European Journal of Psychology of Education
2004, Vol. XIX, n° 1, 3-7

Vygotsky's theory in the classroom: Introduction

Alex Kozulin
International Center for the Enhancement of Learning Potential, Israel

There seems to be a certain mystery in the current popularity of Vygotsky's ideas. Why does a theory developed in Moscow a few years after the Russian Revolution capture the imagination of European and American educators at the beginning of the 21st century?

One possible explanation of this puzzling phenomenon is that Vygotsky's theory offers us answers to the questions that only now we are finally ready to ask. There are several reasons, both historical and theoretical, that determined this late recognition of the relevance of Vygotsky's theory (see Kozulin, 1990; Kozulin, Gindis, Ageyev, & Miller, 2003). Vygotsky's emphasis on the sociocultural nature of human cognition and learning was at variance with both behaviorist and later information-processing models that took it for granted that an abstractive individual is a natural agency of learning. While everyone would agree that transmission of culture from generation to generation is one of the major goals of education, the presence of culture in the classroom remained almost invisible. Students were perceived as individuals possessing natural functions of perception, memory, and problem solving that should be used for the transmission of learning. Culture appeared as an informative content of the curriculum external to the process of learning. Only when multiculturalism became recognized as an empirical reality of the European and American classrooms did educators finally discover the ever-present phenomenon of culture in learning. Once this discovery had been made it became apparent that Vygotsky's sociocultural approach is not limited to such obvious multicultural problems as bilingual students, but goes deeper into such phenomena as a culture of scientific reasoning as different from the culture of everyday cognition, the variety of literacy, and so on. At this juncture the questions first formulated in the context of multicultural education or science teaching started meeting answers offered by Vygotsky's theory.

On the theoretical plane Vygotsky's educational insights remained irrelevant as long as the predominant argument was between "traditionalists" who emphasized the transmission model of education, and "progressivists" who advocated discovery learning. Both "traditionalists" and "progressivists" assumed that cognitive and learning skills are the preconditions for the educational process. The argument was whether the students should receive their knowledge from the teacher in more or less ready form or whether they should actively and independently construct it. Vygotsky's position differs in principle because he places educational process as a source rather than a consequence of the development of cognitive and learning skills. In Vygotsky's model education does not coincide with development but is constructed in such a way as to develop those psychological functions that will be needed for the next educational step. Instead of dichotomy of cognitive functions and curricular content, Vygotsky proposed that such external forms of activity, as reading, writing and numerical operations should be considered on equal footing with other higher cognitive

functions. Moreover, curricular content in mathematics, history or biology appears in the Vygotskian model in a conceptual form, i.e., as aspects of the socioculturally-based development of children's concepts. In this way the opposition between cognition and knowledge is resolved by knowledge appearing as a process of concept formation that shapes the students' cognition rather than being understood as information to be processed by the students' preexistent cognitive skills.

When Vygotsky's theoretical message finally reached the West European and American audience a new problem emerged. The new proponents of sociocultural approach obscured – some deliberately, other unintentionally – an important distinction made by Vygotsky between school-based conceptual learning and situated everyday learning. Moreover, because some of the researchers of everyday apprenticeship were among the first Western Vygotskians (e.g., Rogoff, 1990) this type of learning started being perceived as typical for the Vygotskian educational position (Cobb, 1996).

Systematic classroom learning and everyday apprenticeship correspond to different types of sociocultural contexts and activities. In Vygotsky's theory these two contexts are linked to two different types of concept formation. While classroom learning, at least in theory, is aimed at developing in students systematic "scientific" concepts (in all fields of knowledge, not only in sciences), the apprenticeship leads to the development of everyday concepts that are experientially rich and practical in a given context, yet often incompatible with the scientific notions (Karpov, 2003). Moreover, some Vygotskians would argue that the apprenticeship type of learning just uses the cognitive abilities already existent in the child without developing them further as stipulated by the conceptual learning approach.

While apprenticeship and other situated learning paradigms (Lave, 1988) gained popularity, school-based Vygotskian research remained poorly known and insufficiently understood. More than once the present author has heard skeptical remarks regarding the "philosophical" nature of the Vygotskian approach that produced "no tangible classroom results". In reality, the Vygotskian approach is probably one of the theory-based educational paradigms most consistently implemented in the classroom. As early as the 1960's Daniel El'konin, Vasilii Davydov and their colleagues at the Psychological Institute in Moscow systematically researched, developed and implemented a primary school curriculum and didactics based on the Vygotskian theory of learning activity. In spite of considerable resistance from Russian educational bureaucracy (especially in the late 1970 and the early 1980's) the learning activity group succeeded in developing a system of instruction that, in the last decade, has been used in about 10% of all Russian schools. One reason for an uncertain status of Vygotskian classroom applications in the West was the slow process of translating – literally and conceptually – the work of the learning activity group into English and other European languages. Another reason is the remaining uncertainty regarding the applicability of the learning activity model in cultural contexts other than Russian.

Thus, one of the primary goals of this special issue is to analyze how Vygotskian theory responds to educational needs in a variety of classroom contexts in different countries. The opening paper "Development of reflection through learning activity" by Galina Zuckerman came directly from the learning activity group based at the Psychological Institute in Moscow. Drawing on the longitudinal research of primary school students who, from the first grade, were immersed in a learning activity atmosphere, Zuckerman demonstrated how these students acquired more-than-average reflexive and meta-cognitive skills, and how these habits of "mind and heart" made them highly competitive in solving the challenging PISA assessment math problems.

Jean Schmittau's paper is based on her experience of using Davydov's mathematics curriculum in the American elementary school. She admitted that at the beginning such a cultural transmission was easy neither for the teachers nor students. The curriculum based on a well-structured sequence of problem solving was initially mystifying for American teachers accustomed to textbooks that look like a transcript of lectures interspersed with sets of exercises. It took the elementary school students an entire year to develop the ability of sustained concentration and focus necessary for successful appropriation of new curricular

material. However, upon the completion of the curriculum they were able to master problems normally only given in the US to high school students.

At the center of Schmittau's theoretical discussion lies the question of how to reconcile the need for developing students' conceptual understanding with the need for the mastery of mathematical algorithms. Recent American math education fluctuates between emphasis on mastering algorithms at the expense of conceptual understanding and an almost complete disregard of algorithms under the slogan of meaningful conceptual learning. Schmittau argues that the Vygotskian approach provides the basis for reconciling these two aspects because algorithms appear in this curriculum in a conceptual form. To render them conceptual algorithms should be connected to the mathematical actions from which they arise. This connection is achieved to a considerable degree by teaching students the representational schematics linking actions with objects to their symbolic representations. This theoretical position is illustrated by specific didactics of how the symbolic representation of actions helps students to discern the same type of relations (e.g., part-whole) in a variety of mathematical situations that have very different surface features. Schmittau also demonstrates how the constant emphasis on systemic organization of mathematical knowledge where each new operation or principle is always connected with previously learned material demystifies many mathematical topics that usually appear as separate and unconnected.

The paper of Hartmut Giest extends the learning activity model to the problem of using hypermedia as a tool for adult education. Already in the 1980's a group of educational psychologists from East Berlin headed by Joachim Lompscher (1984) adopted Davydov's methodology and applied it to the problems of teaching science in primary and middle school. More recently the members of this group turned to the question of the relationships between the learning activity paradigm and such modern approaches as constructivism and distance learning. According to Giest the major theoretical difference between constructivism and Vygotskian theory is the interpretation of activity. While for constructivists (Glasersfeld, 1995) the paradigm of activity is an active adaptation of organism to environment, for Vygotskians activity aimed at an active change of the environment is paradigmatic. This fundamental difference has specific methodological consequences. The underlying biological metaphor of constructivism suggests that the experimental paradigm of natural sciences is equally applicable to human learning. Students' psychological functions are tested as if they are objects. Vygotskian methodology presents the so-called design or formative experiment as paradigmatic. Psychological functions are explored through the process of their formation. Their "true" nature emerges in this constructive sociocultural process. Instead of trying to factor out all the numerous forces influencing "natural" development, Vygotsky suggested actively forming this development through education and exploring it, being at the same time fully aware of its "artificial" (i.e., culturally constructed) character. One of the primary agents of this formative process is a symbolic tool appropriated by students. In the empirical part of his paper Giest investigated the extent to which symbolic tools provided by the multimedia may be used for the development of conceptual reasoning in adult learners.

In their paper Alex Kozulin and Erica Garb developed two themes central to Vygotskian theory. One of them is the sociocultural character of the learning process especially in the acquisition of different types of literacy. For a long time literacy was interpreted as a reading skill (in the mother tongue) acquired by 6-7 year old children in a formal educational setting. The pioneering work of Scribner and Cole (1981) as well as the work of other Vygotskians helped to radically change this image. It became clear that there are different types of literacy acquired in different contexts and used for different purposes. Growing awareness of the multicultural and multilingual nature of the contemporary classroom brought to the fore the question of second and third language literacy, as well as the difference between academic and everyday life literacy. All these issues are discussed by Kozulin and Garb using the case of acquisition of academic literacy in English as a third language by Ethiopian immigrants in Israel.

The second theme discussed in the same paper is the applicability of the Vygotskian notion of ZPD (Zone of Proximal Development) to the dynamic assessment of reading comprehension. The notion of ZPD appears in Vygotsky's (1934/1986; 1998) theory in at

least three different contexts. The first is the question of how to identify the emergent psychological functions of the child. The second offers ZPD as an alternative to a standard psychometric testing. In the third ZPD appears as a "space" of the interaction between everyday and scientific concepts. There is no unequivocal agreement between Vygotskians regarding the kind of cognitive processes that can benefit from conceptualization through ZPD. Some suggest that ZPD should be invoked only when a major change is taking place in the students' cognition signifying a transition from one psychological age period to another. Other researchers tend to use ZPD in any situation in which collaborative or assisted learning produces a dynamic process of cognitive change (see Chaiklin, 2003). On a more practical plane ZPD is often used as a theoretical base for the development of a variety of learning potential assessment techniques (Lidz & Gindis, 2003). Kozulin and Garb developed such a technique for assessing learning potential for reading comprehension and demonstrated that one can indeed distinguish between the students' current reading performance level and their comprehension potential that can be revealed only under condition of mediated learning.

One of the better known students and collaborators of Vygotsky was Alexander Luria whose contributions ranged from neuro-psychology and neuro-linguistics to cross-cultural psychology and special education (see Luria, 1979). Luria's work also served as an important "bridge" between sociocultural theory and cognitive approaches based on the information-processing model. The paper of Timothy Papadopoulos et al demonstrates how Luria's concept of simultaneous and successive processing (further developed by J.P. Das) can be used for the development of a remedial program for younger children at risk of developing reading difficulties. At the heart of the approach presented by Papadopoulos and his team is the development in younger children of those "distal" cognitive processes – planning, simultaneous and successive processing – that being actively internalized become a basis for more specific "proximal" phonological processes impacting on children's emergent reading skills. The proposed approach offers a viable alternative to currently popular methods of directly teaching phonological skills.

One of the central notions of Vygotskian theory, the concept of *mediation* finds its further development in the paper of Kaufman and Burden. When discussing the learning interactions Vygotskians predominantly focused on interactions between teachers and students, or between school-age peers. Kaufman and Burden' study broadens the scope of sociocultural study on peer learning in two directions, by examining the interactions between young adults, rather than children, and by selecting a group of individuals with serious learning disabilities. By selecting such a group the authors attempted to answer the question to what extent a person with special needs can appropriate the role of tutor/mediator and what consequences such as activity will have for his or her own cognitive functioning and self-concept. The authors' approach also established a practical link between Vygotsky's sociocultural theory and the Feuerstein's (1990) concept of mediated learning experience. Feuerstein's theory that was apparently developed without direct influence of Vygotskian ideas, focuses on the role of human mediator in creating the cognitive prerequisites of learning in children and adolescents. Feuerstein developed an elaborate taxonomy of mediated interactions and those deficient cognitive functions that can be "repaired" through mediated learning. The authors adopted and elaborated this taxonomy for the analysis of peer learning activity and its outcomes.

We hope that taken together the studies presented in this special issue provide a representative picture of the current classroom applications of Vygotskian theory and demonstrate how the Vygotskian theoretical position can be translated into educational practice in different cultural contexts.

References

Chaiklin, S. (2003). The Zone of Proximal Development in Vygotsky's analysis of learning and instruction. In A. Kozulin, B. Gindis, V. Ageyev, & S. Miller (Eds.), *Vygotsky's educational theory in cultural context* (pp. 39-64). Cambridge: Cambridge University Press.

Cobb, P. (1996). Where is the mind? A coordination of sociocultural and cognitive constructivist perspectives. In C.T. Fosnot (Ed.), *Constructivism: Theory, perspectives, and practice* (pp.34-52). New York: Teachers College Press.

Feuerstein, R. (1990). The theory of structural cognitive modifiability. In B. Presseisen (Ed.), *Learning and Thinking Styles: Classroom Interaction*. Washington, DC: National Education Association.

Glasersfeld, von. E. (1995). *Radical constructivism: A way of knowing and learning*. London: Falmer.

Karpov, Y. (2003). Vygotsky's doctrine of scientific concepts. In A. Kozulin, B. Gindis, V. Ageyev, & S. Miller (Eds.), *Vygotsky's educational theory in cultural context* (pp. 65-82). Cambridge: Cambridge University Press.

Kozulin, A. (1990). *Vygotsky's psychology: A biography of ideas*. Cambridge, MA: Harvard University Press.

Kozulin, A., Gindis, B., Ageyev, V., & Miller, S. (Eds.). (2003). *Vygotsky's educational theory in cultural context*. Cambridge: Cambridge University Press.

Lave, J. (1988). *Cognition in practice*. New York: Cambridge University Press.

Lidz, C., & Gindis, B. (2003). Dynamic assessment of the evolving cognitive functions in children. In A. Kozulin, B. Gindis, V. Ageyev, & S. Miller (Eds.), *Vygotsky's educational theory in cultural context* (pp. 99-116). Cambridge: Cambridge University Press.

Lompscher, J. (1984). Problems and results of experimental research on the formation of theoretical thinking through instruction. In M. Hedegaard, P. Hakkarainen, & Y. Engstrom (Eds.), *Learning and teaching on a scientific basis* (pp. 293-357). Aarhus: Aarhus University Press.

Luria, A. (1979). *The making of mind*. Cambridge, MA: Harvard University Press.

Rogoff, B. (1990). *Apprenticeship in learning*. New York: Oxford University Press.

Scribner, S., & Cole, M. (1981). *The psychology of literacy*. Cambridge, MA: Harvard University Press.

Vygotsky, L. (1986). *Thought and language*. (Rev. ed.). Cambridge, MA: MIT Press. (Original published in 1934)

Vygotsky, L. (1998). *The collected works of L. Vygotsky. Vol. 5. Child psychology*.New York: Plenum Press.