Practical Implementation of the CCFP Model: From Experimental Sites to the Mass School

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 series, I address the most important and simultaneously the most complex question: how can my model of the communicative-cognitive framework of personality (CCFP) and the development of mental mechanisms be implemented in practice - not in isolated experimental classes, but in the mass school? Relying on international experience of systemic educational reforms (Finland, Singapore, Kyrgyzstan) [6], [9], [10], the practice of innovation implementation, and research in the field of educational change management [12], I propose a strategy of gradual, evolutionary transition from the industrial model to the model of thinking development. The key thesis of the article is that successful educational transformation is possible not through top-down revolutionary reforms, but through creating conditions for the organic change of school culture, where teachers and students become active co-authors of change [9], [10]. I also substantiate that the implementation of the CCFP model is not merely the "introduction of innovations," but a strategic investment in the future of science: every school operating under this model becomes a potential incubator for researchers capable of solving the "hard problems" of the 21st century, including the mystery of consciousness [4]. I pay special attention to the creation of infrastructure - studios, workshops, sports facilities - which allows every child to manifest their unique abilities and, through them, develop all mental mechanisms [2], [3]. I propose specific mechanisms for evaluating the effectiveness of the model's implementation and success criteria at the student, school, and system levels, including long-term indicators of graduates' contributions to breakthrough scientific research. The article is written taking into account the revision of Articles 1-7 and 9: it reflects new concepts (the core/support hierarchy, diagnostics of the core and support, the capacity for a paradigm shift) introduced in the revised versions.

Keywords: communicative-cognitive framework of personality, mental mechanisms, core, support, practical implementation, participatory reforming, epistemological recursion, species evolution strategy, effectiveness evaluation, school infrastructure, individualization, paradigm shift.

Introduction: Why I Speak of "Implementation" Rather Than "Deployment"

Completing this series, I want to address the question that inevitably arises for anyone who becomes familiar with my model: "This is all wonderful, but how do we do it? How do we move from words to action?"

I consciously avoid the word "deployment" (or "imposition"). It carries connotations of mechanical enforcement, administrative pressure, and bureaucratic procedure. I am convinced that genuine changes in education cannot be "deployed" from above. They must be "grown" from within - from the practice of teachers, from the needs of students, from the culture of the school. It is appropriate to recall here the biblical parable of the Tower of Babel: an attempt to build a grandiose structure solely through administrative efforts, without a single living language and common understanding, inevitably ends in collapse. The school of the future is not a tower built by decree from above; it is a living garden that needs to be tended. An engineer draws blueprints and pours concrete, but a gardener creates the conditions under which unique seeds sprout on their own.

In research on educational change management, three dominant perspectives are identified [12]. The rational-scientific perspective assumes that changes are created through the dissemination of innovative techniques. The political perspective (a "top-down" approach) generates changes through legislation and external directives. The cultural perspective (a "bottom-up" approach) seeks to influence change by encouraging value shifts within organizations. Researchers conclude that the most promising approach is "comprehensive restructuring" - an approach based on cultural changes but incorporating elements of both political action and scientific-technical innovation [12].

When I speak of the "implementation" of the model, I mean precisely such a comprehensive, multi-level process in which all subjects of the educational process participate - teachers, students, parents, administration, regional and national governing bodies [9]. This process requires time, resources, and, most importantly, patience and consistency.

But I want to immediately set the scale of what I am talking about. The implementation of the CCFP model is not just the "introduction of innovations" in the conventional sense of the word. It is a strategic investment in the future of science. As I substantiated in the article "Epistemological Recursion in Cognitive Science" [4], 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 this, in turn, begins right here - in specific schools, with specific teachers and students.

Every school operating under the CCFP model is not merely an "educational institution." It is a potential incubator for future researchers capable of solving the "hard problems" of the 21st century, including the mystery of consciousness. In twenty or thirty years, it will be precisely those children who are developing cause-and-effect thinking, spatial imagination, critical thinking, and other mental mechanisms today who will become the scientists capable of deconstructing the logic of their own brain's work. This is the civilizational scale of what we are doing in every specific school, in every specific lesson.

Lessons from International Experience: How Educational Systems Change

Before proposing a strategy for implementing my model, I want to turn to international experience. Different countries have approached the transformation of their educational systems in different ways, and several key lessons can be identified from this experience. The Finnish experience, as I have already mentioned in previous articles, is one of the most instructive. A study of the 2014 Finnish basic education reform conducted by Salonen-Hakomäki and her colleagues revealed the key principles of successful reforming [9]. The researchers emphasize: "Participatory approaches to leading reforms are beneficial, yet in practice, participatory initiatives are used only episodically in national reform contexts." The Finnish case shows how this tendency can be overcome. The leaders of the Finnish reform set themselves the goal to "include stakeholders, build and maintain strong and open collaborative processes, take the risk of losing some control, reject strict dichotomies between strategy development and its implementation, and view leading change as a responsible act of giving stakeholders a fair chance to participate in decisions that affect their lives." Key aspects of participatory leadership in Finland included: "building participation rather than quasi-participation; building coherence in complexity - together; and embedding changes into the educational system with responsible leadership" [9]. In other words, the Finnish approach was based not on administrative dictate, but on involving all participants in the educational process in joint decision-making.

The Singaporean experience of scaling innovations is of particular interest to my model. Researchers from the National Institute of Education of Singapore developed the SCAEL model (Scaling Community, Conditions, Culture and Carryovers through Apprenticing and Ecological Leadership) [10], [11]. The SCAEL model describes "apprenticing leadership and ecological leadership, which refer to leadership that facilitates professional learning and support at the horizontal (apprenticing leadership) and vertical (ecological leadership) levels" [10]. This shows that successful scaling of innovations requires support at all levels of the system - from collegial interaction among teachers to institutional support. Singaporean researchers identified three models of scaling innovations [10], [11]: "Technologies and tools en masse," "Deep roots," and "Networks." These models offer "school leaders and all those involved in innovation implementation a coordinate system for dialogue, evaluating existing strategies, and determining the next steps in school innovation trajectories" [10].

It is appropriate to recall here the metaphor of the "rhizome" proposed by philosophers Gilles Deleuze and Félix Guattari. Unlike a taproot, which grows top-down, a rhizome spreads horizontally and chaotically, forming multiple connections and nodes. The Singaporean SCAEL model, with its horizontal and vertical leadership, resembles precisely such a rhizome: innovations do not descend from above as an order; they sprout at different points in the system, connect with each other, and gradually capture the entire space.

The Schools2030 program, implemented in Kyrgyzstan with the support of UNESCO and other partners, offers yet another model of transformation [6], [8]. The program follows a three-step process: Assess, Innovate, and Showcase. Teachers assess the level of holistic learning of students using context-relevant tools, then collaborate with students

and the school community to develop targeted classroom innovations using Human-Centered Design tools (in Kyrgyzstan, more than 400 teachers develop about 100 solutions at the classroom level annually), and then link these innovations to changes at the educational system level through dialogue between teachers and decision-makers [6]. The key conclusion of the program sounds like this: "Context is everything for innovations to work effectively. Innovations must align with the lived realities and future aspirations of students" [6]. An important example from Kyrgyzstan is the "Young Eco-Leaders" project in the village of Emgek-Talaa, where students presented their plans to the head of the rural district, who, together with the deputies of the rural council, allocated 100,000 soms to implement their ideas [7]. This shows how school innovations can influence local communities and gain institutional support.

Evolutionary Educational Psychology as the Foundation for Change

Before moving on to a specific implementation strategy, I want to turn to evolutionary educational psychology, which, in my view, is the theoretical foundation for designing changes. Researchers in this field note: "There is a rapidly growing body of research in evolutionary educational psychology that examines children's evolutionary motivational and educational predispositions in relation to modern learning and schooling. It is widely recognized that schools are inherently mismatched to how children of our species are evolutionarily adapted to learn, contributing to learning difficulties and associated adverse school outcomes" [5], [13].

Researchers propose "a research-based toolkit to guide parents, teachers, and school administrators in the process of evolutionizing the elementary education system" [5]. This toolkit is based on an understanding of how children learned in the Environment of Evolutionary Adaptedness (EEA): through self-directed, mixed-age play with peers; with minimal adult interference; at their own pace, without standards and grades; in connection with real life, when children took adult tools and learned to use them correctly through play and cooperation [5], [13]. Researchers emphasize that "using evolutionary educational psychology to inform pedagogy has the potential to create better outcomes for modern students by helping to promote success both during and after the school experience." To create effective changes, collaborative work among parents, teachers, and school administrators is necessary [5].

Strategy for Implementing the CCFP Model: My Proposals

Based on the analysis of international experience and evolutionary-psychological research, I want to propose a strategy for implementing the CCFP model. This strategy consists of several stages. I propose starting not with "deployment" on a national scale, but with the creation of a network of experimental sites - schools and classes where the CCFP model will be tested, refined, and adapted to local conditions. At this stage, it is important to select schools that are ready for change (as the experience of the Singaporean "Deep roots" model shows, innovations require the selection of a key team to revise teaching approaches, accompanied by structural changes [10]). Methodological support must be provided: teachers need not only a new program but also continuous support - consultations, training, and experience sharing (the experience of Kyrgyzstan shows that teachers must go through the full cycle of Human-Centered Design [6], [8]). A system for collecting and analyzing data must be created to understand what works and what does not, and to see not only academic results but also the dynamics of mental mechanism development [6].

In addition, school autonomy must be encouraged: as Finnish experience research shows, participatory leadership requires leaders to be willing to "take the risk of losing some control" [9]. Schools must have the opportunity to adapt the model to their conditions. And, of course, experimental sites must be equipped not just with "classrooms," but with spaces for creativity, sports, and crafts: art, music, dance, and vocal studios; photo studios; wood and metal workshops with good lathes; sports facilities (gymnastics, light and heavy athletics, fitness, swimming); and rooms for intellectual games (chess, go, backgammon). Without this infrastructure, the principle of individualization through unique abilities remains a declaration. It is precisely in these spaces that a child can manifest their "hidden" abilities, which become the "entry point" for the development of all mental mechanisms. Creating such infrastructure is not an expense, but a strategic investment in the future: every child who finds their "entry point" receives a powerful impulse for the development of thinking, and this pays off many times over through the growth of human capital [2], [3].

At the experimental sites, diagnostics of the core mental mechanisms (MM-1, MM-3, MM-5, MM-6, MM-10, MM-11) must be organized - in order to understand whether they are being formed under the new conditions. Without this, we will not be able to answer the question of whether the model works. Diagnostics of the support mechanisms

(MM-2, MM-4, MM-7, MM-8, MM-9) should be conducted after the diagnostics of the core [19]. The experience of Singapore shows that systemic investments in infrastructure and teacher training yield outstanding results [2]. The experience of Kyrgyzstan shows that even limited resources directed at creating school spaces for innovation can yield measurable results [3].

The second stage is teacher preparation. As I have already written in detail in the previous article [18], the restructuring of pedagogical education is a key condition for success. But the retraining of current teachers is no less important. Evolutionary educational psychology research emphasizes the importance of involving teachers in the change process: "To create effective change, collaborative work among parents, teachers, and school administrators is necessary" [5]. Teachers must not merely "accept" the new model, but become its active co-authors [5]. I propose creating a professional development system focused on developing teachers' competencies in the diagnostics and development of mental mechanisms, as well as their ability to use school infrastructure to identify students' unique abilities [18]. Distance learning formats should be used to reach the maximum number of teachers, and professional communities of teachers working under the CCFP model should be created for experience sharing and mutual support [10].

The third stage is the adaptation of curricula and programs. The CCFP model does not require the abandonment of subject content. But it requires a revision of how this content is taught [18]. The development of mental mechanisms must be integrated into existing subjects. Mathematics can develop cause-and-effect thinking (MM-1) and spatial imagination (MM-10), literature can develop emotional intelligence (MM-3) and eloquence (MM-2), history can develop critical thinking (MM-6) and forecasting (MM-11). Special courses on the development of mental mechanisms (for example, "Fundamentals of Critical Thinking," "The Art of Dialogue") must be developed, and the assessment system must be revised to include the evaluation of mental mechanism development, not just the knowledge of facts [18].

The fourth stage is working with parents and the community. Any changes in school cause anxiety among parents. The experience of Kyrgyzstan shows that community involvement is critically important for the success of innovations [3], [6]. The Schools2030 program emphasizes: "Broad partnerships with schools, governments, communities, and civil society organizations are necessary. Working together with all stakeholders from the very beginning can ensure that the program aligns with educational policy and practice" [6]. I propose conducting explanatory work with parents, showing the benefits of the new model [5], involving them in the educational process - not as controllers, but as participants [5], and demonstrating specific results of mental mechanism development in children. It is important to involve the community in the creation of infrastructure. The experience of Kyrgyzstan shows that local communities are willing to support school innovations when they see their concrete benefits [7]. The creation of studios and workshops can be not only a state task, but also the result of a partnership between the school, parents, local businesses, and non-profit organizations. This not only reduces the burden on the budget but also creates a sense of belonging: the school becomes not a "state institution," but the center of community life.

And only after the model has been tested at experimental sites, teachers have been prepared, and curricula have been adapted, can scaling begin. As the Singaporean SCAEL experience shows, scaling requires support at all levels - from horizontal (apprenticing leadership) to vertical (ecological leadership) [10], [11]. This means that innovations must be supported not only at the school level, but also at the regional and national levels. The experience of Kyrgyzstan shows that "classroom innovations can and do influence educational policy in the country" [6]. Successful innovations at the school level can become the basis for systemic changes.

Key Conditions for Success

Based on everything said, I can highlight several key conditions without which the implementation of the CCFP model is impossible. First and foremost is trust in teachers. As the Finnish and Kyrgyz experiences have shown, successful reforming requires trust in the professionalism of teachers [9], [3]. Instead of controlling and checking, teachers must be given space for creativity and decision-making. The Schools2030 program emphasizes: "Teachers should be trusted to develop and implement relevant solutions in their classrooms" [6].

Change is always associated with risk. Not all experiments will be successful. Some teachers will resist. But without a willingness to take risks, change is impossible. As researchers of the Finnish reform note, participatory leadership requires leaders to be willing to "take the risk of losing some control" [9]. Furthermore, changes in education do not

happen in one year. They require consistency and long-term commitment. As the experience of Finland, Singapore, and Kyrgyzstan shows, successful reforms take decades, not months [9], [10], [6]. And, of course, successful scaling requires support at all levels - from horizontal (apprenticing leadership) to vertical (ecological leadership) [10]. Changes in school require support not only at the school level, but also at the regional and national levels.

And finally, the implementation of the CCFP model is impossible without the creation of the corresponding infrastructure. Art studios, music classrooms, wood and metal workshops, sports facilities, dance halls, photo studios, rooms for intellectual games - these are not a "luxury" or "additional clubs." These are necessary conditions for every child to be able to manifest their unique abilities and, through them, develop all other mental mechanisms. Investments in this infrastructure are not expenses, but an investment in human capital with the highest return. The experience of Australia shows that investments in the old model, without creating conditions for individualization, do not yield a return [1]. The experience of Singapore shows that systemic investments in infrastructure and teacher training pay off [2].

Mechanisms for Evaluating the Effectiveness of the CCFP Model Implementation

Developing a strategy for implementing the CCFP model, I consider it necessary to propose specific mechanisms for evaluating its effectiveness [6]. Without this, we will not be able to understand whether the model works and correct it during the implementation process. I propose evaluating effectiveness at three levels. At the student level, we evaluate the dynamics of the development of each of the eleven mental mechanisms through the diagnostic procedures described in the revised Article 6 [19] (priority is given to the diagnostics of the core, since without it, solving a hard problem is impossible). We also evaluate the student's ability to apply mental mechanisms in non-standard situations (through case studies and projects) [19], the level of academic motivation and engagement [5], and the student's ability to identify and develop their unique abilities (recorded in a portfolio of achievements) [2], [3].

At the school level, we evaluate the proportion of teachers who master the methods of developing mental mechanisms [18], the quantity and quality of pedagogical innovations aimed at developing the CCFP [6], the level of engagement of parents and the community in the educational process [5], [6], the dynamics of mental mechanism development indicators in students compared to control schools [19], and the availability and use of infrastructure for identifying unique abilities (the number and diversity of studios, workshops, sports facilities, and their utilization rate) [2], [3]. At the regional and national level, we evaluate the proportion of schools implementing the CCFP model [10], changes in the pedagogical education system [18], changes in the assessment system [19], and economic indicators (return on investment in education, human capital dynamics) [12].

To evaluate effectiveness, I propose using a diagnostic toolkit for mental mechanism development, student achievement portfolios [19], questionnaires and surveys to assess satisfaction and motivation [5], observation of pedagogical practice [18], analysis of pedagogical innovations [6], comparative analysis with control schools [12], and infrastructure audits [2], [3].

I propose the following success criteria. Short-term criteria (1-3 years): teachers have mastered the basic methods of diagnosing and developing mental mechanisms [18]; conditions for individualized learning have been created in schools (including the presence of studios, workshops, sports facilities) [2], [3]; students demonstrate positive dynamics in the development of mental mechanisms [19]; parents and the community are engaged in the educational process [5], [6]. Medium-term criteria (3-7 years): the CCFP model is scaled to a significant number of schools in the region [10]; the pedagogical education system has been restructured [18]; the assessment system has been changed [19]; graduates of schools operating under the CCFP model demonstrate a higher level of adaptive, creative intelligence compared to the control group [19].

Long-term criteria (7-15 years): the CCFP model has become the basis of state educational policy [9]; a change in educational culture has occurred - from the conveyor-belt school to the school of thinking [12]; economic indicators demonstrate positive dynamics correlating with the implementation of the model [12]; graduates of schools that operated under the CCFP model make a measurable contribution to breakthrough scientific research, especially in the fields of neuroscience, cognitive science, philosophy of consciousness, as well as related disciplines requiring a high level of abstract and systemic thinking [4]. This indicator includes not only "academic achievements," but also

the capacity for a paradigm shift - that is, the ability not just to solve problems within an existing paradigm, but to change it. This is what distinguishes graduates of CCFP schools from graduates of traditional schools.

Conclusion: A Path Worth Taking

I do not want to create the illusion that the transition to the CCFP model will be easy. It will be a long, difficult path. Researchers of the Finnish experience emphasize: "National reforms are often in the hands of national administrators or politicians who, based on classical leadership in public organizations, often seem to 'speak for and on behalf of those below them' when making system-wide decisions" [9]. However, such an approach neglects the networked nature of systems and overestimates the wisdom of reformers. "Research has shown that such traditional 'top-down' leadership often causes dissatisfaction, lack of motivation and understanding, and resistance to the system" [9]. Instead, as the experience of Finland, Singapore, and Kyrgyzstan shows, successful changes require a participatory approach - involving all stakeholders in the decision-making process, trusting the professionalism of teachers, creating conditions for "bottom-up" innovations, and supporting them at the systemic level [9], [10], [6].

Researchers in evolutionary educational psychology add an important aspect to this: "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" [5]. The CCFP model is not a ready-made instruction manual. It is a direction of movement. Every school, every teacher, every student will walk this path in their own way. But it is important that we move in the same direction - from the conveyor-belt school to the school of thinking. From the transmission of knowledge to the development of mental mechanisms. From the static assessment of facts to the dynamic diagnostics of progress. From obedient executors to creative personalities [12].

And perhaps most importantly: this is a change in school culture - from a culture of control to a culture of trust, from a culture of uniformity to a culture of diversity, from a culture of fear of mistakes to a culture of trials and discoveries [9]. It is precisely such a culture, I am convinced, that will allow us to raise a generation of people capable of solving complex problems, thinking critically, collaborating, and creating. And this is the true goal of education. But to form this culture, a material basis is also necessary - infrastructure that allows every child to find their "entry point" [2], [3]. Studios, workshops, sports facilities - these are not just "additional rooms." These are spaces where a child can manifest their unique abilities, feel successful, and gain the confidence that is then transferred to all other types of activities. These are spaces where a teacher can see a student's "hidden" talents and use them as a lever for developing thinking. These are spaces where the school ceases to be a conveyor belt and becomes a place for unlocking potential.

It is precisely such a school - with a new culture, new pedagogy, new infrastructure - that is the school of thinking. And it is precisely such a school that we must build - together, step by step, starting with today's lesson. But I want to conclude this article - and the entire series - 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 [4]. 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 studio where a child tries their hand at music or painting is a step toward revealing the uniqueness that makes them a personality. Every workshop where they learn to work with their hands is a step toward understanding how thought is embodied in matter. Every sports ground where they learn to overcome themselves is a step toward understanding the boundaries and possibilities of their own body and spirit.

Every school operating under the CCFP model is an investment in a future where humanity will finally be able to answer the question that T.V. Chernigovskaya honestly called unresolved: "What is the brain?". And this future scientist - 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 [4]. As Rainer Maria Rilke wrote in "Letters to a Young Poet": "We must live the questions." We cannot give final answers to all the challenges facing education, but we can create the conditions under which these answers will be found. 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 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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