Learning for Life in the 21st Century

Sociocultural Perspectives on the Future of Education

Edited by Gordon Wells and Guy Claxton

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Introduction: Sociocultural Perspectives on the Future of Education

Gordon Wells and Guy Claxton

What should be the goals of education and by what means can those goals best be achieved? These are questions that need to be regularly reconsidered, particularly in times of rapid social, economic and political change – such as the present. As we enter the twenty-first century, with the new uncertainties and demands created by globalization, the rise of the 'knowledge economy' and the growing recognition of the need for greater ecological responsibility, these questions are more important than ever.

Where are we to look for answers? In stable times they are furnished by tradition. But these are not stable times. Schools may once have done an adequate job of equipping and sifting young people to take their various places in the prevailing society, but that world is gone. In more turbulent times, a radical vision of education may emerge from cultural trauma, as it did in Reggio Emelia in Northern Italy at the conclusion of the Second World War. A whole society pulled together in revulsion at the ease with which they had embraced, or at least tolerated, fascism, and vowed to raise young people who would not make the same mistakes. But many societies today are characterized more by confusion and fragmentation than by such a strong sense of common purpose.

There are two other places we can look for ideas about education. One is the future: what kind of world are today's young people going to inhabit; and what skills and qualities will they need to thrive therein? And the second source of practical inspiration is theory: what are the best ideas available about the potentialities of the human mind and spirit, and about how minds and spirits grow? What do we now know about learning and development that the original architects of school did not; and what fresh perspectives and possibilities are thereby made available? This book starts from these latter two sources of inspiration. Where yesterday is an unreliable guide to tomorrow, and where societies are in complex, heterogeneous flux, we must look to the future, and to the best of current theory, to help us reappraise the means and ends of education.

The contributors to this volume share the view that education is not, at root, about the transmission of specific bodies of knowledge and skills. Rather,

it is about the development of understanding and the formation of minds and identities: minds that are robust enough and smart enough to engage with the uncertain demands of the future, whatever they may be, and identities that are attuned to the changing communities of which they are members, and able and willing to participate effectively and responsibly in their activities and thus to contribute to, and benefit from, their transformation. Education, at this point in our history, we would argue, is centrally about the development of a mind to learn.

And we also agree that the way minds grow is not, fundamentally, through didactic instruction and intensive training, but through a more subtle kind of learning in which youngsters pick up useful (or unuseful) habits of mind from those around them and receive guidance in reconstructing these resources in order to meet their own and society's current and future concerns. Thus the minds that young people develop both reflect and modify the habits of mind of their elders, as the latter's ways of acting, feeling and thinking are transformed by the young in the process of appropriating them and making them their own. The idea that education is a process of simultaneous enculturation and transformation is at the heart of what has come to be called, rather grandly, 'Cultural Historical Activity Theory', or CHAT for short, and it is this perspective that the present writers share. Collectively, we believe that CHAT not only helps to clarify the core questions that confront education at the start of the twenty-first century, but also provides a powerful and coherent basis for developing fresh answers to them.

The diversity in the contributions to this book is indicative of the increasingly widespread recognition of the value of CHAT for addressing educational issues in a variety of contexts. The chapters concern all levels of education from early childhood to professional training, and countries as different as Finland and the United States, Spain and New Zealand, Italy and the United Kingdom. In all these countries a growing number of educators are finding inspiration in the seminal work of CHAT's originator, Russian psychologist and educator, Lev Vygotsky. And the authors of the present chapters are prominent among those who are helping to develop the theory to which Vygotsky's pioneering work has given rise. Though CHAT may at first sight appear complex, its fundamental insights are relatively simple, and they are of profound relevance to educational practitioners and policy-makers. Our aim in this volume is to present them in a way that is at once accessible and practical, both as proposals for action and as suggestions for further investigation and discussion.

An Introductory CHAT

We need to begin by saying a little more about what Cultural Historical Activity Theory actually is. CHAT is a theory of human development that

sees human societies and their individual members as mutually constitutive. Cultures play a large role in shaping the development of individual minds; and individuals' thoughts and deeds serve to maintain or to alter the cultural milieu. As people work, play and solve problems together, so their spontaneous ways of thinking, talking and acting – the ideas that come to mind, the words they choose and the tools they make use of – embody an accumulated set of cultural values and beliefs that have been constructed and refined over previous generations. And, as they 'get things done' together, so younger or less experienced people pick up these habits and attitudes from their more experienced friends, relatives, teachers and colleagues. It is through taking part in such joint activities that individual members of a society are inducted into these 'ways of knowing' and take over and make their own the values, skills and knowledge that are enacted in the process. At the same time, since unprecedented problems continually arise, it is through participants' collaborating to find creative solutions that effective new skills and understandings are developed which, in turn, are carried forward to other situations, appropriated by different individuals, and thus pass into the culture at large.

There are two further features that significantly enrich this way of understanding human behaviour and development. The first is the key role of artifacts. Many other animals make use of material tools and resources, and they can learn to do so by watching their elders and betters. Young chimpanzees quickly pick up the art of 'fishing' for termites with a thin stick. Sea otters learn from their mothers how to use stones as 'hammer' and 'anvil' for opening shellfish. But no other species has developed such a diverse and sophisticated array of tools, nor built such an elaborate cultural life around their use, as human beings. Humans find and fashion a wide range of artifacts to extend and mediate their actions, and both the artifacts and the practices involved in making and using them are passed on, and improved upon, from one generation to the next.

For this reason, when looking at both individual and social activity, we need to look beyond solitary actors to the communities to which they belong, and to the inherited resources of artifacts and practices that serve as 'tools' for achieving the goals to which their activities are directed. Wertsch (1998, p. 485) captures this insight when he describes actors as 'agents-acting-with-mediational-means'. In a profound sense, we are so wedded to and constituted by the tools we use that we cannot be understood apart from them. Just as the performance of golfers cannot be understood in the absence of clubs and balls, so too the learning performance of schoolchildren, or the problem-solving processes of a work team, reflect the mental and physical tools to which they have access, and the levels of mastery and senses of occasion which they have acquired. Thus as a group of people engage in an activity together, their ability to carry it out effectively resides not only in their individual knowledge and skills, not just in their ability to collaborate; it is also

distributed across the artifacts that are to hand and the 'affordances' (and also the constraints) provided by the environment.

However, the 'tools' that people use, and that shape the ways they think and act, are not only physical and technological objects like cutlery and cars. Just as important are the meaning-making tools that mediate communicative and reflective action, and which have as their outcome such 'semiotic' artifacts as drawings, graphs, theories and works of literature. Books, computer programs and the rules of geometry are tools too. In fact, all joint activity requires such tools in order to coordinate participants' actions and to construct and pass on their understanding of the principles involved. Chief among these 'psychological' tools is, of course, language in all its modes (Vygotsky, 1981), for it is through discourse that shared meaning is made and experience structured and organized as knowledge (Halliday, 1993, p. 48).

This leads to CHAT's second key feature. Since action is mediated by semiotic as well as material tools, participation in the various modes of discourse that organize and interpret action not only provides the context for the learning of language and other semiotic systems, but it also inducts learners into the culture's ways of making sense of experience – its modes of classification, its understanding of means–ends relationships, and its aesthetic and moral values. In other words, it is particularly by learning to use these semiotic tools in discourse with others that humans appropriate the culture's dominant ways of thinking, reasoning and valuing. And in making them their own and in bringing them to bear on new problems and new situations, they may transform them in ways that add to and potentially improve the culture's shared toolkit of meaning-making resources. What distinguishes humans from other species, therefore, is not the small differences in their biological genes, but the ability to develop, pass on and refine a wide variety of material and semiotic tools and practices that are culturally rather than biologically inherited.

In the CHAT view, 'teaching' and 'learning' are not activities that only take place at particular times and in special places. All interactions between people – having meals, bathing the baby, discussing holiday plans – involve using, adapting and mastering cultural tools. Habits of mind are being displayed, conveyed and modified, often without any deliberate intention or conscious awareness. For example, parents and older brothers and sisters typically provide a running commentary, both verbal and non-verbal, on the actions of small children. They create and direct increasingly variegated 'scripts' and coach the child in the part he or she is to play in each. While controlling the overall organization of the scripts to the extent necessary to bring them to a successful conclusion, the elders interact through action, facial expression, gesture and speech, providing assistance, demonstrating and commenting on the actions and objects involved, and explaining their relationship to the goal of the action. They also respond to and comment upon infants' interest in the environment and their attempts to contribute to joint activities and to achieve goals of their own. It is these forms of interaction, Vygotsky argued, that

provide the most important opportunities for the 'learning that leads development', not only in the early years but also in the more formal contexts of schooling and the workplace. The 'higher mental functions' do not develop simply as a result of individual learning or intellectual maturation. Rather, they depend upon mastering the use of culturally created semiotic tools such as language, artistic representation and scientific procedures, which principally occur 'interpsychologically' (i.e. interactively) in activities undertaken with other members of the culture.

A corollary of this emphasis on the social origin of individual functions was Vygotsky's argument that learning specific things leads the development of mental tools and attitudes, not vice versa. And this, in turn, led to the concept for which he is generally best known, that of the 'zone of proximal development', or ZPD. Through the support and 'scaffolding' of our joint activities by more experienced others, we can transcend our solo limitations, and expand the range of what we can learn and achieve. In the jointly constructed ZPD, I can engage productively with things that, on my own, would have been beyond my grasp. And in so doing, I come to appropriate and internalize for myself tools that were first provided, modelled or created only in interaction. With the aid of the arm of a chair, or her father's fingers, a 10-month-old, who could not have done it by herself, is enabled to stand and walk a few steps. Through practising walking in this supported fashion, she rapidly develops the ability to walk on her own. The ways we think and learn and know develop in the same way.

Finally, in concluding this brief sketch, it is important to draw attention to two points that were often neglected or glossed over in earlier expositions of CHAT. The first is that, despite the emphasis on collaboration in joint activity, it must be recognized that participants in an activity do not necessarily have identical goals, nor do they necessarily share the same beliefs and values. Clearly, for collaboration to occur, there must be a degree of overlap in goals and a willingness to attempt to understand the perspectives of others. But difference and disagreement are also valuable. Without the contribution of new and even antithetical ideas and suggestions, there would be no way of going beyond ways of acting and thinking repeated from the past; and although well-tried solutions are often a good starting point, they may have to be challenged and transformed if they are to become adequate responses to novel predicaments.

The second point is that CHAT is not concerned only with *cognitive* development. All action, whether practical or theoretical, involves the whole person – body, mind and spirit. Particularly in Western educational contexts, there has been a tendency to ignore the interdependence of feeling, thought and action and to focus almost exclusively on what are seen as purely intellectual activities. But, as Vygotsky emphasized in his last major work, 'Thought has its origins in the motivating sphere of consciousness, 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' (Vygotsky, 1987, p. 282).

In the remainder of this introductory chapter, we shall expand on this very condensed summary by considering how the key principles of CHAT throw light on the fundamental concerns of education. We shall also highlight some of the questions and options which the CHAT perspective raises, and which the contributions to this volume serve to explore and illuminate. And we shall conclude with a very brief sketch of each of these chapters.

CHAT Goes to School: Principles and Implications

Cultural relativism

Though the CHAT approach raises questions about the content of education, its implications are most clearly seen in the context of discussions about the 'medium': classroom organization, teaching methods, forms of interaction and assessment, and so on. With the rise of the social sciences since the early twentieth century, and particularly of the discipline of educational psychology, enormous research efforts have been expended on attempting to discover general pedagogical methods that would make education maximally and universally effective. Proven 'scientific' methods have been heralded and applied, only to be succeeded by new methods, equally claiming to be supported by experimental evidence. In the mean time, however, it has become increasingly apparent that such universalizing aims are incompatible with the diverse realities of individual schools and classrooms. No centrally planned pedagogy, or uniformly delivered curriculum, can meet the needs of rural as well as inner-city communities, minority as well as mainstream students, technologically advanced as well as developing countries. Education is not like the motor industry: no one optimal 'technology of teaching', it seems, can be mandated worldwide.

The futile search for a universal, culture-free, 'teacher-proof' approach to education provides a natural point for CHAT to enter the debate about educational means and ends, for perhaps its most fundamental tenet is that all action, including learning, must be understood in its situated complexity and idiosyncrasy. Instead of the curriculum being planned and handed down from a position of lofty omniscience, CHAT suggests that decision-making has to be responsive to the local needs and concerns of students and the communities to which they belong. CHAT does not – and would not attempt to – provide one uniform answer to the questions about the goals of education and how they should be met. Clearly what is selected as appropriate 'content' for education must be related to the present and probable future concerns of the particular students involved, as well as to the canon of knowledge valued by those in immediate authority.

Meaningful, collaborative activity

After the recognition of 'cultural relativism', the next most fundamental educational principle of CHAT is that the kind of learning that leads development takes place through active participation in purposeful, collaborative activity. In the course of working together towards shared goals and of finding solutions to the problems encountered in the process, participants contribute differentially from their existing expertise and take over and transform for their own use the skills, values and dispositions that they find effective in the contributions of others.

Where learning occurs in a systematically organized school setting, the teacher has a special role, as leader of the classroom community, in selecting activities that are appropriately connected to the students' interests, and in advance of their current level of independent performance. These activities must engage students in the kind of present experiences that, as Dewey put it, 'live fruitfully and creatively in future experiences' (Dewey, 1938, p. 28). In other words, in selecting the sequence of activities that make up the curriculum, the teacher should not treat the task as that of 'covering' detached, self-contained topics that, once completed, can be assumed to be finished. Each curricular unit should not only make sense in its own terms, but also encourage the raising of questions for future exploration. So we are bound to ask what kinds of activities do engage different students' learning energies, and at the same time form a coherent part of a longer-term developmental trajectory?

At the same time, however, collaboration should not be equated with agreement and conformity. Although consensus may be an appropriate ultimate aim, the voicing and consideration of alternative ideas, experiences and opinions may be essential if genuine understanding is to be achieved by all participants, and this applies not only to the topic in question but also to the grounds on which people can validly disagree. So CHAT leads us to ask how this balance between collaboration and dissent is to be managed, and by whom. Also, to what extent can the classroom goals be genuinely and appropriately communal, and what place is left for individual enthusiasms – those of both teachers and students? And what does this imply for the planning and carrying out of curricular units and their constituent tasks? In this context we might also ask of what validity is the traditional type of examination, for example, if 'knowing' is to be seen not as an individual possession but a continually evolving communal activity? Are there other types of assessment that honour this 'intersubjectivity' more constructively?

Appropriation and transformation

The next key principle of CHAT is that human development depends on the appropriation and *reconstruction* by each individual of the resources that have been developed within their culture. At the same time as people are

absorbing their cultural heritage they are also, through their contributions to collaboratively undertaken activities, transforming, in small or large ways, the situations in which they act and the resources that mediate those activities, thereby opening up possibilities for transforming, even if only slightly, the culture as a whole. Such a view emphasizes the renewal of culture as well as its reproduction and therefore encourages teachers to see students as modifying and improving upon the valued resources from the past as well as simply equipping them with it. At the heart of CHAT there is therefore a tension between education as enculturation and education for autonomy and originality. We must ask how can the concept of individual agency be reconciled with the strong emphasis on socialization/enculturation that is taken to be a central feature of sociocultural theory, as well as of most public education?

We might also note here that traditionally education has tended to ignore social and emotional development, concentrating almost exclusively on intellectual development and, more specifically, on the acquisition of bodies of formalized knowledge. From a CHAT perspective, however, all human activity is inherently social and imbued with emotion. Along with other more humanistic perspectives, which are also challenging the educational status quo, CHAT therefore invites us to inquire how educational activities can be designed to engage the active involvement of the student as a 'whole person' and to contribute positively to identity formation.

Guided participation

Another key principle of CHAT is the need to include less experienced members of a society in the meaningful activities of its more mature members. For CHAT, learning is very definitely 'on-the-job' and occurs primarily through what Lave and Wenger (1991) call 'legitimate peripheral participation'. Since individuals need to internalize and construct for themselves the psychological and linguistic tools of their culture, it is essential that they be included in those activities that rely on such tools, and be given assistance in learning to participate in those activities fully and effectively. The concept of the zone of proximal development, the ZPD, points to the ways in which an individual's engagement can be framed and interpreted by more experienced others. Assistance can take many forms, from the provision of models to be imitated, through the orchestration of tasks and opportunities, to practical 'scaffolding' through feedback and guidance, and explicit explanations of principles and procedures.

However, as the most effective assistance depends on the momentary state of the learner, the ZPD idea is difficult to operationalize in a busy classroom comprising one teacher and 30 or more students. To cope with this problem, CHAT has come to explore, in recent years, the kinds of support that can be offered by peer interactions, and by a whole class working together as a 'community of inquiry'. Simply by pooling their ideas and experiences, a

group of children can together create a powerful ZPD. Nevertheless, the class is also a community in which the teacher must combine several roles: organizer of activities and instructor as well as supporter of individual students' development. So CHAT leads us to ask how classroom activities can be organized so that all learners are able to receive assistance that is appropriately pitched in their zones of proximal development. What is the appropriate balance between whole-class, group and individual activity, and between 'hands-on' action, talk, and engagement with texts of various kinds?

Recognizing diversity

In the CHAT view, it is in principle impossible to introduce a learning goal or a learning method into any culturally and historically constituted situation – like a classroom – and expect a common outcome. And this applies *a fortiori* to the multicultural and multi-ethnic classroom which is, in many parts of the world today, the norm. Among their individual members, both students and teachers, there are different identities and values that have their origins in cultural, linguistic, class and gender differences, as well as in individual trajectories of experience and current levels of performance. There are also differences in the futures that students can envisage for themselves and, hence, in the kinds of learning trajectories they wish to follow.

Set against this diversity among learners, however, is the increasing convergence of political and economic organizational structures and the homogenization of global educational provision. With the increasing emphasis on measurable, standardized outcomes, for example, there is a danger that individual aspirations and styles of learning will be ignored and that passive conformity will be valued over individual initiative and creativity. Under these conditions, not only will those who go against the mainstream be disadvantaged but, in the long term, society as a whole will be impoverished, since cultural development requires the interplay of alternative viewpoints and the exploration of alternative solutions to the problems that continually arise.

These considerations lead us to ask: how can such diversity be made a resource in educational activities rather than a problem to be overcome or a basis for divisive practices? To put it another way, how can the situated and variegated nature of learning-and-teaching activities be reconciled with the (understandable) administrative concern for mastery of a standardized, prespecified curriculum and for common outcomes? How can teachers be helped to encourage and be responsive to students' ideas and initiatives while also fulfilling their responsibility to ensure that students master the knowledge and skills that are culturally valued? And we might also wonder how to provide appropriate learning experiences for students with special educational needs or those who, by reason of their cultural and linguistic minority status, are at risk of failure within mainstream educational institutions.

Smart machines and absent others

The final key principle of CHAT we wish to emphasize here is that all learning situations are indelibly social and cultural, even if they involve no face-to-face interaction. A solitary scholar poring over her books is engaging with the voices of the books' authors, and through them with a long tradition of thought. She is also engaging, implicitly or explicitly, with the community that will receive and evaluate her 'essay' or her journal paper – choosing forms of words that have particular resonances in that community, anticipating and addressing counter-arguments, and so on. The recent proliferation of electronic forms of communication, and the opportunities for solitary and distance learning to which these technologies have given rise, have re-emphasized the extent to which CHAT thinking is fundamentally 'cultural' rather than necessarily 'social'.

And these media open up new opportunities and demand the development of new mental competencies and attitudes, or require forms of support, which may differ from those exercised or afforded by traditional education. For example, while educational programmes can now be efficiently delivered in the distance mode, the isolation in which students typically receive these programmes means that they may lack many of the forms of social and emotional support that are, ideally, available in face-to-face learning communities. Rapid-fire video games require and develop lightning sensorimotor reflexes – and appetites for stimulation – that may make sitting still in a classroom increasingly alien and intolerable. Surfing the net affords opportunities to make certain kinds of associations with astonishing ease and rapidity; but may, by the same token, conceal other kinds of connections that are not so easily displayed or unearthed. In written language, school has privileged what have been called the 'essayist' registers of technical–rational exposition, and treated them as the predominant media of learning and assessment. But the semiotic toolkit that contemporary societies both afford and require includes many other forms of meaning-making: oracy, narrative skill and the abilities to 'read' the graphic conventions of film, video, hypertext and the like. Either to ignore these powerful social trends, or simply to bewail them and treat them as subversive of school's 'higher' purposes, is surely not an adequate response. CHAT invites us to explore how education can respond to these demands on the development of young people's minds. We must ask: how should education be responding to the changing relationship between different mental tools and ways of knowing? Is there a better balance to be achieved, and if so how?

Up to now, the application of CHAT to education has focused predominantly on early childhood and the elementary school years. But questions such as these indicate that there may well be much to be gained by taking a sociocultural perspective on adult, distance and higher education, and on professional or work-based learning. CHAT invites us to look at lifelong learning, and the demands of the 'learning society', in terms of a continuing

process of absorbing and reconstructing changing cultural milieux. But we do not yet know in any detail how the mechanisms and the objects of cultural appropriation vary across the lifespan. Nor do we fully understand whether there are 'developmental tasks' that require specific kinds of mediation at different ages and stages of life. So CHAT bids us ask what a sociocultural approach to workplace or professional learning would look like. How would the principles explored with respect to schooling need to be modified to provide useful insights, for example, for adult education or the professional development of educators?

Chapter Sketches

These key principles, and the questions to which they have given rise, offer a range of responses to current educational confusion that is different from that suggested by many other frameworks. There are many other questions we could have raised: those we have highlighted above are merely illustrative, as are the hints we have offered about how some of them might begin to be addressed. In the chapters that follow, these issues and hints are explored in much more detail, both conceptually and in practice. They are arranged into three parts that progress from the conceptual to the practical, and from a concern with younger to older age groups. The chapters in the first part, 'Issues and developments in sociocultural theory', build on the introduction by discussing some of the different facets of the CHAT approach in more detail, and in particular, exploring some of the ways in which Vygotsky's original insights and formulations are currently being extended, elaborated and in some cases challenged and reformulated. In the second part, 'Pre-school and school-age learning and development', the focus becomes more explicitly on the kinds of interactions that promote successful development in families, early childhood centres and classrooms. While in the third part, 'Post-compulsory, adult and professional learning', concern shifts to the ways in which CHAT can be used to illuminate the kinds of learning and development that take place in universities, teacher education programmes, school staff rooms and even in distance education.

These broad divisions are rough and ready, at best, and the 'theoretical' chapters both draw on, and prompt speculation about, educational practice just as much as the 'practical' chapters demand and drive the development of theory. This is just as it should be, of course. It will also be clear that the contributors cannot be neatly identified in terms of which of our general themes and questions they set themselves to address, for they are tightly interwoven, and no matter at what specific point you pick up the 'net' of assumptions and priorities that constitute the CHAT perspective, you inevitably find that the rest come with it. Nevertheless, some themes emerge more clearly in some chapters than others, and it is these broad indicators that we

describe below, in the hope that doing so will help readers to orientate themselves in the midst of the plethora of ideas and examples that the contributors generate.

Part I begins with Guy Claxton's chapter, which explores CHAT's contribution to 'learning to learn'. He argues that schools should be aiming to prepare young people for a world in which an unpredictable future requires adaptability, initiative and tolerance of ambiguity and uncertainty. What is at issue, he argues, is the development of 'positive learning capabilities and dispositions' rather than domain-specific skills or substantive knowledge. CHAT invites us to consider the social and cultural contexts that support the development of flexible epistemic mentalities and identities, and emphasizes the value of resilience, resourcefulness and reflective open-mindedness. In contrast to explicit attempts to train 'thinking skills', Claxton argues that the sociocultural approach focuses our attention on the kinds of epistemic milieux which teachers create in the classroom, and especially on the affordances of different activities, the nature of the learning commentary, and the qualities that teachers model.

In chapter 3 Jay Lemke explores the tension, for the growing child, between the need to develop a coherent sense of personal value and identity, and the need to understand and accommodate to the diverse and often conflicting points of view of those they respect, or at least need to rub along with. In the process of learning to manage these relationships, Lemke argues, children's minds themselves need to become multiple and contingent. The 'ordered heterogeneity' of any community or organization – Lemke uses the metaphor of a 'village' – demands the ability to master and to juggle different ways of knowing, thinking and valuing. Lemke argues that, from this point of view, school constitutes a curious kind of 'village': one which actually makes it difficult for young people to manage the tension between identity and diversity, and which may fail to prepare them for the complex, modern kinds of 'village' in which they are going to have to live and function as adults.

In chapter 4 Holbrook Mahn and Vera John-Steiner argue that an important aspect of Vygotsky's theory has been largely ignored: the key role of affect in thinking and action. They point out that a core aspect of effective lifelong learning is confidence, and the chapter explores ways in which learners' confidence can be built up through supportive interactions. In particular, they stress the importance of caring support from colleagues and mentors in enabling people to be risks-takers in initiating new ideas and pursuing new directions. The authors show that the ZPD cannot be reduced to the kind of narrow cognitive 'scaffolding' that some educators have taken it to be: the *quality* of the relationship is crucial. Mahn and John-Steiner illustrate their argument with examples from well-known 'creative collaborations' and from work on high school and adult students learning a second language.

In chapter 5 Pablo del Río and Amelia Álvarez document the extent of what they call young people's disengagement, which is manifested in many

forms, from a lack of concern for public affairs to an absence of commitment to sustained effort in education. This malaise they attribute to the superficial and fragmentary nature of the cultural messages in the media and to similar characteristics in the organization of schooling. As the kind of learning that leads to positive mental development relies crucially on the willing, joint engagement of people in solving meaningful problems, they argue that, in school particularly, students should be challenged to undertake activities that are 'real' and related to their life concerns. Only when learning involves personal commitment does it move beyond accumulation of knowledge and expertise to qualitative mental development. (This is a theme which is taken up in several other chapters.)

In chapter 6 Caroline Gipps explores the implications of sociocultural perspectives on learning for the practice of educational assessment. She asks: if learning is essentially a social process, how can the traditional forms of highly individualized and competitive evaluation be appropriate? Gipps argues for revised methods of assessment that are more 'dynamic', catching something of the learner in action, rather than merely trying to measure summatively how much of a body of knowledge has been transmitted. She discusses assessment methods that are communal, capable of describing how groups of students are developing as social learners And she also points out that the assessment process itself is inherently both a social and a learning situation, in which important power relations between teacher/assessor and learner greatly influence the learners' performance, and in which learners are continually reappraising their relationship to the assessment process, and are learning what is 'required', and how to deliver (or withhold) it.

To round off Part I, Anna Stetsenko and Igor Arievitch (chapter 7) remind us that, from the CHAT point of view, the development of 'higher mental functions' is the result of mastering the tools – material and symbolic – that are used to organize and pursue meaningful activities in the communities in which students are growing up. Much of this process of appropriation, especially in the early years, happens informally, but deliberate teaching becomes one of the most important channels through which cultural tools are transmitted. In the bulk of the chapter the authors describe the seminal contribution of Piotr Gal'perin, one of Vygotsky's students and colleagues, who argued, in essence, that the teacher must organize their work around the most abstract and coherent principles that characterize a particular domain of knowledge. These principles are the core 'conceptual tools', the internalization of which enable students to think powerfully about a whole range of phenomena.

In Part II, 'Pre-school and school-age learning and development', several themes emerge and recur, including the importance of learning dispositions, as these are established at home and in the early years of schooling, and also the importance of students' being encouraged to take initiatives and to engage in activities that are personally meaningful and that bridge the gap between school and the wider communities in which they are also learning and forming

their identities. In chapter 8, for example, Margaret Carr demonstrates the ways in which young children's orientations towards (or away from) learning are being moulded through the activities that are offered to them in early education centres, and through the kinds of verbal and non-verbal messages they receive from their teachers and carers, and from each other. Carr argues that, as dispositions begin to develop, so they draw children towards or away from certain kinds of experience, thus narrowing the range of 'learning niches' which the children can inhabit and explore. They thus quickly become self-perpetuating and self-reinforcing, and so making sure that children set off with learning-positive dispositions is of great importance.

In chapter 9 Ruqaiya Hasan emphasizes the role of 'semiotic mediation' in the development of learning dispositions in the young child. It is through conversations of all kinds that the child's developing 'habits of mind' are most powerfully influenced. Drawing on examples from a large longitudinal study, Hasan shows how unremarkable interactions, centring around ordinary, everyday activities, inexorably steer young children's mental and social development, and thereby lay the foundations for further, more specialized forms of study that are either secure and robust, or not. Recorded snatches of such conversations are used to illustrate how the disposition towards curiosity and questioning, for example, can be subtly either cultivated or suppressed. If the former, children enter school eager to learn; if the latter, they are likely to adopt a more passive or receptive attitude.

One of the most useful cultural tools that language affords, especially in the process of grappling with views that differ from or conflict with one's own, is the ability to argue: to probe other people's assertions and to mount public defences of one's own. In chapter 10 Clotilde Pontecorvo and Laura Sterponi use episodes of conversation similar to Hasan's to show children encountering and producing justified interpretations of events which are then corrected or challenged by older children, siblings, parents and teachers. By entering into communal debates and public 'thinking through' of significant issues, pre-school children come to master various rhetorical devices and modes of rational argument. In conclusion, Pontecorvo and Sterponi argue that the opportunity to take part in well-orchestrated 'narrative activities', at home and school, is necessary if children are to be prepared for life in the twenty-first century.

Neil Mercer (chapter 11) argues that 'the prime aim of education ought to be to help children learn how to use language effectively as a tool for thinking collectively' and that, reciprocally, participation in collective thinking stimulates individual cognitive development. For Mercer, genuine dialogue in the context of jointly undertaken activities is the chief means through which children appropriate cultural knowledge and culturally valued strategies of discussion and problem solving. In the second part of his chapter Mercer describes a programme of 'talk lessons' that introduce 8–11-year-old children to the practice of collaborative exploratory talk. Teacher-led, whole-class

discussions that make explicit 'the ways we talk' are interwoven with small group tasks that stimulate relevant forms of conversation. Mercer reports data which show that participation in this programme enhances children's ability to carry out problem-solving tasks, both in collaborating groups and alone.

In chapter 12 Paul Cobb and Kay McClain show how Mercer's principles apply equally well to the learning of mathematics in middle-school classrooms. CHAT, they have found, is extremely helpful for the design and interpretation of classroom investigations. Teachers and researchers work as a team to construct, implement, monitor and adjust a range of 'design experiments'. For Cobb and McClain, the collaborative learning of the teachers is as much informed by CHAT as are the activities they construct for the students. They illustrate their approach with data from a group of seventh-graders working collaboratively on a statistical task that involves discovering and exploiting the relevant affordances of some computer-based 'minitools' which enable the group to think in more sophisticated ways. The authors argue that learning is 'distributed' not only across social groups but also across the technological tools that the group can make use of. Through designing teaching on the basis of such principles, students can be encouraged to develop for themselves conceptual tools that will be of real value.

In chapter 13 Seth Chaiklin asks how specific subject-matter teaching can contribute to young people's more general mental and personality development. Some discussions of CHAT seem to focus almost exclusively on the process of learning, as if the content of the activity itself was of only secondary importance. Chaiklin, like Stetsenko and Arievitch, argues that each discipline has at its heart a set of powerful, abstract conceptual tools that, if mastered, give the learner access to valuable forms of more sophisticated thinking. Personality development centres on the acquisition of such powerful mental capabilities, and these can only be developed through working with specific, substantive content. It is a core part of the teachers' role, on such a view, to analyse clearly what the core conceptual tools are in their discipline, and to pose questions and design classroom activities in such a way that learners are drawn into an understanding of these underlying organizing principles.

Part II concludes with a chapter by Stephanie Dalton and Roland Tharp (chapter 14), in which they focus on approaches to learning and teaching that meet the needs of children whose diverse backgrounds put them at risk of educational failure. They put forward five principles or 'standards' for effective pedagogy and illustrate each with examples taken from a diverse array of elementary classrooms. These standards are: that teachers and students should engage together in 'joint productive activity'; that all activities should be designed to develop students' language and literacy; that school activities should make meaningful and timely connections to students' out-of-school lives; that activities should stimulate the development of ever more complex

forms of learning and thinking; and that task-focused conversations between students, and from students to teachers, should be encouraged across the board. Though these standards derive from work with students at risk, the authors point out that they are equally appropriate as a basis for planning educational experiences for all students.

In Part III the contributors go beyond school-age students to consider the needs of adult and professional learners. Though this represents less well charted waters for sociocultural approaches to education, these chapters collectively demonstrate how fruitful the CHAT approach can be at this level. For example, in chapter 15 Gordon Wells argues that CHAT must inform the aims and activities of teacher education and professional development, as well as those of the classroom. He begins by proposing that 'inquiry' is the approach to learning and teaching that best enacts CHAT principles and argues that if teachers are to adopt this approach successfully in the classroom, it must also characterize their own learning experiences, both pre-service and in-service. Wells describes attempts to create overlapping 'communities of inquiry' in which school-age students, their teachers and university-based teacher educators collaborate to discover ways of learning and teaching that are empowering for all concerned. In contrast to some similar-sounding projects, Wells argues that it is essential to put the teachers and the students, rather than the academics, firmly in the driving seat.

In chapter 16 Yrjö Engeström, Ritva Engeström and Arja Suntio focus on teacher development within a school community. Describing a partnership between a university research team and a middle school serving a disadvantaged population, they illustrate two ways in which CHAT can serve as a tool for change. First, it was used in the 'Change Laboratory', in which teachers were invited to explore the tensions and problems in the school's current organization. Second, it provided a framework for the analysis of data, collected over a two year period, that recorded teachers' attempts to change that organization. Most significantly, the authors show that the desired change in students' commitment to a learning project, and their ability to bring it to a successful completion, depended on, and was brought about by, a change in the teachers' ways of talking about the students and of evaluating their attitudes and achievements.

Katherine Brown and Michael Cole (chapter 17) also discuss a range of projects in which school pupils, teachers and university staff and students collaborate in the design and running of an after-school club that engages youngsters in a variety of enjoyable but intellectually demanding computer-based activities. The authors contrast two versions of the programme in an attempt to identify the factors that enable some versions to flourish while others fail to surmount similar challenges. While there is no one factor that determines whether such projects thrive or struggle, the importance of the relationship between the programme directors and the local community is significant. If the community holds a model of education, or of how best to