain moment turns into a bright flash of an idea. For the emergence of a creative idea, a certain level of intellectual and emotional tension is required, as well as a kind of "push" that launches the insight process.

Due to the mentioned above, the classification of *express assessment methods* is built as a system that combines 1) psychometric, 2) pedagogical-observational and 3) interactive-digital tools.

The psychometric component includes standardized tasks for the development of divergent thinking, associative originality, and combinatorial flexibility, which provide quantitative comparability of indicators over time and between samples, and serve as a basis for the formation of local standards for younger schoolchildren [6: 65].

The pedagogical-observational component includes systematized observation maps of educational activity, the teacher and parent questionnaires, and portfolio analysis of children's creative products – from written and visual works to mini-projects; it provides a research context and allows us to track how creative ways of activity are "rooted" in real classroom learning practices.

The interactive digital component, represented by environments such as educational programming and design platforms, captures the "digital footprint" of pupils' activity (variability of solutions, complexity of iterations, ability to modify and transfer), which expands the grounding base of assessment and harmonizes it with the competency logic of the NUS.

In such a configuration, psychometrics is responsible for standardized measurement and sensitivity to change; the pedagogical observation is responsible for interpretive validity and connection to learning process, and the digital tools are responsible for authenticity and procedurality of assessment. Table 1 presents a concise version of the classification of creative thinking assessment methods for grades 1-4 according to the NSU requirements. It does not replace full protocols but serves as a quick reference being an express method: what exactly we measure, with what tool and how we record the result, in order to further combine psychometric, observational and digital artifact data in a single pupil's profile.

Table 1.

Generalized classification of methods for assessing creative thinking in younger schoolchildren

Unit	Tool / example task	Indicators	Express format and evaluation
Psychometric	"Unusual use of an object" (paper clip/brick): offer as many options as possible and choose the 1-2 best ones with an explanation	Originality, flexibility, speed, sophistication	Individually, 5-7 min; counting valid ideas + quality of explanations; recording 1-2 oral arguments
	"Circles" / "Draw up the shape" with a short comment	Originality, sophistication, transfer	Individual/small group, 8-10 min; assessment using agreed

	"what is it and why is it like that"		rubric, storing examples in portfolio
	Remote associations (word ↔ word/picture), adapted to the vocabulary of 6–10 years old children	Combinatorial flexibility, semantic originality	5-10 stimuli; qualitative assessment of the diversity and relevance of associations; visual support if necessary
Pedagogical and observational	Observation map in the lesson (concerning the alternatives, changing the strategy of thinking and argumentation)	Flexibility, transfer, reflection	During the lesson; 0-3 points per indicator; cross-check with a colleague to reduce subjectivity
	Portfolio of artifacts (drawing + explanation, mini-project, comics) + short pupil's self-assessment	Sophistication, dynamics of progress, transfer	1 time/month; selection of the "best grounding" of creativity with a short "pitch" from the pupil
Interactive and digital	Scratch/visual programming: "change the game rule" or "add new mechanics" and explain	Transfer, flexibility, sophistication	In pairs, 20-30 min; assessment using a checklist: novelty, workability, explanation; preservation of the project as a "digital footprint"
	Construction platforms (LEGO-like): "two different designs for the same function"	Originality, functionality, transfer	Small groups, 15-25 min; photo/video recording + short oral defense of the solution

A concise classification provides a balance between standardized measurement and pedagogical interpretation in real learning situations. To increase validity, it is advisable to combine at least one tool from each unit and present the results as a profile with three levels (high/medium/low) for four indicators (originality, flexibility, speed, elaboration).

Each level is supported by a set of groundings: test answers, observational data, portfolio artifacts and a "digital trace". Such multi-source corresponds to the competence logic of the NUS, allows for targeted planning of support and avoiding stigmatizing "labels", transferring assessment to a formative mode [1: 13].

The criteria framework for assessment at the level of indicators focuses on originality, flexibility, speed and detailing as interrelated indicators that reflect both the *productive* and *procedural* sides of creative thinking. For pedagogical interpretation, it is advisable to distinguish three levels of assessment – high, medium and low – as working profiles of educational support.

The high level is characterized by pupil's ability to offer semantically justified non-standard solutions, quickly rebuild the strategy and deepen the idea to a functional product; the medium level is characterized by pupil's presence of original solutions in familiar contexts when external stimuli are needed for transfer and detailing; the low level is characterized by pupil's dominance of reproductive responses, difficulties with changing the approach and insufficient elaboration of details.

It is important to note that the levels are determined based on a wide set of data from different sources, and not a single test indicator, and are necessarily adjusted considering the age peculiarities and educational conditions.

Conclusions and research perspectives. The practical application of methods for assessing the level of creative thinking in primary school should be organized as a cyclical algorithm that includes motivational, diagnostic and analytical stages.

At the motivational stage, a safe, gaming space is to be created for testing ideas through fairy-tale and problem

situations, working with everyday objects and class stories; at the diagnostic stage, a combination of short standardized tasks and open creative tasks is used with the fixation of procedural characteristics and the output, and a pupil's portfolio is collected at the same time; at the analytical stage, the results are interpreted in the format of an individual profile, from which specific pedagogical actions follow: varying the complexity of tasks, introducing interdisciplinary mini-projects, purposeful work on flexibility or detailing, using digital environments for training the transfers.

Let us present some examples of tasks for daily practice: to offer as many unusual ways of using a familiar object as possible with further grounding of the selected options; to continue the fairy-tale or change the conditions of the problem so as to find new ways of solving it; to rethink the design of the model and explain why such a modification increases its functionality, etc.

The role of the teacher covers such activities: 1) moderating the open educational situations that provide different trajectories of solving problem situations, 2) organizing formative feedback that increases the level of thinking strategies, 3) combining assessment data with lesson planning in accordance with the competency guidelines of primary education.

This approach ensures content compliance of the presented methodological principles of assessing the level of creative thinking in primary school pupils with the requirements of the NUS, thus preserving the scientific correctness of diagnostics and its adaptive nature, and at the same time strengthening the pedagogical expediency of its use in daily practice, relying on modern Ukrainian scientific and methodological sources.

The prospects of our research include the experimental approbation of the proposed algorithm of assessing the creative thinking of younger schoolchildren.

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