Chapter 10. The Zone Of Proximal Development And Its Implications For Learning And Teaching

http://www.oise.utoronto.ca/~gwells/resources/ZPD.html

There can be little doubt that, in the English-speaking world at least, it is the "zone of proximal development" that has been Vygotsky's most important legacy to education. Indeed, it is the only aspect of Vygotsky's genetic theory of human development that most teachers have ever heard of and, as a result, it is not infrequently cited to justify forms of teaching that seem quite incompatible with the theory as a whole. This centenary conference therefore seems an appropriate occasion to review Vygotsky's exposition of the zpd and to consider the ways in which this seminal concept has been modified and extended in subsequent work.

Although the zpd is often said to be a central concept within his theory, its explicit formulation appeared quite late in Vygotsky's writings and then in two rather different contexts. One version, translated into English as "Interaction between Learning and Development" (chapter 6 of Mind in Society, 1978), occurred in a posthumously published collection of essays entitled Mental Development of Children and the Processes of Learning (Vygotsky, 1935). Here, the immediate context in which the concept of the zpd is presented is that of the assessment of children's intellectual abilities and, more specifically, as a more dynamic conception of intellectual potential than that represented by an IQ score. Vygotsky defines the zone of proximal development as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (1978, p.86). In other words, operationally, it is the zone defined by the difference between a child's test performances under two conditions: with or without assistance.

The second version occurs in Vygotsky's last major work, Thinking and Speech (1934/1987), and is embedded in chapter 6, in which he discusses "The Development of Scientific Concepts in Childhood". Here, the emphasis falls more heavily on instruction and, in particular, on its role in relation to the development of those higher mental functions that are characterized by conscious awareness and volition. In this context, the significance of the zpd is that it determines the lower and upper bounds of the zone within which instruction should be pitched. "Instruction is only useful when it moves ahead of development" (p.212), "leading the child to carry out activities that force him to rise above himself" (p.213). How instruction is conceived to operate in practice is briefly sketched in a description of the hypothesized processes leading to the child's solving of a test problem involving a causal relationship in the social sciences. Vygotsky writes: "The teacher, working with the school child on a given question, explains, informs, inquires, corrects, and forces the child himself to explain. All this work on concepts, the entire
process of their formation, is worked out by the child in collaboration with the adult in instruction. Now, [i.e. in the test situation] when the child solves a problem ... [he] must make independent use of the results of that earlier collaboration" (pp.215-216).

Written at about the same time, these two expositions have several common features, including the emphasis on learning leading development, and on the role of adult assistance and guidance in enabling the child to do in collaboration with more expert others what he or she is not yet able to do alone. These are memorably summed up in the contrast Vygotsky makes between development in animals and humans: "animals are incapable of learning in the human sense of the term; human learning presupposes a specific social nature and a process by which children grow into the intellectual life of those around them" (1978, p.88). In this sentence, one can see how the zpd was probably destined to play a pivotal role in the larger theory that Vygotsky was constructing. Unfortunately, however, he did not live to work out the implications of what is here only sketched. Instead, what we have in the work that was completed is, on the one hand, some provocative and generative metaphors and, on the other, two rather specific applications of the concept of the zpd that may appear to be rather out of keeping with contemporary Vygotskian-inspired educational practice.

On the basis of these two texts alone, therefore, there remain a number of questions about how the concept should be understood. For example, did Vygotsky consider that, at any particular point in a child's development, the zpd was a fixed and quantifiable attribute of that particular child? And did it apply only to intellectual development? Was the assistance that could be given by others restricted to deliberate instruction of the kind described above? And did it necessarily have to be given in face-to-face verbal interaction? And, perhaps most important, should the account he offered of learning-and-teaching in the zpd be taken as universal and normative or as merely descriptive of the practices of a particular stratum of the society in which he lived?

It is a central tenet of cultural historical theory, however, that tools - including cognitive artifacts - are created at a particular moment in the historical trajectory of a culture, in response to the demands of the activity in which they are used, and that they continue to be modified, in use, by those who continue the activity. The concept of the zone of proximal development is just such a cognitive artifact/tool. As Wertsch (1985) suggests, it was formulated by Vygotsky to tackle two specific problems, as these were construed at a particular moment in his ongoing construction of a more general theory of development; moreover, as well as being incomplete, his exposition of the concept bears the stamp of the more general intellectual and practical concerns of his generation in post-revolutionary Russia. However, since its first formulation, the zpd has continued to serve a valuable role as a tool for thinking about human development by theorists and researchers in other cultural and historical contexts. Not surprisingly, therefore, it has itself undergone considerable modification in the process. In the remainder of this paper, I shall offer a brief overview of what I see to be the main trends in this development.
Some of the earliest attempts to apply Vygotsky's concept occurred in the context of testing. Picking up his concern with appropriate assessment, attempts were made to use the concept of the zpd in the administration of tests under two conditions: without and with assistance. Typically, the aim of such assessment was, and continues to be, the categorization of individual students with a view to their appropriate placement in educational programs, often of a remedial kind (Campione and Brown, 1987; Feuerstein, 1979). In these applications, the tests used have typically been 'standardized' in form and administered on a single occasion in a setting removed from ongoing classroom or home activities. However, it could be argued that, although compatible with Vygotsky's (1978) discussion of the value of the concept of the zpd for diagnostic assessment, the practice of administering such decontextualized tests is at variance with the requirement that assessment be related to the cultural activities in which the tested subject habitually engages. Certainly, this seems to be the implication of Cole's (1985) criticism of cross-cultural research that fails to embed testing in activity contexts familiar to those who are tested.

Since the purpose of assessment of the zpd is to enable the provision of appropriate instruction, such assessment, it might be argued, is more appropriately carried out in the context of particular students' engagement in an educational activity (Allal and Ducrey, 1996). Here, the aim is the diagnosis of the student's ability to cope with the specific task and of the nature of the difficulties that he or she is experiencing so that, when the teacher intervenes, the intervention is tailored to the student's actual needs rather than to the assumed needs of students in general at that age or grade level. This mode of diagnostic assessment has been employed at two levels, corresponding to the distinction that is frequently made between summative and formative assessment. At the summative level, a student's performance on an end-of-unit test or assignment can be made the basis on which the teacher then works with the student individually or in a small, relatively homogeneous group. The practices of "reciprocal teaching", developed by Palincsar and Brown (1984) would seem to fit into this category. The assistance given under these conditions can be seen as 'remedial', designed to enable the student to master some specific skill or those parts of the unit with which he or she had not been successful under normal instruction. While such practices are certainly compatible with Vygotsky's theory, they might in many cases equally be characterized as a regular feature of good traditional pedagogy.

A more dynamic conception of diagnostic assessment can be found in a number of pedagogical approaches that explicitly make appeal to the concept of the zpd. Here, the assessment is both formative and informal, and occurs as the teacher, either as a co-participant or as a bystander, observes how students are tackling particular tasks and, on this basis, attempts to intervene in a manner that is both responsive to the students' needs and intended to assist them to achieve mastery of the task (Schneuwly and Bain, 1993). Although geared to the responses of a group, rather than of an individual student, this dynamic use of assessment to guide teaching is also the basis of what Tharp and Gallimore (1988) refer to as "instructional conversation". It is this latter, situated, use of assessment that Allal and Ducrey (1996) consider best fulfills Vygotsky's concern to use assessment to guide instruction.
Instruction

All the above assessment practices are undertaken with a view to providing appropriate instruction. However, the judgments that they lead to are of quite different orders of specificity with respect to the nature of the instruction that is deemed appropriate. In introducing the notion of the zpd in relation to the assessment of children with "delayed development", Vygotsky (1978) was essentially arguing for appropriate placement based on the child's learning potential. His chief concern was that the placement should ensure that the child had the opportunity for "good learning", i.e. learning that is in advance of his or her development. What form of instruction might best provide such opportunities was not addressed on that occasion.

In the chapter in Thinking and Speech in which Vygotsky focuses more directly on instruction, the emphasis is on enabling the mastery of scientific concepts, which are seen as psychological tools that mediate higher mental functioning. The zpd is used in this context to identify the window for instruction: "instruction is maximally productive when it occurs at a certain point in the zone of proximal development" (1987, p.212). However, although he emphasizes the "decisive influence" that instruction has on the course of development (p.213), Vygotsky does not treat the nature of instruction itself as problematic, seemingly accepting the current practices with which he was familiar as adequate, provided they were appropriately in advance of development.

The one place in which Vygotsky gives a clearer indication of the form that "good instruction" might take is in his discussion of the Montessori approach to the early stages of literacy learning. The passage is worth quoting at some length.

... teaching should be organized in such a way that reading and writing are necessary for something. If they are used only to write official greetings to the staff or whatever the teacher thinks up (and clearly suggests to them), then the exercise will be purely mechanical and may soon bore the child; his activity will not be manifest in his writing and his budding personality will not grow. Reading and writing must be something the child needs ... writing must be "relevant to life" - in the same way that we require a "relevant" arithmetic. A second conclusion, then, is that writing should be meaningful for children, that an intrinsic need should be aroused in them, and that writing should be incorporated into a task that is necessary and relevant for life. (1978, pp.117-8)

Vygotsky is here writing about children of preschool age and, as he says elsewhere, "instruction takes on forms that are specific to each age level" (1987, p.213). We cannot be certain, therefore, whether he considered that the meaningfulness of educational activities to the learner and their relevance to life were essential characteristics of instruction at all ages and stages of development. However, recent commentators have for the most part assumed that this is what is implied by his theory as a whole.

As a result of Vygotsky's lack of specificity about the nature of instruction - at least in the context of his discussion of the zpd - there is considerable diversity in the instructional...
approaches that have been developed on the basis of his ideas. One crucial difference is in the role that students are given in shaping the goals of learning activities. On the one hand, there are approaches in which the zpd is appealed to only in determining the level at which instruction is pitched. Here, it is assumed that it is possible to establish the zpd of the class as a whole and to modify instructional input and task demands accordingly (Hedegaard, 1990). A further refinement might involve the formation of groups within the class, with tasks of different levels of difficulty being assigned according to the group's zpd. In neither case, however, would the students' interests and goals typically play a significant role in determining the teacher's pre-established instructional plans.

An alternative view places much greater emphasis on the importance of educational activities being meaningful and relevant to students at the time that they engage in them (Wells, 1995). Adopting this approach involves the teacher in negotiating the curriculum and in accepting that the most valuable learning opportunities are often those that emerge when students are encouraged to share the initiative in deciding which aspects of a class topic they wish to focus on and how they intend to do so. In such a context, the concept of the zpd is interpreted very differently. Not only is it assumed that the zpd applies to individuals rather than to collectives, such as a group or class, but, more importantly, it is treated as an attribute, not of the student alone, but of the student in relation to the specifics of a particular activity setting. In other words, the zone of proximal development is created in the interaction between the student and the co-participants in an activity, including the available tools and the selected practices, and depends on the nature and quality of that interaction as much as on the upper limit of the learner's capability. A corollary of this view is that, while it may be possible to determine, in general terms, what activity settings and modes of interaction are likely to be conducive to effective learning and, on that basis, to propose the goals for class or group activities, the teacher always has to be responsive to the students' goals, as these emerge in the course of activity, and by collaborating with them in the achievement of their individual goals, to enable them to extend their mastery and at the same time their potential for further development. From a teacher’s perspective, therefore, one is always aiming at a moving target.

Semiotic Mediation

Learning and teaching in the zpd is clearly dependent on social interaction and, in educational settings, this most typically involves face-to-face interaction mediated by speech. The development of the higher mental functions, as envisaged by Vygotsky, is largely achieved through the construction on the intramental plane of the discourse practices that are first encountered on the intermental plane of activity-related social interaction. As Leont'ev puts it, summarizing Vygotsky's fundamental insight:

higher psychological processes unique to humans can be acquired only through interaction with others, that is, through interpsychological processes that only later will begin to be carried out independently by the individual. When this happens, some of these processes lose their initial, external form and are converted into intrapsychological processes." (1981, p.56)
Indeed, the final chapter of Thinking and Speech is essentially an expansion of this last sentence as, tracing the differentiation of the child's initial "social speech" into speech for others and "egocentric" speech for self which, in turn, becomes converted into the intrapsychological activity of "inner speech", Vygotsky charts the development of the medium in which individual thinking is realized. As he puts it, "thought is born through words" (1987, p. 282).

There is no doubt that, in Vygotsky's view, speech played a critical role in the child's learning in the zpd and, hence, in the associated processes of instruction and collaborative assistance. However, as is increasingly being recognized, to focus exclusively on face-to-face interaction mediated by speech is seriously to limit our understanding of the range of modes of semiotic mediation that play a role in both interpersonal and intrapersonal thinking and problem solving; it also limits our understanding of the variety of ways in which learning in the zpd is facilitated (Smagorinsky, 1995).

In his exposition of the concept of psychological tools, Vygotsky himself made clear that the means of semiotic mediation are not limited to speech. He also included: "various systems for counting; mnemonic techniques; algebraic symbol systems; works of art; writing; schemes, diagrams, maps and mechanical drawings; all sorts of conventional signs; and so on" (1981, p.137). To these, we might also wish to add the various modes of artistic expression, such as dance, drama and musical performance. All these modes of representation are simultaneously means of communication and tools for thinking with, both when with others and when alone (John-Steiner, 1987). To recognize this is to enlarge considerably the range of applicability of the concept of learning and teaching in the zpd.

Broadening the range of modes of semiotic mediation considered also leads to the recognition that there are other sources from which learners can receive assistance in the zpd, in addition to deliberate instruction or the assistance of others who are physically present in the situation. As has been pointed out, all artifacts - both material and symbolic - are embodiments of the knowing that was involved in their production (Wartofsky, 1979) and can thus, in appropriate circumstances, make that knowing available to others, provided that the learning that is required is within the potential user's zpd. While this is certainly the case with material artifacts, as when a new and more efficient tool becomes available for carrying out a familiar task, it is even more true of symbolic artifacts, such as written texts, charts and mathematical formulae. For those who are able to read them, such texts can provide a powerful means of self-instruction, as the reader appropriates the thoughts of others and makes them his or her own. However, as Lotman (1988) makes clear, texts are not only valuable when read "univocally", in an attempt to reconstruct the author's intended meaning; treating the text "dialogically" can be even more productive, as the reader uses it as "a thinking device" to develop meanings that are new not only for the reader but perhaps also for the culture as a whole. By the same token, it is probably through the dialoguing with real or imagined others that is an essential part of the process of textual composition that even the most knowledgeable others are able to continue to learn in the zpd.
Internalization: From Intermental to Intramental

The concept of "internalization" played a central role in Vygotsky's theory of learning and development; in fact, it might be said to be the end for which interaction in the zpd was conceived as the means. As he put it: "all higher mental functions are internalized social relationships" (1981, p.164). Yet, central though the concept is, it is probably the aspect of his theory that has been the most hotly contested. For some, the concept simply lacks explanatory power; for others, it is the implied mind/body dualism that is unacceptable. But whatever the specific objection, the general thrust of this line of argument has been to question, and even to reject, the sharp distinction that Vygotsky seems to draw between internal and external, and between social (intermental) and individual (intramental) functioning.

It is not that individuals do not develop more complex (higher) modes of functioning with respect to the activities in which they engage, as they increasingly bring their actions under semioticized self-control, but that these modes of functioning are not independent of the social practices in and for which they develop. Neither in learning nor in use after mastery does it therefore seem appropriate to talk of a movement between inner and outer, such as is implied by the terms 'internalization' and 'externalization'. This position is forcibly stated by Lave and Wenger in setting out their alternative theory of "legitimate peripheral participation":

In a theory of practice, cognition and communication in, and with, the social world are situated in the historical development of ongoing activity. ... First, the historicizing of the processes of learning gives the lie to ahistorical views of "internalization" as a universal process. Further, given a relational understanding of person, world, and activity, participation, at the core of our theory of learning, can be neither fully internalized as knowledge structures nor fully externalized as instrumental artifacts or overarching activity structures. Participation is always based on situated negotiation and renegotiation of meaning in the world. (1991, p.51)

More will be said below about Vygotsky's ahistorical universalizing tendencies but, in the present context, the issue that most needs to be addressed is the sharp distinction that he appears to draw between social and individual and, perhaps even more important, the temporal sequence in which functions are said to appear on the two planes.

From a strictly ontogenetic perspective, it is not inappropriate to argue, as Vygotsky does, that higher mental functions are first social and external, in the sense that they are already implicated in ongoing social activity before any particular individual enters into the activity and gradually becomes able to organize his or her participation in terms of an individual construction of the relevant cultural practices. It is also true that, from the same perspective, an individual's participation changes, over time, from a stage in which assistance and guidance are needed to a stage in which the same individual is generally able to function 'autonomously' and even to provide assistance and guidance to others. However, in using the term "internalization" to describe this transformation in and of
participation, Vygotsky also appears to be proposing a temporal sequence on the microgenetic plane, such that, in learning, there is a stage at which the higher mental functions are external to the learner and a subsequent stage at which they are internal. The problem with this latter proposition is that it also implies a spatial movement in which what is learned passes from outside to inside the skin of the learner. And it is this that many commentators find objectionable.

The root of the problem seems to lie in Vygotsky's tendency to focus on the process of learning solely from the perspective of the inner transformation that takes place as a result of the learner's participation. And this leads him to set up an opposition between individual and social that seems to lose sight of the fact that, at every stage, the learner is necessarily a participant in, and therefore a part of, the community whose practices he or she is learning (Rogoff, 1990). The distinction between individual and social is thus not to be understood as a spatial separation between two distinct entities, such that functions can pass between them, but rather as the adoption of one or other of two different analytic perspectives on an individual's participation in activity, where the activity is inherently social and cultural, although carried out at any time by particular individual participants. In other words, the ongoing activity can be seen either from the perspective of the individual participants acting with mediational means, or from that of the social practices in which they and the mediational means are involved (Wertsch et al., 1995). And this remains the case whether the component actions are undertaken solo or in collaboration with others. Both perspectives are equally valid, although which perspective is foregrounded will vary with the purposes of the analysis.

The value of the concept of the zpd is that it enables us to adopt both of these perspectives simultaneously. For what it highlights for us is, on the one hand, the reciprocity with which the participants adjust their manner of participation to take account of each other's current levels of knowledge and skill in carrying out the activity and, on the other, the transformation that takes place, in the process, in their individual potential for participation. It is also important to add that, as a result of the ways in which new participants take part, both the purposes and the means of joint action are themselves constantly undergoing transformation.

Elsewhere (Wells, 1993 a), I have proposed that learning to dance is a particular case that can serve as an analogy for what is involved, more generally, in learning and teaching in the zpd. Dancing is a cultural activity that is far older than any individual participant and, although new forms emerge and are, in turn, replaced by still newer, the basic patterns tend to persist from one generation to the next. In learning to dance, therefore, the newcomer is joining an ongoing community of practice. To begin with, as the novice takes the first faltering steps, he or she is carried along by the rhythm of the music and guided by the movements of the other dancers (and even, in some, characteristically Western, genres, quite forcibly 'led' by his or her partner). Before long, however, the novice begins to get a feel for the dance and is soon able to participate on equal terms, both creating new variations that are taken up by others and adapting easily to those that they introduce.
In explaining this learning process, talk of internalization seems unnecessary; no knowledge passes explicitly to the novice from the more expert participants, as they move together with increasing synchrony. Rather, within the framework provided by the structure of the activity as a whole, of which the entraining movements of the other participants are just one part, the novice gradually constructs the organizing cognitive structures for him or herself and brings his or her actions into conformity with the culture-given pattern. In the words with which W.B. Yeats concludes his poem, Among School Children: "How can we know the dancer from the dance?"

The Significant Other

Much of the discussion of the zpd has assumed that, in order to learn, the young novice needs the assistance of a more expert person who participates with him or her in the activity. Certainly, parents and teachers are the most important providers of guidance and assistance in relation to the child's learning, in early childhood and even beyond. But they are not the only significant others in this respect. Vygotsky made this clear when he wrote: "learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers" (1978, p.90). Indeed, the current emphasis on 'cooperative learning' in North America can be attributed, in part, to the significant role that Vygotsky, as well as Piaget, attributed to peer group activities in fostering learning.

On page 86 of the same text, Vygotsky actually specifies "more capable peers" but, as has become apparent from a range of studies of group work (Forman and McPhail, 1993; Tudge, 1990), it is not necessary for there to be a group member who is in all respects more capable than the others. This is partly because most activities involve a variety of component tasks such that students who are expert in one task, and therefore able to offer assistance to their peers, may themselves need assistance on another task. But it can also happen that in tackling a difficult task as a group, although no member has expertise beyond his or her peers, the group as a whole, by working at the problem together, is able to construct a solution that none could have achieved alone. In other words, each is "forced to rise above himself" and, by building on the contributions of its individual members, the group collectively constructs an outcome that no single member envisaged at the outset of the collaboration.

Educators have typically had little faith in the potential for learning inherent in tackling problems to which no-one knows the answer. However, it must have been through the 'pooling of ignorance' in the face of new ecological challenges that our ancestors gradually developed the cultural resources of tools and practices that provided the basis for subsequent generations' common knowledge. And still today, outside the classroom, it is often in conditions where no one member of the group has a clear idea of how to proceed that many of the most significant advances in understanding are made. It seems, therefore, for learning to occur in the zpd, it is not so much a more capable other that is required as a willingness on the part of all participants to learn with and from each other.

Telos: the End-Point of Development
Implicit in Vygotsky's discussion of the "awakening" role of instruction in relation to development there seems to be an assumption that the development that results from learning can be treated unequivocally as progress. This is most apparent in the chapter on spontaneous and scientific concepts (Vygotsky, 1987, chap.6), where the mastery of scientific concepts is clearly presented as making possible a higher mode of mental functioning than is possible with spontaneous concepts alone. Here, "higher" appears not simply to denote later in the sequence of ontogenetic development, but evaluatively to connote a superior mode of functioning. The same assumption, transferred to the plane of cultural history, can also be seen to underlie the studies conducted by Luria in Central Asia in the 1930s in collaboration with Vygotsky. The presupposition on which these studies were apparently based was that mastery of the abstract and decontextualized modes of thinking made possible by the use of scientific concepts would provide a criterion for distinguishing between "primitive" and "advanced" societies (Luria, 1976) and, hence, for the planning of educational interventions designed to bring all societies to the advanced level of intellectual functioning of which they were potentially capable.

As Bruner (1996) and Wertsch and Tulviste (1991), among others, have argued, such a view can be seen as consistent with Vygotsky's evolutionary approach to culture, and also with the revolutionary ideological spirit in which he conceived his task of reconstructing psychology as a basis for emancipatory action and as a more adequate foundation for the study of human behavior. In the decades since his death, however, there have arisen a number of grounds for challenging what many now consider to be an over-optimistic belief in the universal superiority of scientific rationalism and an unquestioning acceptance of the progressive and benign consequences of schooled instruction. Here I shall consider three that have, in recent years, increasingly been voiced.

The first problem concerns the assumption of the superiority in all situations of thinking based on scientific as opposed to everyday concepts. Habermas (1971), for example, writing from the perspective of social theory, criticizes the increasing hegemony of technical rationality in Western societies, arguing that, although it has a crucial role to play in contemporary life, it must be complemented by both practical and critical-emancipatory modes of knowing. A somewhat similar challenge has come from cultural anthropologists, whose studies of non-Western cultures have led them to reject the view that treats the trajectory of European cultural history as the point of reference for evaluating other cultures. Within Western societies, too, the influx of immigrants from a wide range of different cultures has led to a de facto multiculturalism that is demanding a reevaluation of the assumed superiority of white, male, middle-class values and, hence, also of the technical rationality on which it is based.

Nevertheless, it is not clear that the ways in which Vygotsky used the terms "primitive" and "advanced" when explaining and comparing the development of mental functions in the three different contexts of general human history, contemporary preliterate cultures, and children in contemporary Western societies, really do lay him open to the charge of "Eurocentrism", as Wertsch and Tulviste (1992) have suggested. As Minick (1987) points out, Vygotsky's theory was itself constantly evolving, as he read and critiqued the
work of others and carried out his own research, with the result that his written oeuvre is not internally consistent in this respect; furthermore, as Scribner (1985) shows, Vygotsky was emphatic in rejecting a recapitulationist position. The intellectual development of a child in any contemporary culture through the appropriation of resources already in use in his or her social environment, he insisted, constitutes a very different kind of development from that which was involved in the gradual creation of these resources over many generations in the phylogenetic development of the species. In fact, Scribner argues, Vygotsky's habit of using the term "primitive" when comparing these different situations can best be understood, not as substantively equating them, but as a methodological heuristic that he used at various points in his theory-building procedure.

A second criticism is based on the primacy given to cognition in much of the Vygotskyan-inspired study of human development, and the consequent neglect of the social, affective and motivational dimensions. However, the responsibility for this imbalance should not be laid at Vygotsky's door; it is due much more to the 'cognitive revolution' of the 1960s and the central role that the metaphor of the mind as computer has played in recent work in cognitive science. That Vygotsky had a much more comprehensive and balanced conception of development is apparent from the final section of Thinking and Speech. “Thought has its origins in the motivating sphere of consciousness,” he wrote, "a sphere that includes our inclinations and needs, our interests and impulses, and our affect and emotion. ... A true and complex understanding of another's thought becomes possible only when we discover its real, affective-volitional basis" (1987, p. 282 ). To which he might have added the converse, namely that "feeling is forever given shape through thought", which is structured by our cultural forms of understanding (Rosaldo, 1984, p.143). A further indication of the holistic nature of Vygotsky's mature understanding of development is to be found in the extension of his ideas in the work of his colleague, Leont'ev (1978), on motivation, emotion and personality.

The third, and most recent, reevaluation of Vygotsky's account of the zpd questions the assumption of inevitable progress at the level of ontogenetic development. Since the development of the individual is dependent on the tools and practices that are made available for appropriation in the activities in which he or she participates, it is just as possible for the learner's interpersonal experiences to constrain or even distort his or her development as to enable the development of a socially and emotionally balanced personality (Engeström, 1996). Clearly, many children do experience appalling deprivation and cruelty at the hands of others and the learned coping strategies and conflicted self-image that result have long-term harmful consequences for themselves and for society at large. Some have argued, too, that the coercion that is a pervasive characteristic of formal schooling in almost every culture constitutes an unrecognized but systematic limitation of the creativity and originality of which all human beings are capable.

In the light of these important reservations, it is now no longer possible to accept a conception of learning in the zpd that assumes either a single end in view or a developmental trajectory that is free of contradiction and conflict. Decontextualized
rational thinking is not the inevitable apogee of intellectual development, nor is it necessarily optimal in all situations. Here, Tulviste's (1991) emphasis on the heterogeneity of semiotic mediational means is important, as is Wertsch's (1991) metaphor of the tool-kit, from which a selection is made according to the culturally construed demands of different activity settings. Gardner's (1983) theory of "multiple intelligences" represents yet another attempt to escape from too narrow a view of intellectual development. But the development that is fostered by learning and teaching in the zpd is, in any case, not unidimensionally cognitive. Because the whole person is involved in activity undertaken with others, interaction in the zpd necessarily involves all facets of the personality. This is the force of the current emphasis on the zpd as a site of identity formation, which, in turn, has led to the recognition that an individual's developmental trajectory is rarely, if ever, free of social encounters that may engender inner as well as outer conflict and contradiction (Litowitz, 1993). Finally, it is now increasingly recognized that what is taken to constitute the ideal end-point of development is itself a cultural construct; it varies from one culture to another and, in each culture, is implicated in the continuous processes of change that characterize cultural history everywhere.

Instead of viewing development as progress towards some ideal, therefore, there is an increasing tendency to focus on the transformative nature of learning in the zpd, with an emphasis on diversity rather than on improvement. This conceptualization of learning as transformation is already to be seen, at least embryonically, in Vygotsky's formulation of the general genetic law of cultural development. Having stated the major proposition that, in development, any function first appears between people and only subsequently within the child, he goes on to add: "it goes without saying that internalization transforms the process itself and changes its structure and functions" (1981, p.163). However, it could be argued that more is involved than a transformation of the process alone. Whenever an individual engages, with the assistance of one or more others, in tackling and solving a problem that arises in the course of action, there are, potentially, multiple transformations. First, there is a transformation in the individual in terms of his or her capacity to participate more effectively in future actions of a related kind and, hence, a transformation of his or her identity; second, where the problem demands a novel solution, the invention of new tools and practices or the modification of existing ones transforms the culture's toolkit and its repertoire for problem solving; and third, there is the transformation in the activity setting brought about by the problem solving action which, in turn, opens up further possibilities for action. Finally, to the extent that one or more members of the group has changed the nature of his or her participation, there is also transformation in the social organization of the group and in the ways in which the members relate to each other. These transformations may usually be quite small, and they may not always be positively evaluated by all the participants involved. Nevertheless, it is such small transformations that, successively and cumulatively, lead to the actual outcomes of the activities in which they occur and, in the process, contribute to the construction of the developmental trajectories of individual participants, of collaborating groups and, thus, of whole cultures.
Vygotsky tended to emphasize the revolutionary nature of the transformations that take place periodically in the developmental trajectories of both individuals and whole cultures. Today, we are probably more aware of the constantly emerging nature of the activities in which we engage and of the extent to which they overlap and impinge on each other. This has certainly led to a more complex conception of development, but it has perhaps also led to a recognition of the developmental significance of each and every activity and, thus, of the transformative potential of the manner in which we participate, of the tools we select from the available toolkit, and of the way in which we use and reshape them in action.

The Role of the Teacher

Although Vygotsky emphasized the critical role of instruction in the zpd, he had relatively little to say about teachers and teaching. However, as we consider the way in which his ideas are interpreted today, it is perhaps here that there has been the greatest change, as is evidenced by the attention that is now given to teacher development.

The reasons for this are not hard to find. One of the most hopeful - due in no small part to the influence of Vygotsky's concept of the zpd - is the increased understanding among educators that teaching involves much more than appropriately selecting and delivering a standardized curriculum and assessing the extent to which it has been correctly received. Teaching certainly involves preparation, instruction and assessment; but to be truly effective it also involves the ongoing co-construction of each student's zpd and on-the-spot judgments about how best to facilitate his or her learning in the specific activity setting in which he or she is engaged. Of equal importance is the growing recognition of the multi-faceted nature of development, and of the need to respond to the diversity among the student population with more open-ended envisionments of their possible futures. To these must be added the increasing rate of cultural change, particularly in the technologies that amplify the traditional modes of semiotic mediation. Taken together, these changes in what is expected of teachers have finally led those who administer public education to recognize the complexity of the responsibility that is placed on those who guide young people's development and, therefore, on the need for adequate teacher development.

For the most part, however, 'teacher development' has meant teacher training, that is to say, something that is done to teachers. Only recently has this begun to give way to a more agentive view of development: teachers learning in their zones of proximal development, constructing their understanding of the art of teaching through reflective practice, and drawing for guidance and assistance upon the same range of sources that is available to other learners (Tharp and Gallimore, 1988).

In this context, it is worth mentioning the growing number of teachers who are undertaking classroom-based action research as a means of simultaneously improving the learning opportunities they provide for the particular students in their care, and of increasing their own understanding of the principles that underpin these improvements. As might be expected, linguistic mediation has frequently been the object of their
inquiries, particularly the quality of whole class and small group interaction (Mercer, 1995); however, some teachers are also beginning to investigate the potential of other, non-linguistic, semiotic modes for mediating learning in the zpd (Gallas, 1994), while others are challenging the ideological underpinnings of the discourses of power that regulate what will count as learning (Gee, 1992; Lemke, 1988).

A further significant feature of the growing practice of teacher research is the emphasis on community and collaboration with other teachers. As with peer groups solving problems in the classroom, teachers providing 'horizontal' support for each other often construct novel solutions to the problems they face that are more appropriate to their particular circumstances than the standard practices recommended by experts outside the classroom; in this way, they both challenge the traditional, 'vertical', model of teacher development, and enlarge and diversify the repertoire of strategies available for supporting learning. Equally important, they transform their own identities as teachers, as they take greater responsibility for their own learning and for the learning opportunities they provide for their students (Chang-Wells and Wells, 1997). And when, as is quite frequently the case, they also include their students as well as their colleagues as collaborators in their inquiries, a new, more equal and reciprocal interpretation of the concept of learning and teaching in the zpd is born (Hume, forthcoming) - one that Vygotsky would recognize, I believe, as a very worthwhile transformation of his initial formulation.

Conclusion: Toward a New Conception of Education

Since Vygotsky first coined the phrase "zone of proximal development", the concept that it names has itself undergone very considerable development. Starting as an insight about the need for psychological assessment to be dynamic and forward-looking so that it might maximize the effectiveness of instruction, the concept of the zpd has been expanded in scope and become more fully integrated into the theory as a whole.

As was suggested above, Vygotsky tended to characterize the zpd in terms of individual assessment and instruction, concerned chiefly with generalized intellectual development, and dependent upon face-to-face interaction. However, subsequent discussion and use of the concept in the exploration of its applicability in a variety of settings has considerably extended this characterization by emphasizing the holistic nature of the learning that takes place in the zpd and by making clear that it involves not simply speech but a wide range of mediational means, and not simply dyads in face-to-face interaction but all participants in collaborative communities of practice.

Viewed from the perspective of education, the most salient features of this expanded interpretation of the zpd are, in my view, the following. First, rather than being a "fixed" attribute of the learner, the zpd constitutes a potential for learning that is created in the interaction between participants as they engage in a particular activity together; furthermore, although there is, in principle, an upper bound with respect to what participants are able to take from their task-related interaction at any moment, this upper bound is, in practice, unknown and indeterminate; it depends as much on the manner in
which the interaction unfolds as on any independent estimate of the participants' current potential. In this sense, the zpd emerges in the activity and, as participants jointly resolve problems and construct solutions, the potential for further learning is expanded as new possibilities open up that were initially unforeseen. Second, as an opportunity for learning with and from others, the zpd applies potentially to all participants, and not simply to the less skillful or knowledgeable. From this it follows that it is not only children who can learn in the zpd; learning continues over the life-span, and can at all ages and stages be assisted by others, including those who are younger and less mature. Third, the sources of guidance and assistance for learning are not limited to human participants who are physically present in the situation; absent participants, whose contributions are recalled from memory or encountered in semiotic artifacts, such as books, maps, diagrams and works of art, can also function as significant others in the zpd. Finally, more is involved than cognition alone. Learning in the zpd involves all aspects of the learner - acting, thinking and feeling; it not only changes the possibilities for participation but also transforms the learner’s identity. And, because individuals and the social world are mutually constitutive of each other, transformation of the learner also involves transformation of the communities of which he or she is a member and of the joint activities in which they engage.

This enlarged conception of the zpd has contributed significantly to changing views of the role of joint activity and interaction in the classroom, as is to be seen in reform efforts in curricular areas as different as mathematics (Cobb et al., 1990), history (Pontecorvo and Girardet, 1993), literacy (Brossard et Magendie, 1993; McMahon and Raphael, 1997), and second and foreign language teaching (Lantolf and Appel, 1994), and in the efforts made to integrate exceptional students into mainstream classrooms (Englert, 1992). It has also been influential in the increased value that is attributed to collaboration in classroom activities (Sharan and Sharan, 1992), as students are encouraged to work on group projects, sharing their ideas with peers - their problems, questions and wonderings, as well as their tentative solutions - rather than treating the classroom as a site of individualistic competition (Scardamalia et al., 1994; Brown and Campione, 1994). This has led, in turn, to a different conception of the role of the teacher; rather than being primarily a dispenser of knowledge and assigner of grades, the teacher sees him or herself as a fellow learner whose prime responsibility is to act as leader of a community committed to the co-construction of knowledge (Rogoff, 1994; Wells and Chang-Wells, 1992).

The second major effect of continued exploration of the zpd has been to highlight its interdependence with all the main threads in Vygotsky's theory: the dialectical relationship between individual and society, each creating, and being created by, the other; the mediation of action by material and semiotic tools and practices; the multiple levels on which previous development both enables and constrains current action and interaction; and activity as the site in which these threads are woven together as the resources of the past are deployed in the present to construct an envisaged future. All activity involves change, and learning is that aspect of change that is brought into focus when activity is considered from the perspective of the human participants who are involved. In this pattern, learning and teaching in the zpd provide both the assurance of a
degree of cultural continuity and the opportunity for creative transformation and further
development.

At the same time, the concept of development has itself been undergoing change.
Vygotsky's revolutionary vision of development as progress to the ideal society is now
seen to be untenable. On the phylogenetic level, there is no biologically-given end point
for development, although the continued existence of a species over successive
transformations is evidence that the trajectory it has followed is still ecologically viable.
On the cultural historical level, too, there is no universal goal to which all cultures aspire;
as was argued above, development is always construed in relation to the values obtaining
in particular times and places and, even within a particular culture, these values may be
contested. When we describe or evaluate development on the ontogenetic plane,
therefore, we should be clear that, in so doing, we are privileging one particular set of
values and, by implication, rejecting or according less value to other possibilities that
might prove to be just as - or even more - viable for the individuals concerned and for
society as a whole (Lemke, 1995).

However, this new understanding of development in no way reduces the educational
significance of Vygotsky's concept of working in the zpd; on the contrary, it serves to
bring into focus the critical nature of the decisions that teachers have always had to make
concerning the kinds of activities in which they engage with students and the manner in
which they do so. When it was assumed that there was an ideal, predetermined end in
view for development, it was possible for the teacher simply to rely on tradition or
authority in making curricular decisions. However, that is no longer the case. As well
as with the means to be used in awakening the potential for development, the teacher
must also be concerned with the diverse directions that development may take; as well as
making available to students the legacy of the past, the teacher must also support and
guide them as they create their own alternative versions of the future. Teaching thus
becomes more than ever a matter of making choices, and ones that are not simply
practical in their implications but also moral, in that they concern ethics and values
(Cole, 1996b).

Table 1 summarises the characteristics of this expanded conception of the zone of
proximal development.

[Insert Table 1 about here]

At this time when confidence in public schooling is at a low ebb, there is both a need and
an opportunity to make radical changes in the way in which it is organized. In this
context, as increasing numbers of educators are recognizing, Vygotsky's genetic theory of
learning and development can provide a starting point for rethinking the principles on
which education should be based. And in that rethinking, the concept of the zone of
proximal development has a central role to play. For, far from being simply a new and
better pedagogical method, the zpd offers an insightful and theoretically coherent way of
thinking about the complex nature of the transformations that are involved in learning
and of the multiple ways in which learning can be assisted. However, as was pointed out
at the outset, it is a central tenet of Vygotsky's theory that theories, like all other artifacts, are the products of the particular conditions in which they are created; if they are to be useful in other times and places, therefore, they must be treated, not as repositories of truth that are fixed and immutable but as helpful tools for thinking with, which can themselves be improved in the process. It thus follows that, if Vygotsky's theory is to provide the guidance that many believe it should, we should treat his ideas as a source of assistance in our zones of proximal development. We should certainly read his texts and try to understand what he had to say; but, in appropriating his ideas and putting them to use, we should also be willing to transform those ideas so that they can be of greatest use to us in meeting the demands of our own situations.

Table 1. Characteristics of an Expanded Conception of the Zone of Proximal Development

1. The zpd may apply in any situation in which, while participating in an activity, individuals are in the process of developing mastery of a practice or understanding of a topic.

2. The zpd is not a context-independent attribute of an individual; rather it is constructed in the interaction between participants in the course of their joint engagement in a particular activity.

3. To teach in the zpd is to be responsive to the learner's current goals and stage of development and to provide guidance and assistance that enables him/her to achieve those goals and, at the same time, to increase his/her potential for future participation.

4. To learn in the zpd does not require that there be a designated teacher; whenever people collaborate in an activity, each can assist the others, and each can learn from the contributions of the others.

5. Some activities have as one of their outcomes the production of an artifact, which may be used as a tool in a subsequent activity. Representations - in e.g. art, drama, spoken or written text - of what has been done or understood are artifacts of this kind; engaging with them can provide an occasion for learning in the zpd.

6. Learning in the zpd involves all aspects of the learner and leads to the development of identity as well as of skills and knowledge. For this reason, the affective quality of the interaction between the participants is critical. Learning will be most successful when it is mediated by interaction that expresses mutual respect, trust and concern.

7. Learning in the zpd involves multiple transformations: of the participants' potential for future action and of the cognitive structures in terms of which it is organized; of the tools
and practices that mediate the activity; and of the social world in which that activity takes place.

8. Development does not have any predetermined end, or telos; although it is characterized by increasing complexity of organization, this does not, in itself, constitute progress. What is considered to be progress depends on the dominant values in particular times and places, which are both contested and constantly changing. The zpd is thus a site of conflict and contradiction as well as of unanimity; the transformations it engenders lead to diversity of outcome which may radically change as well as reproduce existing practices and values.

References


Vygotsky, L.S. (1935) Mental development of children during education. Moscow-Leningrad: Uchpedzig,


including the emphasis on learning leading development, and on the role of adult assistance and guidance in enabling the child to do in collaboration with more expert others what he or she is not yet able to do alone.

http://ject.lib.muohio.edu/contents/article.php?article=137

The work of Lev Vygotsky (1896-1934) provides a sound theoretical foundation for investigating the rationale underlying various instructional strategies. This article integrates Vygotsky's construct of the zone of proximal development with the instructional strategy of cooperative learning. The zone of proximal development provides a conceptual basis for explaining the five basic tenets of cooperative learning: positive interdependence, face-to-face interaction, individual accountability, small-group and interpersonal skills, and group self-evaluation. Following a discussion of the relevance of Vygotsky's ideas to cooperative learning, the article presents a series of guidelines or suggestions for using cooperative learning.

Zone of Proximal Development

The zone of proximal development is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers (Vygotsky, 1978:86). What children can do with the assistance of others is even more indicative of their mental development than what they can do alone (Vygotsky, 1978:85).

The zone of proximal development embodies a concept of readiness to learn that emphasizes upper levels of competence. These upper boundaries are not immutable, however, but constantly changing with the learner's increasing independent competence. What a child can perform today with assistance she will be able to perform tomorrow
independently, thus preparing her for entry into a new and more demanding collaboration. These functions could be called the "buds," rather than the fruits of development. The actual developmental level characterizes mental development retrospectively, while the zone of proximal development characterizes mental development prospectively (Vygotsky, 1978:86-87).

http://tip.psychology.org/vygotsky.html

Social Development Theory (L. Vygotsky)

The major theme of Vygotsky's theoretical framework is that social interaction plays a fundamental role in the development of cognition. Vygotsky (1978) states: "Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals." (p57).

A second aspect of Vygotsky's theory is the idea that the potential for cognitive development is limited to a certain time span which he calls the "zone of proximal development" (ZPD). Furthermore, full development during the ZPD depends upon full social interaction. The range of skill that can be developed with adult guidance or peer collaboration exceeds what can be attained alone.

Vygotsky's theory was an attempt to explain consciousness as the end product of socialization. For example, in the learning of language, our first utterances with peers or adults are for the purpose of communication but once mastered they become internalized and allow "inner speech".

Vygotsky's theory is complementary to the work of Bandura on social learning and a key component of situated learning theory. Because Vygotsky's focus was on cognitive development, it is interesting to compare his views with those of Bruner and Piaget.

Scope/Application:

This is a general theory of cognitive development. Most of the original work was done in the context of language learning in children (Vygotsky, 1962), although later applications of the framework have been broader (see Wertsch, 1985).

Example:

Vygotsky (1978, p56) provides the example of pointing a finger. Initially, this behavior begins as a meaningless grasping motion; however, as people react to the gesture, it becomes a movement that has meaning. In particular, the pointing gesture represents an interpersonal connection between individuals.
Principles:

1. Cognitive development is limited to a certain range at any given age.

2. Full cognitive development requires social interaction.