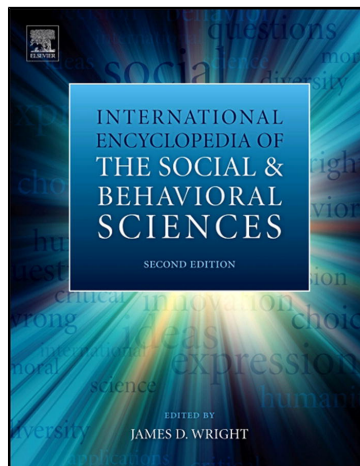


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## Vygotsky's Theory of Human Development and New Approaches to Education

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### Abstract

This article will focus on describing the main tenets of Vygotsky's theory of human development, current critique of these tenets, and new approaches to education stemming from Vygotsky's work and its critique. Vygotsky's legacy is in his emphasis on social, historical, and cultural aspects of development and learning, semiotic mediation, activity, and social interaction. According to Vygotsky, education can lead children's development and learning is shaped by cultural tools and activities in which it is embedded. This article is organized around three major interconnected issues: what develops, what are the processes of development, and what are the directions of development.

Vygotsky's legacy is in his emphasis on social, historical, and cultural aspects of development and learning, semiotic mediation, activity, and social interaction. After about 50 'dark years' of silence, from the early 1930s (immediately after his death) to the end of 1970s, caused in part by the repressive political circumstances in the Soviet Union, social sciences have been experiencing Vygotsky's renaissance. Since the 1970s, Vygotsky has become a 'root theoretician' for a family of approaches in social sciences including sociolinguistics (Heath, 1983), anthropology (Lave and Wenger, 1991), psychology (Cole, 1996; Rogoff, 1990), education (Cazden and Cordeiro, 1992), and literacy studies (Gee, 1996), among others. In fact, it is probably not an overgeneralization to say that currently, developmental psychology and education have been highly influenced by Vygotsky's work. This article will describe the main tenets of Vygotsky's theory of human development, current critique of these tenets, and new approaches to education stemming from a dialogue with Vygotsky's work. This article is organized around three major interrelated issues: what develops, what are the processes of development, and what are the directions of development.

### What Develops?

Vygotsky argued that human development is based on intertwining of two lines: (1) natural based on processes of biological maturation and (2) cultural based on mastery and use of cultural means. Psychologically, these two lines are represented by lower and higher mental functions, respectively, such as memory, attention, and intelligence. For example, mechanical memorization of unrelated bits of information mainly involves lower functions of memory. Meanwhile, memorization that is based on mental structuring of information in some hierarchical classes (e.g., axe, saw, and hammer are tools) or a story connecting items to remember involves higher mental functions of memory. For instance, when a child is asked to remember the word 'theater' and a picture of a crab, the child creates a story: "The crab is looking at the stones on the bottom, it is beautiful, it is a theater" (Vygotsky, 1997: p. 181). Vygotsky insisted that higher mental functions are formed by a reorganization of lower mental functions mediated by a cultural sign (e.g., mnemonics). Higher mental functions

allow a person to control his or her behavior, "in the elementary form [of memory - EM], something is remembered; in the higher form, humans remember something ... the basic characteristic of human behavior in general is that humans personally influence their relations with the environment and through that environment personally change their behavior, subjugating it to their control" (Vygotsky, 1978: p. 51). Thus, according to Vygotsky, what develops is higher mental functions via a mastery of cultural signs (i.e., *semiotic mediation*), leading to a person's development of *self-regulation* and self-control.

Probably the most elaborate application of Vygotsky's stress on cultural mediation as the object of development has been in the 'sign' pedagogy developed by the Russian educational psychologist Davydov (Davydov and Kilpatrick, 1990). Davydov and his colleagues rewrote an entire elementary school curricula (e.g., math, sciences, and language art) representing it as a series of dialectical contradictions of mental actions mediated by cultural signs. They also changed the curriculum sequence putting the abstract concepts - higher level cultural mediators - ahead of concrete application of them (e.g., putting study of fraction and algebra ahead of integer arithmetic). For example, according to Davydov and Kilpatrick (1990), the fraction represents the contradiction between the permanence of the object's length ( $N$ ) and the variability of its measurement ( $A$ ), depending on the unit ( $c$ ) mediating the measurement. Mathematical formula  $A/c = N$  is a model of the fraction that allows first-grade students to make comparisons involving any measurement unit.

Yet, a growing literature has implicitly or explicitly criticized Vygotsky for making mental functions the object of development (Rogoff, 1990). This work has argued that culturally mediated functions are not self-contained, but instead embedded in sociocultural activities. Lave (1988) introducing the notion of *situated cognition* demonstrates, for example, that people's computation in school-like math tasks and grocery shopping is not psychologically equal even when the problems are mathematically isomorphic. The problem solving is mediated and structured differently in these two conditions because the problems are embedded in different sociocultural activities with different goals and different social relations. In response to these and other related findings, alternative objects of development have been proposed.

Rogoff (1990) proposes a *sociocultural approach* in which a person's participation in sociocultural activities and communities is the object of development. Development is seen as *transformation of participation* in a sociocultural activity – transformation that is socially valuable. For example, when a child whose parents had previously read books to her starts asking her parents to read a book, this change indicates a transformation of the child's participation in the reading practice. Some have argued that mediation by cultural tools and scripts pointed by Vygotsky is only a part of the developmental story and should be considered together with aspects such as social relations, division of labor, community rules and norms, and relations with other practices and communities (Engeström et al., 1999). These features of social life were often ignored in cultural research and research on child development conducted by Vygotsky and his colleagues (Vygotsky, 1978; Vygotsky and Luria, 1993).

### How It Develops?

According to Vygotsky's general genetic law of cultural development, any function in the child's cultural development appears on three planes: natural, social, and psychological. Vygotsky emphasized a dynamic and emergent character of development: each plane emerges on the periphery ('in an embryonic state') of the previous plane (Vygotsky, 1997). First, a function appears on the natural plane, when a child finds him or herself in an environment and can observe the function as used by other people without the child's understanding or active participation in it. For example, in human society, people use gestures in their communication with each other and they often are inclined to (mis)interpret some of child's actions as gestures. When a very young child tries unsuccessfully to grasp a remote object, his or her caregiver may (mis)interpret it as a command gesture to bring the object to the child.

The second plane of development is social – the child is an active participant in the function socially distributed among people, although this participation may not be necessarily conventional or fully grasped by the child on his or her own and requires the involvement of other people for the participation's success. Continuing Vygotsky's example of the development of the index gesture, at some point, the young child notices that she can control adults by stretching her arm toward a desired object – the adults often bring the remote object to the child. Thus, on the social plane, the child actively participates in the social function of controlling other people rather than finding herself in the function fully organized by other people as it was on the natural plane.

Finally, on the third plane, the function transforms from external social into internal psychological. The child's command of others transforms into the index gesture controlling the child's own attention. Now the child's stretched arm controls not others but the child herself; her own attention is mediated by the index gesture. The developmental cycle is completed: the cultural higher mental function of the index gesture that initially exists only outside the child on the natural plane becomes the child's own on the psychological plane for the child's self-regulation (Vygotsky, 1997). According to

Vygotsky, development involves nonlinear and systemic processes of changing relationships and organizations of mental functions.

Recently, Vygotsky's so-called general genetic law of development has been challenged on both empirical and theoretical grounds. Thus, Vygotsky's explanation of development of index gesture faces critique (e.g., Kaye, 1982) coming from recent findings that index finger extensions can be observed in infants as young as 2 months old (Fogel and Hannan, 1985; Trevarthen, 1977) and seems to be developing in relative independence from grasping movements (Fogel and Thelen, 1987). It seems to be utilized by the infant first for touching objects at about 6 months and then for an extension of the orienting response at about 11 months (Lempert and Kinsbourne, 1985). During the period between 8 and 12 months, pointing seems to shift from an exploratory to an indicating function (Fogel and Thelen, 1987). It seems that Vygotsky's model of the development of the index gesture might be still relevant for an illustration of how a misunderstanding between child and adult guides child's development (Lock, 1980). Also, Matusov (1998) has challenged Vygotsky's insistence on the mastery of solo activity and autonomous self-regulation as the acme of the human psychological development, suggesting an ethnocentric bias on the part of Vygotsky.

The issue of the relationship between development and education led Vygotsky to introduce the notion of 'the zone of proximal development' (ZPD) as the gap between actual and potential development (Vygotsky, 1978). Vygotsky offered two major interpretations of ZPD. The first interpretation is the ZPD as a gap between the psychological (i.e., completed) plane, what the child can do by him or herself, and the social (i.e., potential) plane, what the child can do with the help of more capable others (adults or peers), of development.

This use of ZPD defines 'teachability' of the child in a specific activity or in problem solving. If an activity or problem can be accomplished by the child with the help of more capable others, this activity or skill is considered possible to teach the child. If, however, the activity or skill cannot be accomplished by the child with the help of more capable others, it is considered not useful to teach to the child. Vygotsky coined the term *formative experiment* to provide methodology for the investigation of ZPD. According to this methodology, a particular higher level psychological function is formed through some kind of instruction with a more knowledgeable other or manipulation of the context and tools used by a child. The successful formation of the psychological function verifies the existence of ZPD and provides insight into the genesis of the function (Griffin et al., 1993).

Unlike Piaget, who believed that instruction should follow development based on biological maturation and a child's active experimentation with the environment, Vygotsky argued that guidance can, should, and does lead the development. Both Piaget and Vygotsky would differently define what is currently called 'developmentally appropriate curriculum.' Piaget insisted that learning is essentially an individual endeavor and that adults can only facilitate it by providing an enriched stimulating learning environment and opportunities for the children to share and discuss their egocentric thinking with each other to promote disequilibrium in the child's

thinking. Adults should not interfere in the child's individual thinking because it can only lead to imposition of the adult's ideas onto the child – what Piaget called 'sociocentrism' (Piaget and Smith, 1995). In contrast, Vygotsky encouraged adults to provide guidance and help and to engage students in activities that are beyond their individual levels of competence ('performance before competence,' Cazden and Cordeiro, 1992).

Currently, there are attempts in education to develop 'scientific instruction' using a medical model of 'educational interventions' (Hargreaves, 1996, 1997). The essence of these efforts is to develop educational diagnostics of students' skill deficits and prescribe an appropriate dose of standardized guidance providing no less and no more help to the student than is required (Newman et al., 1989). For that purpose, some researchers have tried to develop a 'ZPD test' (Dixon-Krauss, 1996; Moran, 1997) – a standardized assessment of a student's teachability. However, it is doubtful that a reliable ZPD test would be possible to develop because, as Newman et al. (1989) demonstrate, the notion of ZPD is relational. Student's teachability depends not only on the student but also on the teacher (and broader communities in which the child participates). Thus, no test of the child alone would accurately determine the child's teachability – the teacher always counts as well as broader and local contexts and activism of the child.

According to this neo-Vygotskian view, the ZPD is applied not only to the student but also to the teacher. Both the teacher and the student try to manage the uncertainty that their joint activity creates. During teacher–student instructional interaction, the student learns how to do the classroom activity, while the teacher learns how to guide the student. Each engages in their own ZPD that mutually constitute each other – the student's learning is shaped by the teacher's guidance, while the teacher's guidance is shaped by the student's ongoing learning.

The second interpretation of the ZPD offered by Vygotsky is about the activity in which the child is involved. Vygotsky argued that at different ages, different activities become leading forces in a child's development. For young children, play is the *leading activity*, "play creates a zone of proximal development of the child. In play a child always behaves beyond his average age, above his daily behavior ... As in the magnifying glass, play contains all developmental tendencies in a condensed form and is itself a major source of development ... Action in the imaginative sphere, in an imaginary situation, the creation of voluntary intentions, and the formation of real-life plans and volitional motives – all appear in play and make it the highest level of preschool development" (Vygotsky, 1978: p. 102). He introduced the notion of 'leading activity' as an activity that determines the child's development. El'konin and Leont'ev elaborated this notion by creating a scale of leading activities from infancy to adulthood as the base of age periodization in a given society (Griffin and Cole, 1984). The concept of age periodization has become criticized as ethnocentric by several authors (Lave and Wenger, 1991; Matusov et al., 2007a; Rogoff, 1990).

Bruner and his colleagues developed the didactic notion of 'scaffolding' in their attempts to operationalize Vygotsky's ZPD

in their study of dyadic interactions involving adults tutoring children (Wood et al., 1976). Scaffolding involves a series of adult strategies that assume responsibility for children's learning, such as focusing the child on the task, simplifying the task to fit the child's current mastery, maintaining the child's motivation for working on the task, managing the child's level of frustration and risk involved in the problem solving, and demonstrating an idealized version of the required act (Rogoff, 1990). Like Vygotsky's ZPD, the scaffolding metaphor is aimed to explain the child's gaining of skills in social interaction that the child may apply later on when working alone. It focuses on how the adult fine-tunes the extent of help he or she provides the child for each successful activity outcome while viewing the child as inept, "One sets the game, provides a scaffold to assure that the child's ineptitudes can be rescued or rectified by appropriate interaction, and then removes the scaffold part by part as the reciprocal structure can stand on its own" (Bruner, 1983: p. 60).

In a critique of the concept of scaffolding, Griffin and Cole (1984) emphasize the role of the child in his or her own development, "The metaphor [of scaffolding] becomes more problematic when we focus not on the execution of a specific task but on the changes in the child" (p. 47). This concept makes it difficult to address the issue of the child's creativity, "If adult support is the universal source of a child's development, then there is a strong sense of theology – children's development is circumscribed by adults' achieved wisdom" (p. 47). If Vygotsky's concept of ZPD seems to be too focused on the child, then the concept of scaffolding seems to be too focused on the role of the adult in guidance. As a consequence, both concepts are limited by dyadic interaction between more and less knowledgeable partners. Besides, cross-cultural research on guidance suggests that scaffolding is not a universal guidance strategy (Rogoff et al., 1993).

Unlike scaffolding, the concept of *guided participation* developed by Rogoff (1990) can be applied in diverse cultural activities because it focuses on the transformation of participation guided not only by more knowledgeable partners but also by sociocultural tools, culturally defined goals and problems, and social arrangements of joint activity: "Interaction with other people assists children in their development by guiding their participation in relevant activities, helping them adapt their understanding to new situations, structuring their problem-solving attempts, and assisting them in assuming responsibility for managing problem solving. This guidance of development includes tacit and intuitive forms of communication and distal arrangements of children's learning environments; it is often not designed for the instruction of children and may not involve contact or conversation. The model is one of routine arrangements and engagements that guide children's increasingly skilled and appropriate participation in the daily activities valued in their culture" (Rogoff, 1990: p. 191).

Lave (1992, April) insists that learning is inherent to activity and an aspect of any activity. Learning occurs even despite expectations and wills of experienced members of community – it is not a matter of whether students learn in school but a matter of what they learn. The students

might actually learn what they were not expected to learn and might not learn what was expected for them to learn. Learning is not an independent activity among other activities but, like development, it is an aspect of any activity in the world.

Lave and Wenger (1991) argue that learning is situated in *communities of practice*. Learning is always a question about membership in the community, about participation in the community practice. A novice is not simply a person who lacks some entities called 'skills' but rather a newcomer who needs to negotiate her or his participation in the community practice (Wenger, 1998). A person engages in ongoing negotiation of membership/participation in different communities of practice. Learning, as a process of negotiation and renegotiation of participation in the community of practice, is often not prime-time community business; rather it is always going on in the periphery of community activity. Because the community is aware of newcomers, the peripheral processes of negotiation and renegotiation of participation have a legitimate character. Newcomers are anticipated and usually (but not always!) organized by the community. An analysis of situated learning allows Lave and Wenger to construct a new productive concept of 'legitimate peripheral participation' that becomes the main definition of learning and development.

Learning as a communal process is both a descriptive and guiding approach (Matusov et al., 2007b). A view of learning as communal processes embedded in communal practices has inspired many educational practitioners and researchers to explore and define new conceptual and empirical forms of guidance that can be used in schools such as *instructional conversations* (Tharp and Gallimore, 1988), *reciprocal teaching* (Brown and Palincsar, 1987), *cognitive apprenticeship* (Rogoff, 1990), *community of learners* (Brown and Campione, 1994; Matusov et al., 2012; Rogoff et al., 1996), *practice- and problem-based learning* (Gijsselaers, 1996), *building a professional community* (Matusov et al., 2005), *dialogic inquiry* (Wells, 1999), *dialogic pedagogy* (Matusov, 2009; Sidorkin, 1999; Wegerif, 2007), and *authorial teaching and learning* (Matusov, 2011a). This family of instructional approaches and models shares at least the following important principles: learning is a communal process, learning is embedded in activities and practices in which it occurs, learning involves development and negotiation of new communal identities, students' guided initiation of discourse and definition of problems and goals are crucial for becoming an active member of a community of practice, ownership for guidance and learning should be shared among students and between the students and the teacher, and a community is based on practice and communication. Nonschool sociocultural research on learning shares many of the same principles (Cole, 1996; Heath, 1994; Wenger, 1998).

Finally, influenced by another Soviet scholar Mikhail M. Bakhtin (1896–1975), a philosopher and literary theoretician of the dialogic framework, there have been increasing doubts that the purpose of development and education is in the elimination of gaps between less and more capable people, as Vygotsky seemed to imply in his notion of ZPD. Bakhtin argued that elimination of gaps between consciousnesses is both impossible and undesirable (Bakhtin, 1986, 1999).

Matusov (2011b) has come to a conclusion that the important and irreconcilable difference between Vygotsky and Bakhtin comes from their different assumptions about the nature of human consciousness. Vygotsky treated consciousnesses as potentially transparent to each other, while Bakhtin treated consciousnesses as essentially opaque to each other.

### Toward What Does the Development Go?

According to Vygotsky, development leads toward a buildup of higher mental functions with mediated cognition increasingly playing the central role among all other psychological functions that promote self-regulation in the individual. Vygotsky's primary focus in his *cultural-historical theory* of development was on how human society reproduces itself. Vygotsky often saw non-Western cultures as 'historical slices' of the past development of Western civilization (Luria, 1976; Vygotsky and Luria, 1993). When the developmental directionality was considered, Vygotsky was, at least, inconsistent with his own tenet that stressed the contextual and activity specificity of intellectual functioning (Cole, 1988; Scribner, 1977). Prioritizing self-regulation, mastery of independent working, literacy, schooling, scientific concepts, universal rationality, decontextualization, universality in societal development, and systematic hierarchical thinking as the pinnacle of individual's development reveals Vygotsky's ethnocentrism (Matusov, 1998, 2011b; Matusov and Hayes, 2000; Rogoff, 1990; van der Veer and Valsiner, 1991; Wertsch, 1985).

A diversity of goals of different cultural communities necessitates defining development in terms of progress toward more responsible participation in specific communities of practice rather than assuming that development is a generic and universal process independent of the goals and institutions of the communities in which an individual develops. As Tharp and Gallimore (1988) argue, "Boys in Micronesia, where sailing a canoe is a fundamental skill, will have a ZPD for the skills of navigation, created in interaction with the sailing masters. A girl in the Navajo weaving community will have experiences in a zone not quite like any ever encountered by the daughters of Philadelphia" (p. 31). At the same time, the developing individual contributes to the further development of the practices (and goals and institutions) of the community.

Griffin and Cole (1984) argue that the ZPD is not only about a gap between the child's present and the adult's past but also between the child's present and the society's future. They criticized the conservative and reproductive nature of learning and development assumed in both Vygotsky's notion of ZPD and Bruner's notion of scaffolding. These authors argue that development and education is "a dialogue between the child and his [unknown – EM] future; [it should not be – EM] [...] a dialogue between the child and an adult's [known – EM] past" (Griffin and Cole, 1984: p. 62). There is an increasing tendency in the social sciences to consider the developmental telos as a social construction (Gergen, 1994) and dialogic negotiation (Matusov et al., 2007a) of cultural, institutional, communal, and personal values that have both stable and dynamic components that can conflict with each other

(Lemke, 1995). The historical time when positive values of literacy, school, science, rationality, intelligence, and the Western civilization were unquestionable in the social sciences is gone. Stemming from Vygotsky's cultural-historical theory, new approaches to development and learning are emerging. There has been a growing call for viewing development and education as production and active making of culture, rather than reproduction, focusing on human authorial agency transcending of the given (Bibler, 2009; Lobok, 2012; Matusov, 2011a).

**See also:** Bruner's Theory of Cognitive Development; Neo-Vygotskian Developmental Theory; Piaget's Theory of Cognitive Development; Scientific Concepts: Development in Children; Vygotsky's Sociocultural Theory; Vygotsky's Theory of Cognitive Development; Vygotsky, Lev Semenovic (1896–1934).

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