The Communicative-Cognitive Framework of Personality: From Diagnosis to a Strategy of Species Evolution

Series Conclusion

Aleksandr Kleymenov

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Author: Aleksandr Kleymenov
ORCID: 0009-0004-9404-2400
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Abstract

In this concluding article of the module, I summarize the conceptual findings of a series of eight articles dedicated to the theoretical foundations and practical implementation of the communicative-cognitive framework of personality (CCFP) model. I summarize the key ideas of each article, highlight six main conclusions regarding the causes of the crisis in modern education, propose a paradigm shift - a transition from a school of knowledge to a school of thinking - and formulate a six-step roadmap for change. I pay special attention to the fact that the CCFP model is not merely a pedagogical innovation, but a strategy for the evolution of the cognitive potential of the species: without the development of mental mechanisms in new generations, humanity will not be able to solve the "hard problems" of the 21st century, including the mystery of consciousness [26]. I also address teachers, parents, researchers, and policymakers with an invitation to dialogue and justify why I believe in the possibility of change, relying on science, international experience, and the biological fact of neuroplasticity. The article is written taking into account the revision of Articles 1-8: it reflects new concepts (paradigmatic problem, six requirements, core/support hierarchy) introduced in the revised versions.

Keywords: communicative-cognitive framework of personality, mental mechanisms, core, support, epistemological recursion, hard problem of consciousness, neuroplasticity, individualization of education, school infrastructure, evolution of the cognitive potential of the species.

Summary of Our Journey

When I began working on this module, I faced an ambitious task: not merely to criticize the existing education system, but to propose a constructive alternative based on the richest heritage of pedagogical science [1]-[9] and verified by international experience [10], [14], [15], [16]. The eight articles that make up this module are the result of years of reflection, observation, and analysis. Allow me to briefly summarize the key ideas of each of them, emphasizing the theses that give the entire module a civilizational scale.

In the first article - "The Current State of Pedagogical Science and Practice: Diagnosis of a Systemic Gap" - I showed that there is a fundamental, systemic gap between academic pedagogy and the mass school. Science knows how to develop thinking, but the school continues to transmit knowledge. This gap, as international studies have shown [10], is global in nature. International experience - Finland with its culture of trust in teachers [14], Sweden with its instructive charter school experiment [11], Japan with its transition from "examination hell" to "living power" (ikiru chikara), China with its movement from "cramming" to "quality education" (suzhi jiaoyu) - shows both successful change strategies and potential risks. I also introduced a key distinction between the CCFP (the architecture of personality) and mental mechanisms (the tools of thinking) and showed that this gap has not only local pedagogical, but also fundamental epistemological consequences: as long as the school prepares thinkers with linear, reductionist thinking, neuroscience is doomed to remain in the "trap of correlations" and cannot approach the unraveling of the mystery of consciousness [26].

In the second article - "Reasons for the Viability of Modern Pedagogical Practice: Institutional Inertia and Conservative Stability" - I explained why, despite its obvious inefficiency, the old model continues to exist. Normative inertia (standards as a trap), organizational mechanisms (the illusion of autonomy while maintaining control), psychological resistance (fear and professional identity), the political economy of reforms (entrenched

interests), and cultural factors (the Confucian heritage in East Asian countries) - all this creates a powerful system of self-preservation. I also showed how the evolutionary mismatch [12] and the traditional assessment system create a vicious circle, making the school familiar and understandable to adults, despite its inconsistency with the nature of children. But the key reinforcement of this article is the concept of the epistemological trap: institutional inertia reproduces not only its own structures, but also the cognitive structures of those who function within it. The old model of education is protected not only by institutional barriers, but also by the cognitive blindness of those who are supposed to change it [26].

The third article - "The Historical Necessity of Changing the Pedagogical Model: From the Industrial Conveyor to Post-Industrial Thinking" - showed that the conveyor-belt school was created for the needs of industrial society and brilliantly coped with its task. But the industrial era has ended. As a historical analysis of the Swedish transition to a post-industrial society has shown [11], the realization that the educated voter was becoming the "new leading class" began as early as the 1960s. The economy of the 21st century requires not executors, but creators, not disciplined workers, but adaptive thinkers. The evolutionary mismatch [12] between the biological nature of man and the organization of the modern school makes this transition inevitable.

In the fourth article - "The Economic and Evolutionary Disadvantage of Old Models of Pedagogy" - I shifted the discussion from the pedagogical plane to the economic and evolutionary plane. I showed that the old model is not just inefficient - it is unprofitable [13]. Low return on investment, colossal opportunity costs, and the costs of compensating for deficits - the economic price is too high. The school suppresses the natural abilities of children, especially boys, which leads to massive problems: anxiety, low motivation, and impaired social skills. The traditional assessment system is a key economic and evolutionary brake.

The fifth article - "The Principal Mental Mechanisms: The Structure of the Communicative-Cognitive Framework of Personality" - became the constructive core of this series. In the revised version, I proposed a systematic description of eleven interconnected mental mechanisms, divided into two levels: six core mechanisms (MM-1, MM-3, MM-5, MM-6, MM-10, MM-11) and five support mechanisms (MM-2, MM-4, MM-7, MM-8, MM-9). The core constitutes the act of solving a hard problem; the support makes it practically feasible. This distinction allows us to answer the question of the openness of the list: the core is closed by the task, the periphery is open to the context. I also embedded the list in the tradition of virtue epistemology (Sosa, Zagzebski), research on thinking dispositions (Perkins, Tishman), and the concept of the cognitive niche (Clark, Sterelny). But the key reinforcement of this article is the thesis that the eleven MMs are not just pedagogical goals, but necessary tools of a new quality, allowing humanity to deconstruct the logic of its own brain and approach the unraveling of the "hard problem of consciousness" [18], [22], [26].

The sixth article - "Diagnostics and Development of Mental Mechanisms: From Theory to Pedagogical Practice" - showed exactly how one can work with these mechanisms. In the revised version, diagnostics is divided into two levels: first, the diagnostics of core mechanisms, then - support mechanisms. I introduced the principle of dynamic diagnostics - assessing not a static level of "knowledge", but progress in skill development. I also proposed using a system of criteria with the application of artificial intelligence (AI) to collect, analyze, and interpret data on the development of mental mechanisms throughout the child's education.

The seventh article - "From the Methodology of Teaching Subjects to the Methodology of Developing Thinking: Restructuring Pedagogical Education" - addressed the most painful and simultaneously the most important question: teacher preparation. I showed that modern pedagogical education is the main obstacle on the path to the new model. Universities train subject teachers who possess the methodology of teaching disciplines, but not the methodology of developing thinking. International experience - from Australia to Finland [14], from Chile to Kazakhstan - confirms that reforms without restructuring teacher training do not work. I also introduced the concept of pedagogical content knowledge (PCK) as the foundation of the new model of teacher preparation. But the key reinforcement of this article is the thesis that a teacher of a new formation is not just a "methodologist", but an architect of the cognitive apparatus of future researchers.

The eighth article - "Practical Implementation of the CCFP Model: From Experimental Sites to the Mass School" - proposed a strategy for a gradual transition to the new model. Relying on the experience of Finland (participatory reforming) [14], Singapore (the SCAEL model and scaling of innovations) [15], and Kyrgyzstan (the Schools2030 program, the school as a center for solution design) [16], I showed that successful transformation is possible through

creating conditions for the organic change of school culture. I also proposed specific mechanisms for evaluating the effectiveness of the model's implementation at three levels: the student, the school, and the region/country. But the key reinforcement of this article is the thesis that the implementation of the CCFP model is not just the "introduction of innovations", but a strategic investment in the future of science. Every school operating under the CCFP model is a potential incubator for future researchers capable of solving the "hard problems" of the 21st century, including the mystery of consciousness [26].

What We Have Understood About the Causes of the Crisis

Having traveled this path, I want to highlight several key conclusions about the causes of the crisis in modern education. First of all, the crisis is structural, not personal in nature. The problem is not "bad" teachers or "incapable" students. The problem is that the education system was created for different purposes and in different historical conditions. It functions exactly as it was designed. And to change the result, we must change the system itself [10], [12].

The gap between science and practice is not an accident, but a pattern. Pedagogical science has accumulated the richest arsenal of tools for developing thinking [1]-[9]. But these tools remain the property of the academic environment, because the teacher training system does not include them in its arsenal. Teachers are taught methodology, not pedagogy. They are taught "how to do", not "why". The conservatism of education has deep institutional, cultural, and evolutionary roots. Standards, assessment systems, pedagogical university programs, the political economy of reforms, cultural traditions, and the evolutionary mismatch [12] - all this creates a powerful system of self-preservation. The traditional assessment system (right/wrong answer) is a key element of this system, creating an illusion of objectivity and simplicity, making changes unprofitable for all participants in the educational process.

Institutional inertia is an epistemological trap. The old model of education reproduces not only its institutional structures, but also the cognitive structures of those who function within it. A teacher who grew up in the old system, was trained in the old system, and works in the old system, thinks within the framework of the old paradigm. They do not just "not know" about the CCFP model - they are fundamentally unable to comprehend it, because their cognitive apparatus is formed to solve different tasks. This means that overcoming institutional inertia requires not just administrative reforms, but an epistemological breakthrough - a change in the very way of thinking of those who make decisions [26].

Here it is appropriate to recall the metaphor of the Ouroboros - the mythical serpent biting its own tail. The old education system devours itself: it reproduces the very cognitive limitations that do not allow it to be overcome. This circle can only be broken from the outside - through the purposeful formation of a new cognitive apparatus. The old model is economically and evolutionarily disadvantageous. It does not yield a return on investment, creates colossal opportunity costs, and hinders the development of human potential [13]. Studies of the evolutionary mismatch [12] show that the school suppresses the natural abilities of children. Preserving this model is not just a pedagogical error, it is an economic and social disaster. Changes are possible, but they require a new approach. As the experience of Finland [14], Singapore [15], and Kyrgyzstan [16] has shown, successful changes require not "top-down" reforms, but a participatory approach - involving all stakeholders, trusting the professionalism of teachers, creating conditions for "bottom-up" innovations, and supporting them at the systemic level.

What We Propose Instead

My model of the communicative-cognitive framework of personality (CCFP) and the development of mental mechanisms is not a utopia. It is based on scientific developments [1]-[9], verified in the practice of innovative teachers, confirmed by international experience [14], [15], [16], and consistent with research in evolutionary educational psychology [17]. I propose a paradigm shift - a transition from a school of knowledge to a school of thinking. This means a change in goals (from the assimilation of knowledge to the development of thinking), a change in content (from subject-centrism to the development of mental mechanisms), a change in methods (from explanatory-illustrative to problem-based, dialogic, research, and game-based), a change in assessment (from checking facts to dynamic diagnostics of progress), a change in the role of the teacher (from a transmitter to a facilitator, tutor, mentor), and a change in the approach to the student (from unification to individualization through the identification of unique abilities).

At the center of this paradigm are the eleven mental mechanisms (six core and five support) that I described in the revised Article 5. This is not a "set of skills" in the sense in which this word is used in modern educational standards. This is a framework - something structuring, load-bearing, that holds the form, but is not rigid and immobile. And most importantly: this process must be individualized. Every child is unique, and their unique abilities should become the "key" through which they can develop all other mental mechanisms. The school should not unify, but identify and develop what makes each child special. Like the Ship of Theseus, we must replace every plank in the education system, but preserve its living essence - service to man.

But I want to emphasize one more, perhaps the most important, aspect. The CCFP model is not just a pedagogical innovation. It is a strategy for the evolution of the cognitive potential of the species [26]. As I substantiate in the article "Epistemological Recursion in Cognitive Science" [26], modern neuroscience is stuck in the "trap of correlations": we record the results of brain activity, but we do not understand the mechanism of its self-organization. The way out of this dead end lies not in the plane of creating even more powerful scanners, but in the plane of the evolution of the knowing subject itself. And it is precisely the mental mechanisms described in this series of articles that are those "tools" of a new quality that allow humanity to deconstruct the logic of its own brain [18], [19], [22], [23], [24], [26]. Thus, the formation of the CCFP in children is not only a pedagogical task. It is an investment in the future of science.

Roadmap for Change

I do not want my proposals to remain mere good wishes. Therefore, I propose a specific roadmap for the transition to the new model.

The first step is the creation of experimental sites. We should start with a small number of schools ready for change. These schools must receive methodological support, autonomy in decision-making, and the opportunity to adapt the model to their conditions. The experience of Singapore [15] shows that the "Deep roots" model - selecting a key team to revise teaching approaches - is an effective strategy for initiating change.

The second step is teacher preparation. Parallel to the work of experimental sites, the restructuring of the pedagogical education system must proceed. As the experience of Finland [14], Australia, and Chile shows, reforms without restructuring teacher training do not work. Without a new teacher, there is no new school. But teacher preparation is not just "training in methodologies". It is the formation of architects of the cognitive apparatus of future researchers. A teacher of a new formation must possess not only subject knowledge, but also a deep understanding of the psychology of thinking [2], [4], [5], [9], methodologies for developing mental mechanisms, and the principles of epistemological recursion [26].

The third step is the adaptation of curricula and programs. The development of mental mechanisms must be integrated into existing subjects. Mathematics can develop cause-and-effect thinking and spatial imagination, literature can develop emotional intelligence and eloquence, history can develop critical thinking and forecasting.

The fourth step is changing the assessment system. We need to move from assessing knowledge to dynamic diagnostics of the development of thinking, communication, and creativity. This requires the development of new forms of assessment - portfolios, projects, oral defenses - as well as the use of AI to collect and analyze data.

The fifth step is scaling. Only after the model has been tested at experimental sites, teachers have been prepared, and curricula have been adapted, can we begin scaling it to the entire system. As the experience of Kyrgyzstan [16] shows, "classroom innovations can and do influence educational policy in the country." Scaling must be gradual, data-driven, and take local conditions into account.

The sixth step is long-term evaluation. In 7-15 years, it is necessary to evaluate the contribution of graduates of schools that operated under the CCFP model to breakthrough scientific research - especially in the fields of neuroscience, cognitive science, and philosophy of consciousness [18], [22], [23], [24]. This indicator will become a key indicator that the model works not only as a pedagogical innovation, but also as a strategy for the evolution of the cognitive potential of the species [26].

Address to the Reader: Our Common Challenge

I write these lines as a person deeply convinced of the need for change, but devoid of illusions about their ease. The transition to a new model will require not one year or even one decade. It will require efforts at all levels - from the teacher in the classroom to the Minister of Education. As researchers of the Finnish experience note [14], "the traditional 'top-down' approach, which views people in the system as recipients of ready-made national initiatives, is incapable of building long-term, legitimate changes in complex, networked educational systems." On the contrary, involving stakeholders in decision-making has proven its effectiveness. It is precisely this approach - participatory, based on trust and cooperation - that I propose.

To teachers I want to say: you are not alone. Your daily labor is the foundation of any educational reform. Without you, nothing will work. But you cannot work alone. You need support - methodological, organizational, psychological. As the experience of Kyrgyzstan has shown [16], "teachers should be trusted to develop and implement relevant solutions in their classrooms." But I want to add: you are not just "educators". You are architects of the cognitive apparatus of future researchers. Every lesson in which you help a child ask a real question is a step toward understanding how matter acquires the ability to ask the question: "What am I?" [26].

To parents I want to say: your involvement and understanding are critically important. Your children are not just students, they are future creators. They need not only "good academic performance", but also the ability to think, create, and adapt. The experience of Kyrgyzstan [16] shows that community involvement is critically important for the success of innovations.

To officials and policymakers I want to say: education is not an "expense item". It is an investment in the future. And the return on this investment depends on which model you choose. The old model does not work. It is not just inefficient - it is unprofitable [13]. Economic research shows that weak institutions, including an outdated education system, limit the rate of economic growth even in countries with a high level of formal education [13]. Investments in the development of thinking are investments in economic growth, social stability, and technological progress. But I want to add: this is also an investment in the scientific sovereignty of the country. Without a new model of education, humanity will not be able to solve the "hard problems" of the 21st century, including the mystery of consciousness [18], [22], [26]. The country that is the first to implement the CCFP model will gain a strategic advantage in the race to understand the nature of the mind.

To researchers I want to say: evolutionary educational psychology offers us a new perspective on how children learn. "Understanding evolutionary educational psychology has the potential to help parents, teachers, and administrators better understand how children are evolutionarily adapted to learn and how these evolved learning mechanisms can be used to inform pedagogical decisions" [17]. We need more research in this area to turn these ideas into practical tools. But I also want to address neurobiologists, cognitive scientists, and philosophers of consciousness: if you want to solve the "hard problem of consciousness" [18], [22], you need not just more powerful scanners. You need researchers with developed mental mechanisms - capable of multidimensional thinking, systemic analysis, and critical reflection [26]. And only a new model of education can raise these researchers.

Why I Believe in the Possibility of Change

I would not be the author of this series of articles if I did not believe in the possibility of change. And my belief is based not on naive optimism, but on an analysis of facts.

I believe because science has already given us the tools. We do not need to invent something fundamentally new. We need to take what has already been created by Vygotsky [2], [3], Galperin [4], Davydov [5], Elkonin [9], Sukhomlinsky [6], Amonashvili [1], Shatalov [8], and Ushinsky [7] - and implement it in mass practice, supplementing it with modern research in evolutionary educational psychology [17].

I believe because international experience shows that change is possible. Finland [14], Singapore [15], Kyrgyzstan [16] - different countries, different cultures, but they have something in common: they were able to change their educational systems.

I believe because evolutionary psychology shows that children want to learn [17]. The problem is not that children are "lazy" or "incapable". The problem is that the school does not correspond to their natural learning abilities.

I believe because there are already successful examples in Russia. Individual schools operating under models of developing education [5], individual teachers who are already using elements of my model - this is proof that the new model works in our conditions.

I believe because teachers want to change. Most teachers are aware of the limitations of the existing model and are ready for change. They just need support and tools.

I believe because children are our main resource. Every child comes to school with a huge cognitive potential. And our task is not to suppress this potential, but to unlock it.

I believe because the philosophy of consciousness shows that there is a way out. As I showed in the article "Epistemological Recursion in Cognitive Science" [26], Colin McGinn's hypothesis of "cognitive closure" [20], which asserts that the human brain is fundamentally incapable of understanding its own nature, can be overcome through managed cultural and pedagogical evolution. By developing mental mechanisms, we do not just use the brain - we upgrade it, going beyond basic evolutionary "closure". L.S. Vygotsky [2] proved that higher mental functions are not given biologically, but are formed through the appropriation of cultural tools. This means that the human brain is not a closed system, but an open structure capable of radical restructuring under the influence of purposeful pedagogical activity.

I believe because neuroplasticity is a biological fact [21], [23]. When we teach a child not just to memorize facts, but to build information search strategies, verify them for reliability, and synthesize them into a new concept, we physically restructure their connectome. The brain uses pedagogically organized experience for its own structural modernization, so that in the future, having become the brain of a scientist, it possesses sufficient computational and conceptual power to understand its own nature [26].

Instead of an Afterword: An Invitation to Dialogue

This series of articles is not a final document. It is an invitation to dialogue. I invite teachers, parents, researchers, policymakers, and everyone who cares about the future of education to discuss my ideas. What do you think about the CCFP model? Which mental mechanisms do you consider most important? What implementation strategy would you propose? What obstacles do you see on this path? What resources are necessary? I am open to criticism, clarifications, and additions. Because it is only in dialogue that truth is born. And dialogue is precisely one of the key mental mechanisms that I propose to develop.

The education of the future will not be created by one person or one organization. It will be created by the joint efforts of everyone who understands its importance and is ready to invest their strength in its change. And let this work begin today.

But I want to conclude this series of articles - and our entire journey - with one more thesis that ties everything said together. The path from the conveyor-belt school to the school of thinking is the path to unraveling the mystery of consciousness [18], [22], [26]. It is a path that begins here and now - in specific schools, with specific teachers and students. Every lesson in which a teacher helps a child ask a real question is a step toward understanding how matter acquires the ability to ask the question: "What am I?". Every school operating under the CCFP model is an investment in a future in which humanity will finally be able to answer the question that T.V. Chernigovskaya [23] honestly called unresolved.

And this scientist of the future - the one who will say "I know" - will carry within themselves the cognitive architecture laid down by a pedagogy that today seems to many to be merely an "appendage" to "real" science. But it is precisely this pedagogy - understood as a strategy for the evolution of the species - that is the very "real" science without which all others will remain blind [26]. T.S. Eliot once bitterly asked: "Where is the wisdom we have lost in knowledge? Where is the knowledge we have lost in information?". The answer to this question lies not in the accumulation of new data, but in the restructuring of the very way we think. It is precisely to this pedagogy - a pedagogy that forms the communicative-cognitive framework of personality, develops mental mechanisms, and transforms the school from a conveyor belt into a laboratory of thinking - that this entire series of articles is dedicated. And it is precisely this pedagogy that we must build - together, step by step, starting with today's lesson.

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