PROBLEMY WCZESNEJ EDUKACJI / ISSUES IN EARLY EDUCATION ISSN 1734-1582
3 (42) / 2018 e-ISSN 2451-2230

Galina Zuckerman
ORCID: 0000-0002-7982-6424
Psychological Institute, RAE, Moskwa
galina.zuckerman@gmail.com

https://doi.org/10.26881/pwe.2018.42.03

Longitudinal formative interventions in the Elkonin – Davydov's context

Summary

The paper presents the historical description of the development of D.B. Elkonin and V.V. Davydov's original educational system and the fundamental components of the genetic modeling experiment in this system. The history of the Elkonin-Davydov laboratory is seen as a series of macrocycles of genetic modeling experiments. Each cycle once begun, has been going on through the following decades.

Keywords: research through transforming the cultural practice, genetic modelling, Elkonin – Davydov's experiment

I will talk on the longest formative experiment, which has been going on for more than half a century (since 1958). Daniil Elkonin and Vassilii Davydov developed the educational system as an experimental method exploring and expanding the potentials of human mind for children and adolescents through education. Fig. 1 presents a macrocycle study by the method which Davydov called **genetic modeling**: this method "assesses the capacity and effectiveness of a project (model) describing the origin (genesis) of concepts as tools of students' mind".

The history of the Elkonin-Davydov laboratory is seen as a series of macrocycles of genetic modeling experiments. Characteristically, each cycle once begun, has been going on through the following decades.

1960s

1. *A hypothesis of age-related potentials and limitations of human mind*: elementary schoolchildren **are sensitive to the development of reflective thinking**.
2. *Laboratory observations*: "capable" children act reflectively on their own initiative, the rest need some help from an adult. **Reflective thinking is the zone of proximal development** of children starting school.
3. *A hypothesis on educational tools for developing potentials of human mind that are left concealed under the prevailing school system.* By discerning between **empirical and theoretical concepts**, Davydov explained why school failed to develop reflective thinking in elementary schoolchildren. The empirical concepts prevail in major educational systems and do not need reflection for their mastering.

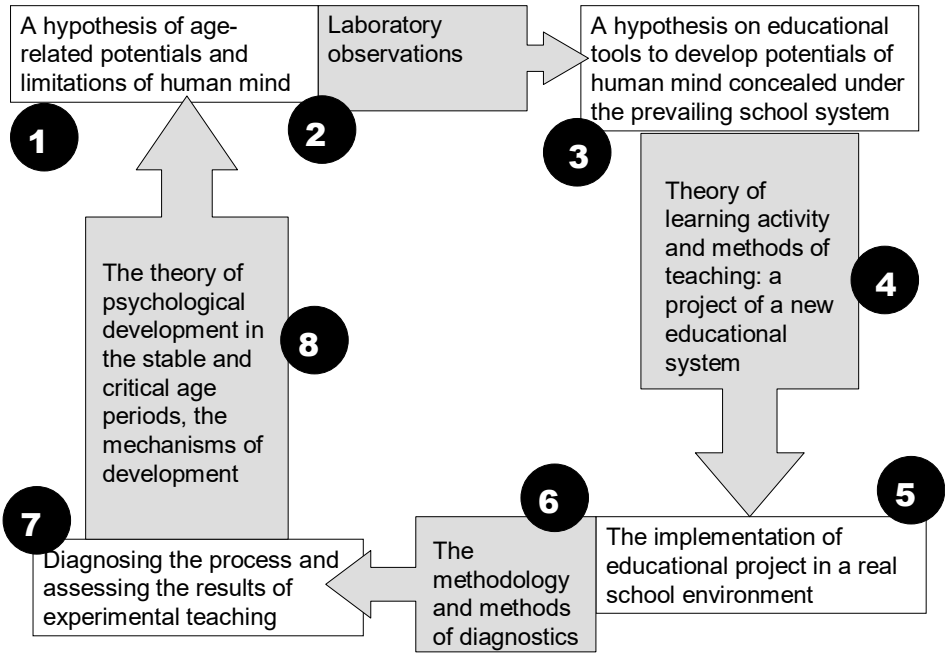

Fig. 1. Basic components of a genetic modeling experiment in the Elkonin-Davydov educational system. Units 1, 3, 5, 7 represent the major steps of the experiment, and Units 2, 4, 6 and 8 are its intermediate products.

4. *Theory of learning activity and methods of teaching (a project for development of students' mind through education)*: the study of any particular subject is commenced from a **genetically initial concept** as a starting point for further deducing the system of concepts. The theory establishes the concepts of **the learning task** and **the learning model**. The learning task is the situation provoking children into search for new ways of problem solving and is structured around the contradiction between the already mastered ways of action and new facts. The learning model is seen as a non-verbal schematic presentation of new concepts and ways of acting; such a model becomes the basic tool of conceptual thinking. New educational materials that embodied these ideas were drafted for teaching math and linguistics in the elementary schools.
5. *The project was implemented in a real educational environment:* psychologists and teachers started working together in the Moscow School 91.
6. *The methodology and methods of diagnostics*: basically, they comprised a classic comparison of the experimental and control classes using a new type of diagnostic tasks – outwardly similar to those in standard textbooks and nevertheless requiring **reflection on the means of using concepts**. (To illustrate: a classical problem *the African numbers* designed by G. Mikulina). Case studies registered in lesson transcripts illustrated the fact that **students enthusiastically performed the activities previously thought too difficult for their age**.

7. *Diagnosing the process and assessing the results of experimental teaching*: early experimental evidence proved that **the experimental classes outpaced the control ones in conceptual thinking.**
8. *The theory of psychological development in the stable and critical age periods, the mechanisms of development.* The evidence from experimental classes changed the concept of "age-dependent norm of development." This norm in elementary schoolchildren is shifted with the changes in the content of education.

1970s

1. *A hypothesis of age-related potentials and limitations of human mind:* the elementary schoolchildren are sufficiently sensitive to the development of reflection in thinking, cooperation and self-consciousness.
2. *Laboratory observations* focused on small groups of students who cooperate to solve the problems. Spontaneous forms of cooperation are registered in the classes. Productive and destructive forms of cooperation are discerned.
3. *A hypothesis on educational tools for developing potentials of human mind that are left concealed under the prevailing school system*: the interaction modes „teacher – student" vs. „teacher – a group of students working together" are relatively independent factors of reflective development; to employ these factors most efficiently, one must discern learning tasks and their content.
4. *Theory of learning activity and methods of teaching (a project for development of students' mind through education):* the theory was extended by coining the concept of **learning cooperation,** researching on the relationship between the content and form of learning activity. Cooperation with equals (equally incompetent partners) was recognized to be a prerequisite for reflective development. First comprehensive curricula for the elementary school including math, linguistics, fine arts took most of team efforts. First attempts were commenced to develop similar curricula for the middle school.
5. *The project was implemented in a real educational environment:* psychologists and teachers were working together in the Moscow school 91 and the Kharkov school 17.
6. *The methodology and methods of diagnostics*: An "experiment within experiment" approach was introduced to compare two experimental classes, one of which practiced peer cooperation. Learning tasks were developed to distinguish the various patterns of cooperation (to illustrate: *Mittens* and *Postman*.) The case studies were based on the transcripts of communication in the groups of students working together to solve the problem.
7. *Diagnosing the process and assessing the results of experimental teaching* provided the first evidence that **cooperation with peers is essential for the reflective development of elementary schoolchildren.**
8. *The theory of psychological development in the stable and critical age periods, the mechanisms of development*: the developmental norm for elementary schoolchildren

was shown to shift with the changes in the content and form of education. Further research was carried out on the role of cooperation with peers in child development.

1980s

The passing of D.B. Elkonin motivated his son Boris Elkonin to revisit fundamental notions of Elkonin's approach to relations between development and education. Political persecution of V.V. Davydov and his collaborators radically changed the landscape in educational research and practice. The complete prohibition of experiments in schools aborted formative experiments; nevertheless it did not stop the movement of thought. The principles of diagnosing reflective abilities of schoolchildren were worked out, and the diagnostic tasks were developed and verified to reveal the latent possibilities of age. New research hypotheses were put forward to define a student able and willing to learn as the subject of learning activity. In the elementary school, the whole **class acting as a learning community is such subject of learning activity**.

1990s

The Elkonin-Davydov educational system lives through the temptation of ideological freedom and social popularity in early years of new Russia. The research focus is further shifted to a previously unexplored territory of middle school; now it comprises the development of both the concept of life-long learning and the curricula for the middle school. An attempt to bridge the gaps between the elementary and middle school made the researchers concentrate on the problem of crisis ages and the classical Vygotskian problem of internalization in the context of transition from cooperative learning activities in the class to learning activities of each individual student.

21st century

The passing of V.V. Davydov in 1998 turned the minds of his disciples "back to basics". **The unit of analysis** of educational interaction in mastering the concepts was newly rethought as the crossroads of two initiatives (teacher's and student's) on the sign. The focus of research interests moved to new manifestations, such as children's independence: initiative in suggesting new ways for action, search and testing of hypothesis. Following the individual developmental trajectories of independent individual learners within the educational community became the main research method. (Example: The history of discovery of multiplication in two classes – daring and timid.). Ways to include all types of students into cooperative search activity retrieve interest to written communication as a powerful vehicle for intellectual development in early adolescence.

References

Arievitch I.M. & A. Stetsenko (2000), *The Quality of Cultural Tools and Cognitive Development: Galperin's Perspective and Its Implications*. "Human Development", 43.

Davydov V.V. (1990), *Types of generalization in instruction: Logical and psychological problems in the structuring of school curricula*. Reston, VA, National Council of Teachers of Mathematics.

Davydov V.V. (1998), *The concept of developmental teaching*. "Journal of Russian and East European Psychology", 36.

Davydov V.V. (1999), *What is Real Learning Activity?* In: M. Hedegaard & J. Lompscher (Eds.), *Learning Activity and Development.* Aarhus, University Press.

Davydov V.V. (2008), *Developmental Instruction: A Theoretical and Experimental Psychological Study*. Hauppauge (NY), Nova Science Publ.

Davydov V., Slobodchikov V., Tsukerman G. (2003), *The elementary school student as an agent of learning activity*. "Journal of Russian and East European Psychology", 41(5).

Elkonin B.D. (2001), *L.S. Vygotsky and D.B. El'konin: Symbolic mediation and joint action.* "Journal of Russian and East European Psychology", 39.

Elkonin D.B. (1960), *Child Psychology*. Moscow, Uchpedgiz. (In Russ.).

Elkonin, D.B. (1972), *Toward the problem of stages in the mental development of the child*. "Soviet Psychology", 10.

Elkonin, D.B. *(*1989), *Selected psychological works*. Moscow, Pedagogy Publ. (In Russ.).

Elkonin, D.B. (1999), *On the Theory of Primary Education.* "Journal of Russian and East European Psychology", 37.

Elkonin D.B. (1999a), *On the Structure of Learning Activity.* "Journal of Russian and East European Psychology", 37.

Engestrom Y. (2011), *From Design Experiments to Formative Interventions*. "Theory & Psychology", 21(5).

Vygotsky L. (1978), *Mind in society. The development of higher psychological processes*. Cambridge (MA), Harvard University Press.

Vygotsky L.S. (1934/1987), *Thinking and speech*. Ed. and transl. by N. Minick. New York & London, Plenum.

Zuckerman G. (2001), *How the elementary school children become the subjects of cooperative learning activity*. In: M. Hedegaard (Ed.), *Learning in Classrooms: A Cultural-Historical Approach*. Oxford, UK, Aarhus University Press.

Zuckerman G. (2003), *The learning activity in the first years of schooling: the developmental path towards reflection.* In: V. Ageev, B. Gindis, A. Kozulin, S. Miller (Eds.), *Vygotsky's Theory and Culture of Education*. New York, Cambridge University Press.