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DYNAMICS AND PSYCHOLOGICAL FACTORS OF REFLECTION DEVELOPMENT IN YOUNGER SCHOOLCHILDREN

Стаття присвячена одній з ключових проблем сучасної педагогічної психології – дослідженню генезису рефлексії у учнів початкової школи. Актуальність теми визначається стратегічним зсувом в освітній парадигмі, закріпленням у концепції Нової української школи (НУШ). Перехід від моделі, заснованої на знаннях, до моделі, заснованої на компетентностях, висуває на перший план формування ключової компетентності «навчитися вчитися», психологічним ядром якої є не просто знання, а розвинені метакогнітивні навички та рефлексивні здібності. Без здатності учня до самоаналізу, самоконтролю та самокорекції неможливо стати суб'єктом освітньої діяльності. Дослідження має на меті подолати суперечність між заявленою метою НУШ та недостатнім розвитком психологічних і педагогічних умов для формування рефлексії на практиці. Дослідження базується на синтезі провідних американських, європейських та українських психологічних концепцій. Теоретичну основу складають: Американська школа: праці Дж. Дьюї (концепція рефлексивного мислення), Дж. Флавелла (теорія метакогніції) та С. Хартера (теорія мотивації та самооцінки). Європейська школа: когнітивний конструктивізм Ж. Піаже (роль децентралізації в розвитку рефлексії) та концепція діалогічного навчання Р. Александра. Українська психологічна школа: ідеї Г.С. Костюка про єдність мислення та самосвідомості, а також генетико-психологічна теорія особистості С.Д. Максименка, яка розглядає рефлексію як ключовий механізм саморегуляції та особистісного розвитку.

Метою статті є теоретичний аналіз підходів до проблеми та емпіричне дослідження вікової динаміки розвитку рефлексії (у 2 та 4 класах), а також виявлення її провідних психологічних чинників. Для досягнення цієї мети було проведено емпіричне дослідження на вибірці 80 учнів ($N=80$). Було використано комплекс валідних діагностичних інструментів: адаптовану версію «Опитувальника метакогнітивної обізнаності для дітей» (Jr. MAI), «Шкалу внутрішньої та зовнішньої орієнтації» (С. Хартер), техніку «Сходи» (діагностика самооцінки) та таблицю спостереження за уроком (за принципами Р. Александра).

Емпіричний аналіз виявив чітку позитивну тенденцію у розвитку рефлексії. Було встановлено якісний перехід від зовнішньої ситуативної, орієнтованої на вчителя рефлексії у 2-му класі до формування елементів внутрішньої метакогнітивної (моніторинг процесу дії) та особистої (аналіз власних станів та причин труднощів) рефлексії у 4-му класі. За допомогою кореляційного аналізу (r -Пірсона) було визначено провідні психологічні чинники, що визначають процес розвитку рефлексії у молодших школярів.

Зроблено висновок, що розвиток рефлексії в молодшому шкільному віці є систематичним процесом, який не відбувається автоматично, а визначається тріадою чинників: мотиваційними (наявність інтересу), особистісними (адекватна самооцінка) та педагогічними (діалогічне середовище). Результати дослідження обґрунтовують необхідність впровадження в практику НУШ цільових програм, спрямованих не тільки на розвиток когнітивних навичок, а й на формування адекватної «я-концепції» та когнітивного інтересу учнів.

Ключові слова: рефлексія, учень початкової школи, навчальна діяльність, метакогніція, динаміка розвитку, психологічні чинники, мотивація до навчання, самооцінка, діалогічне навчання, Нова українська школа.

The article is devoted to one of the key problems of modern pedagogical psychology – the study of the genesis of reflection in primary school students. The relevance of the topic is determined by a strategic shift in the educational paradigm, enshrined in the concept of the New Ukrainian School (NUS). The transition from a knowledge-based to a competency-based model brings to the fore the formation of the key competency of “learning to learn,” the psychological core of which is not simply knowledge, but developed metacognitive skills and reflective abilities. Without the student's ability to self-analyze, self-control, and self-correct, it is impossible to become a subject of educational activity. The study aims to overcome the contradiction between the declared goal of NUS and the insufficient development of psychological and pedagogical conditions for the formation of reflection in practice.

The study is based on a synthesis of leading American, European, and Ukrainian psychological concepts. The theoretical basis is provided by: The American school: the works of J. Dewey (the concept of reflective thinking), J. Flavell (the theory of metacognition), and S. Harter (the theory of motivation and self-esteem). European school: J. Piaget's cognitive constructivism (the role of decentralization in the development of reflection) and R. Alexander's concept of dialogic learning. Ukrainian psychological school: ideas of G.S. Kostiuk on the unity of thinking and self-awareness, as well as the genetic-psychological theory of personality by S.D. Maksymenko, which considers reflection as a key mechanism of self-regulation and personal development.

The purpose of the article is to provide a theoretical analysis of approaches to the problem and an empirical study of the age dynamics of reflection development (in grades 2 and 4), as well as to identify its leading psychological factors. To achieve this goal, an empirical study was conducted on a sample of 80 students (N=80). A set of valid diagnostic tools was used: an adapted version of the “Metacognitive Awareness Questionnaire for Children” (Jr. MAI), the “Intrinsic and Extrinsic Orientation Scale” (S. Harter), the “Ladder” technique (self-assessment diagnostics), and a lesson observation chart (based on the principles of R. Alexander).

Empirical analysis revealed a clear positive trend in the development of reflection. A qualitative transition was established from externally situational, teacher-oriented reflection in the 2nd grade to the formation of elements of internal metacognitive (monitoring the process of action) and personal (analysis of one's own states and causes of difficulties) reflection in the 4th grade. Using correlation analysis (r-Pearson), the leading psychological factors that determine the process of reflection development in younger schoolchildren were identified.

It was concluded that the development of reflection in primary school age is a systematic process that does not occur automatically but is determined by a triad of factors: motivational (presence of interest), personal (adequate self-esteem), and pedagogical (dialogical environment). The results of the study justify the need to introduce targeted programs into the NUS practice, aimed at developing not only cognitive skills, but also forming an adequate “I-concept” and cognitive interest of students.

Key words: reflection, primary school student, learning activity, metacognition, development dynamics, psychological factors, learning motivation, self-esteem, dialogical learning, New Ukrainian School.

Problem statement. The current stage of development of the national education system, embodied in the New Ukrainian School (NUS) reform, declares a fundamental shift from a knowledge-oriented to a competence-based paradigm. The central place in it is occupied by the formation of a key competence – «the ability to learn», which implies the ability of a student to independently organize, regulate, and control their own cognitive activity.

The psychological core and, at the same time, the mechanism of this ability is reflection—the process of the subject's awareness of their own cognitive processes (metacognition), modes of activity, emotional states, and personal qualities. It is precisely developed reflection that allows the student to transform from a passive «object» of pedagogical influence into an active «subject» of their own learning activity, capable of self-development and self-improvement.

At the same time, there is a sharp contradiction in the actual educational practice of primary schools. On the one hand, the NUS standard requires the development of reflective skills, starting from the first grade, as an integral part of each lesson. On the other hand, traditional approaches often dominate pedagogical practice, where reflection is given formal attention (for example, through answers to the question «did you like it/didn't you like it»). Without targeted psychological and pedagogical support, reflection in younger schoolchildren often develops spontaneously, remaining at a low, situational level and not becoming an effective tool for self-regulation.

This contradiction is exacerbated by the insufficient development of the problem itself in educational psychology. Educators often lack valid tools for diagnosing and forming reflection, as the specific psychological factors (determinants) that promote or hinder its development in primary school age remain insufficiently studied. The question remains open as to how internal learning motivation, self-esteem structure, and the level of metacognitive awareness are interrelated and how they influence the overall dynamics of the formation of reflection during the transition from 2nd to 4th grade.

Thus, the problem of the study lies in the discrepancy between the acute socio-pedagogical need to develop reflective students (a requirement of the New Ukrainian School) and the lack of scientifically based data on the psychological factors and conditions that ensure this process in primary school. This creates a need for empirical study of the dynamics of reflection and its key psychological determinants.

The purpose of this article is to empirically investigate the dynamics of reflection development and identify its leading psychological determinants in younger schoolchildren based on a synthesis of American, European, and Ukrainian psychological theories.

Presentation of the main material. This study deliberately focuses on concepts developed within American, European, and Ukrainian psychological schools, as they provide a powerful basis for understanding reflection as the foundation of student subjectivity.

1. American tradition: from pragmatism to metacognition.

American philosopher and psychologist John Dewey is considered the founder of the study of reflection in education. He contrasted «routine action» (based on habit) with «reflective action», which involves actively considering a problem and its consequences [8]. According to Dewey, reflective thinking is the true goal of education.

Developing these ideas, Donald Schön introduced the concept of «reflective practice», distinguishing between «reflection-on-action» (analysis after completion) and «reflection-in-action» (correction of the process «on the fly») [8]. The transition to the latter is a sign of learning mastery.

In parallel, in cognitive psychology, John Flavell introduced the term «metacognition», which encompasses two components: knowledge about cognition (what I know about my cognitive processes) and regulation of cognition (planning, monitoring, evaluation) [9]. Reflection, in this sense, is a tool that activates metacognitive monitoring.

2. The European approach: cognitive constructivism and pedagogical dialogue.

Swiss psychologist Jean Piaget, although not focusing directly on reflection, laid the foundations for its understanding. The transition of a child in primary school to the stage of concrete operations means the development of decentralization (the ability to look at a situation from a different point of view) and reversibility (the ability to mentally return to the beginning of an action). It is these cognitive mechanisms that are a necessary prerequisite for a child to be able to «see» their own thoughts or actions as an object of analysis [7].

In modern European pedagogy (in particular, British), great attention is paid to pedagogical conditions. Robin Alexander, in his concept of «Dialogic Teaching», argues that reflection is not born individually, but in a collective, cumulative, and supportive dialogue, where the teacher encourages students not only to respond, but also to justify, analyze, and evaluate different views [10].

3. Ukrainian psychological school: reflection as a mechanism of self-regulation.

Ukrainian psychologist G.S. Kostiuk viewed reflection as an inseparable unity of thought processes and self-awareness. He emphasized that it is reflection that allows a person to realize themselves as a subject of activity, to correlate their motives and goals [3].

These ideas were developed in the genetic-psychological theory of academician S.D. Maksimenko. In his concept, reflection is a key mechanism of personality genesis and self-regulation. It is the reflective «pause» that allows the subject to go beyond the situation, comprehend it, and consciously build or adjust the further trajectory of their actions or development [5].

Thus, we consider reflection to be an integrative formation based on cognitive mechanisms (metacognition, according to Flavell; specific operations, according to Piaget) and serves as a tool for personal self-regulation (according to Maksymenko), activated in a dialogical learning environment (according to Alexander and Dewey).

Presentation of the main material. The study was conducted at Vinnytsia Primary School No. 5 in Vinnytsia. The sample consisted of 80 students: 40 second-grade students (average age 7,5 years) and 40 fourth-grade students (average age 9,5 years). A set of valid psychodiagnostic techniques adapted to the conditions of Ukrainian schools and free of ideological bias was used:

Reflection diagnosis: An adapted version of the Junior Metacognitive Awareness Inventory (Jr. MAI), based on Flavell's model. The technique allows assessing the level of development of metacognitive components (e.g., «I know when I need help», «I check my work before handing it in»).

Diagnosis of learning motivation: An adapted version of the Scale of Intrinsic versus Extrinsic Orientation by American psychologist Susan Harter (S. Harter). Allows you to determine what dominates in a student: cognitive interest (internal motivation) or orientation towards evaluation and approval (external motivation) [9].

Self-esteem diagnosis: The Ladder technique, which is a standardized tool for identifying the level (overestimated, adequate, underestimated) and adequacy of self-esteem at a given age.

Analysis of the educational environment: Lesson observation chart developed based on R. Alexander's principles of «dialogic teaching» (recording the frequency of reflective, open-ended questions asked by the teacher) [10]. Data processing was performed using Student's t-test (for group comparison) and correlation analysis (Pearson's r) in SPSS.

Empirical analysis of the data obtained allows us not only to confirm the presence of changes, but also to reveal the psychological essence of the dynamics of reflection development and the mechanisms of influence of key factors.

A comparison of the average indicators and percentage ratios between the 2nd and 4th grades (Table 1) reveals a fundamental qualitative shift in the structure of the self-awareness of younger schoolchildren. From situational metacognition to conscious regulation. In the 2nd grade, 65% of students are at a low level of metacognitive awareness (according to Jr. MAI). Empirically, this manifests itself in the fact that their reflection is reactive and situational. The student realizes the mistake only after it has been pointed out by the teacher («I got a bad grade»). They are not capable of monitoring themselves in the process of activity («I don't know if I'm doing it right now») and, even more so, of planning («I just start doing what I can»).

Table 1.

Comparative characteristics of levels of reflection and motivation

Indicator	Level / Type	2nd grade (n=40)	4th grade (n=40)
Metacognitive awareness	Low (situational)	65%	20%
(adapted from Jr. MAI)	Average (monitoring elements)	30%	55%
	High (conscious regulation)	5%	25%
Personal reflection	External (assessment-oriented)	80%	35%
(based on interviews)	Internal (analysis of conditions/causes)	20%	65%
Dominant motivation	External (evaluation, avoidance)	60%	25%
(according to S. Charter's scale)	Internal (cognitive)	40%	75%

In contrast, in the 4th grade, the proportion of low levels decreases threefold (to 20%), while the proportion of high levels increases fivefold (from 5% to 25%). The most significant is the increase in the average level (55%). This is a «transitional zone», indicating the active formation of metacognitive monitoring. Fourth-grade students begin to 'feel' difficulties in the process of work. They can already say, «This task is similar to the previous one, but there is something different here», or «I started writing and realized that I forgot the rule». This demonstrates the development of cognitive structures, in particular decentralization (according to J. Piaget), – the ability to look at one's own mental activity as if «from the outside».

From external evaluation to internal attribution. The change in personal reflection is even more striking. In the 2nd grade (80% with «external» reflection), the student's 'I' is practically merged with the

teacher's assessment. The typical answer to the question «What did you do well?» is «I was praised». The reason for success or failure is external («the teacher gave me a good grade»).

In the 4th grade (65% with «internal» reflection), there is a radical change in locus of control and causal attribution. Students begin to associate results with their internal states and efforts: «I succeeded because I was attentive», «I made a mistake because I was in a hurry and didn't check», «It was difficult for me because I didn't understand the condition». This is direct evidence of the emergence of subjectivity and the development of self-awareness, as described by G.S. Kostiuk. The child begins to realize that they are the cause of their own academic successes and failures.

Change of «fuel»: from avoidance to interest. The dynamics of motivation (according to S. Harter) explains why the above changes occur. In the 2nd grade (60% with «external» motivation), learning is a means of achieving external benefits (approval, avoidance of punishment). In this case, deep reflection is unnecessary and even energy-consuming. It is enough just to «guess» the correct answer that the teacher expects. The turnaround in the 4th grade (75% with «internal» motivation) means that for most students, the learning process itself becomes a value. Cognitive interest becomes the «fuel» that triggers reflective mechanisms. A student who is interested in how a task is structured will spontaneously reflect on how to solve it. It is important for them not just to get a grade, but to understand.

Correlation analysis (for 4th grade students) revealed not only connections, but also the psychological factors influencing them.

Internal motivation ($r = 0,61$; $p < 0,01$). This is a strong positive correlation. It indicates that internal motivation is not just an «accompanying» factor, but probably the leading condition for the development of reflection. Reflection is a cognitively complex activity. To perform it, a student must make a volitional effort. External motivation («so that mom doesn't scold me») can force a student to complete a task, but it will not force them to analyze how they do it. Only intrinsic interest (according to Ryan and Deci's self-determination theory) generates a desire for mastery, which, in turn, requires constant metacognitive monitoring and correction.

Adequate self-esteem ($r = 0,45$; $p < 0,05$). This is a moderate positive correlation, indicating a complex, nonlinear relationship. Reflection (especially error analysis) is an emotionally threatening process. A student with low self-esteem is prone to avoiding reflection. For them, analyzing mistakes is not a step towards development, but a confirmation of their own worthlessness («I knew I was stupid»). The ego defense mechanism kicks in.

A student with an inflated, inadequate self-esteem also blocks reflection. They use external attribution to explain failures («The task was incorrect», «The teacher doesn't like me»). They don't need to analyze their actions because «the problem is not with them».

Only students with adequate, stable self-esteem are able to separate the evaluation of their actions from the evaluation of their personality. They can admit, «I made a mistake», without concluding, «I am a failure». This emotional security is the foundation on which objective self-analysis is possible [4].

Pedagogical factor (dialogical learning). The results of the observation showed that reflection does not develop in a vacuum. In classes with a monological, directive style of teaching, the teacher himself is the «bearer» of reflection—he alone evaluates, analyzes, and gives feedback. Students in such a system remain passive objects. On the contrary, dialogical learning (according to R. Alexander), where the teacher constantly asks open questions («Why do you think so?», «Could it have been done differently?», «Compare your methods»), forcibly activates reflective processes in students. Reflection becomes socially necessary for participation in the lesson.

The empirical data obtained allow us to formulate a complete picture. The development of reflection in primary school age is a systematic process that moves from external (teacher assessment, external motivation) to internal (self-analysis, cognitive interest).

This transition does not occur automatically with age, but is determined by a triad of factors: the presence of internal motivation to learn, which provides energy for the cognitively complex process of self-analysis; the presence of adequate self-esteem, which acts as an emotional filter that allows one to analyze mistakes without destroying one's «self-concept»; the organization of a dialogical educational environment that «draws» reflection outwards, makes it a subject of discussion, and thus contributes to its internalization.

Thus, the results confirm S.D. Maksimenko's key ideas about the unity of cognitive and personal development, where reflection acts as an integrative mechanism of self-regulation, allowing the student to gradually become a true subject of their own learning activity [4].

The data obtained are consistent with the main theoretical approaches. The dynamics from 2nd to 4th grade illustrate the deepening of cognitive operations (according to Piaget) and the development of metacognitive skills (according to Flavell). The close connection between reflection and motivation and

self-esteem fully confirms the ideas of the Ukrainian psychological school. This proves the thesis of G.S. Kostiuk and S.D. Maksymenko that cognitive processes do not exist in a vacuum but are an integral part of the holistic structure of personality and its self-regulation [4; 5]. Reflection is not just «thinking about thinking»; it is a mechanism of personal development.

Conclusion. The development of reflection in primary school age children shows a clear positive trend, consisting in the transition from external situational reflection, focused on results and adult evaluation (2nd grade), to the formation of internal metacognitive (process monitoring) and personal (state analysis) reflection (4th grade). The leading internal psychological factors that positively correlate with the level of reflection are the dominance of internal cognitive motivation (according to S. Harter) and the formation of adequate self-esteem.

The key external pedagogical factor that stimulates the development of reflection is the teacher's use of dialogic teaching practices (according to R. Alexander), which creates the necessary educational environment. The practical significance of the work lies in the advisability of introducing targeted reflection development programs into the NUS practice, which should be based not only on cognitive techniques (such as Jr. MAI), but also on the formation of internal motivation and adequate self-esteem of students.

Prospects for further research are seen in longitudinal research and the development of a formative experiment based on the synthesis of American metacognitive technologies and the genetic-psychological approach of the Ukrainian school.

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