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Chapter 19

Mediated learning leading development – the social development theory of Lev Vygotsky

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Abstract

The importance of Vygotsky's thinking is reflected in how - despite being condemned and censured under Stalin in the CCCP where he worked - he is so often cited in educational work today. Vygotsky was something of a polymath, and appropriately his thinking has influenced a number of key areas of educational work. This chapter will explore some of Vygotsky's most influential ideas, and in particular consider how they can inform the study and practice of education. Vygotsky posited a notion of conceptual development which highlighted the importance of the interaction between spontaneous conceptions and scientific or academic conceptions – the latter reflecting the formalised knowledge adopted within a culture, such as the formal concepts developed in the sciences. This kind of learning is therefore situated in a social context and mediated by cultural tools, such as language. From this perspective, the potential of a learner is best judged in terms of their capability within a supported teaching context (the so-called zone of proximal development) and effective teaching can be seen as a form of scaffolding of learning. Some of Vygotsky's once radical ideas have over time come to seem obvious to teachers (as his theory of cultural mediation might lead us to expect), but his work continues to drive thinking in areas such as social constructivism, cultural-historical activity theory, and learning communities.

Keywords: language in learning; symbols as tools; the zone of proximal development; dialectic; social constructivism; mediation of learning; private speech; spontaneous concepts; scientific (academic) concepts; melded concepts; scaffolding planks; scaffolding poles; gifted learners; educative learning activities; differentiation

Introduction

Lev Vygotsky worked in the Soviet Union (CCCP: Сою́з Сове́тских Социалисти́ческих Респу́блик) in the first third of the twentieth century, before dying of tuberculosis at 37 years of age. Considering his early death, and considerable political censure (at one point some of his work could only be read by those to whom the KGB, the CCCP 'secret police', issued a special library pass), Vygotsky's influence on education internationally today is noteworthy. He was very interested in cognitive development and his work is relevant to education in general (e.g., in terms of pedagogy and assessment) as well as having particular value in supporting learners with specific developmental or learning difficulties and gifted learners. Vygotsky was also very interested in literature and the arts more generally.

Vygotsky wrote in Russian, and most of his writing is in the form of discrete papers. He is best known in the English-speaking world through two books: 'Thought and Language' (1934/1986), and 'Mind in Society' (1978), the latter edited together from a number of his discrete works. An English publication of 'Thought and Language' (it is sometimes considered that it might have been better translated as 'Thinking and Speech', and appears under that title in other editions) included an introduction by Jerome Bruner (see Chapter 13) who recognised the potential importance of Vygotsky's work and sought to publicise it the West.

Vygotsky worked with a number of collaborators (perhaps the best known in the West is Alexander Luria), and his ideas have been adopted, adapted and developed by a range of thinkers working in different national contexts. This chapter introduces Vygotsky's work in terms of some of his best-known ideas with relevance to research and practice in education. In particular the chapter considers his emphasis on language and the use of symbols as tools, the sociocultural aspect of education and development, the zone of proximal development, and his model of cognitive development. These themes are interlinked, and the treatment here will reflect that.

Vygotsky's ideas are complex and have been much discussed and developed. As with all texts, his writings are open to interpretations, something perhaps especially significant when reading in translation. Vygotsky's early death prevented him fully developing and refining many of his ideas. For example, Vygotsky is said to have dictated the final chapter of *Thought and Language* on his deathbed, giving him no opportunity to review the overall text once the draft was finished. If we see writing as potentially a tool for thinking (a notion that fits well with Vygotsky's perspective) we would expect an author's ideas to develop through the process of writing a book, and authors

often review their manuscripts after drafting to ensure consistency. This luxury was not afforded to Vygotsky. This chapter focuses on introducing some of the areas where the legacy of Vygotsky's writings influences current thinking and practice in relation to teaching and learning, and the nature of schooling.

The importance of the social in learning and development

Vygotsky was interested in human development, and he thought that a full understanding of this topic needed to consider four quite distinct levels or scales. One had to understand the development of the human species as a biological entity; the history of human peoples as they developed culture; the general course of the development of an individual; and the development of particular psychological processes as they appear in an individual. The latter required microgenetic studies (Brock & Taber, 2016) that intensely investigated an individual during the time when new processes developed. Vygotsky noted that when such opportunities occurred during psychological experiments (exploring children's responses to tasks under controlled conditions) his contemporaries were usually interested in looking at stable patterns and so ignored the 'training' phase whilst those patterns were being established. It was that stage of cognition in flux that Vygotsky thought offered most interest.

A key focus of Vygotsky's work was the social nature of learning and development (cf. Chapter 7). He considered that the ability to teach others, and to learn from others, was a characteristic quality of human beings (Moll, 1990). Indeed, Vygotsky went as far as suggesting that it was generally the case that the learning of an individual always involved a process of internalising (to an intra-personal or intra-mental plane) what is first experienced in interaction with others (i.e., experienced on an inter-personal or inter-mental plane) who had already previously internalised that learning. This then is an emphasis on the role of culture (and therefore less directly, history) in the development of the individual. That which affords one to develop as an adult mind operating in some particular society at some point in its history would not be available to a lone epistemic subject learning directly from interactions with the physical/natural (non-social) environment.

This is perhaps obvious in the context of formal education such as in science lessons - children are taught, with varying degrees of success, about Newtonian physics, the circulatory system, atomic structure, and so much more: knowledge they would have negligible chance of acquiring simply

through lone direct interrogation of nature. However, Vygotsky was thinking more widely - so even before school the young child learns about the world supported by parents and others. For Vygotsky, development was not purely related to the child being supported to transition into an adult through social mediation. Rather, the nature of human society is that we continue throughout our lives to learn, and develop, through the mediation provided by the culture, that is through interactions (directly or mediated through various media) with others. Taking this view seriously should have implications for what we see education to be preparation for, and how we consider it is best organised, as well as how we view new forms of media that can mediate enculturation (see Chapter 9).

People then, by the nature of what it is to be human, exist within some specific culture (Geertz, 1973). Such cultures have developed historically, such that they represent the combined development of many generations. Enculturation depends upon mediation by others who already share in aspects of the culture being acquired. However, it is also important to note that Vygotsky's theories were dialectical in nature (he was working in a Marxist state, in more than one sense) – so he did not conceive of a one-way process of the individual absorbing a static culture (cf. Collins, 2010), but rather he thought that the changes the learner goes through can change the context itself. Cultures are themselves in flux (thus history), and subject to diverse influences - so they are always in a kind of unstable equilibrium that may be readily shifted. Vygotsky himself lived in revolutionary times.

Social constructivism

One area where this social focus is important is the manner in which Vygotsky may be considered a constructivist - in the sense of someone who believes that knowledge is actively constructed (rather than being already innately present in some sense, and being revealed by contemplation or experience; or being acquired by sense impressions that impress fully formed knowledge directly onto mind). Vygotsky was contemporaneous with (the early) Piaget and read and commented on his work. Piaget (see Chapter 10) assumed that the learner was an active constructor of knowledge, and his perspective focused on the learner's actions in and on the environment (Piaget, 1970/1972). Piaget certainly acknowledged the role of social interaction in some learning, but he largely wrote about his epistemic subject as if the social was secondary - and considered young children as too egocentric to effectively learn though social interaction. For Piaget, when young

children play together, they are really each playing alone within the same social space, and the ability to genuinely share in authentic collective activity only develops over time (Piaget, 1932/1977).

Vygotsky, however, considered social interaction to be a central part of all human learning. Whereas Piaget's research programme was one of genetic epistemology (finding the common cognitive development sequence that each individual person would be expected to pass through), Vygotsky's programme was sociohistorical: that is, it took the perspective that human psychological developments are mediated by culture and so ultimately contingent on history (Cole, 1990, p. 91). Vygotsky believed that from the age of about two years, development is closely influenced by the young learner's interactions with other minds (Crain, 1992). Vygotsky's perspective, unlike Piaget's, did not suggest a single pattern of development as inevitable for all humans, regardless of their cultural context.

For Piaget, action on the environment supported by existing cognitive structures allowed the development of more advanced structures: which in turn allowed more advanced learning. The nature of science (as primarily a body of theoretical knowledge that develops through the interplay between theory and empirical observation and hypothesis testing) suggests that understanding much school science depends on learners having already acquired the stage of formal operations (Shayer & Adey, 1981). So, for Piaget, "development explains learning" (Piaget, 1997, p. 20).

In contrast to this, Vygotsky considered that learning should lead development. He suggested at one point that "the only 'good learning' is that which is in advance of development" (Vygotsky, 1978, p. 89). At first sight this seems problematic - if the learning of certain material requires a particular level of development, then without that degree of development the learning should not be possible. However, for Vygotsky 'good learning' is initiated on the inter-mental plane, mediated by others who are further ahead in their own development, so that the learner vicariously experiences what is to be learnt. At this point the learner is (to borrow a term) a legitimate but *peripheral* participant in the activity (i.e., one who would no longer be able to continue the activity successfully without the support of others - see Chapter 20). Yet, by engaging in the interaction, the learner can begin to internalise and take ownership of the knowledge – and so is able to eventually become a full participant (Lave & Wenger, 1991). Once this process is complete the individual will be able to demonstrate the learning without the support of the interaction with others. This

process is possible because of tools such as symbolic systems that support both (a) communication with others and (b) thinking for oneself.

Tools and mediation

Vygotsky saw an extensive use of tools as something specifically human. Although he was aware some other animals used tools, he considered human tool use as different in extent and kind. In particular, humans can *use tools to make and improve other tools*, and Vygotsky thought this second-level use of tools was important to our development. There is a parallel here with Piaget's notion of formal operations, the most developed of his four main stages of cognitive development, where a person can not only undertake mental operations to model aspects of the world, but is able to *mentally operate on those mental operations themselves*. Tools include artefacts such as a step ladder or hammer, but could also be tokens and other signs and symbols.

Another key term in Vygotsky's thinking is mediation. Mediation allows what would otherwise not be possible. Others can mediate for us; and we can use tools (in the external world, or intra-mentally) to mediate activities. This is seen as essentially social in nature, even when a child is solving a problem alone, because the tools they use (be that physical objects or physical tokens of other objects or symbolic tools used in thought) are provided by the culture. The child who has internalised symbolic tools (such as number systems, or, say, chemical formulae) and can now apply them unaided, only does so following previous mediated access to such systems in interaction with others. Teaching is the process by which such mediation of learning is deliberately carried out.

One area of work that has developed from that of Vygotsky and his colleagues is that of activity theory (see Chapter 21), or cultural-historical activity theory (CHAT). Vygotsky's work is considered to be the first generation in this tradition, and is associated with the mediation triangle which sets out graphically the subject (acting person), object (to be acted upon to some effect), and mediating tool, as the apices of a triangle. This is seen as a dialectical system with each component influencing the rest.

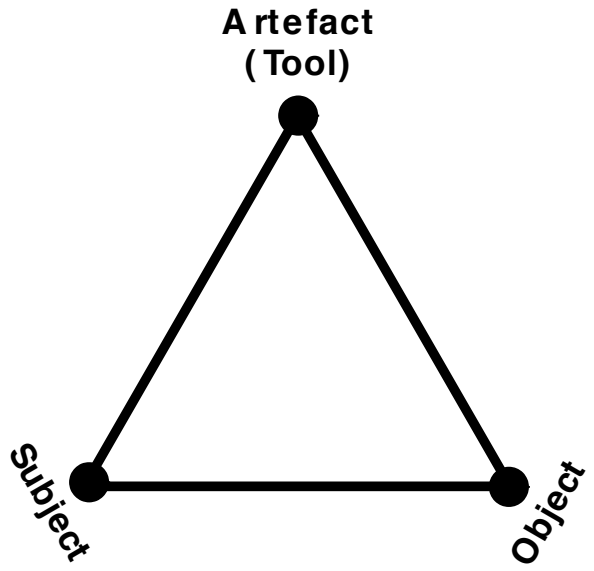

Figure 19.1: The general form of the semiotic triangle

This simple image (figure 19.1) is itself of course an example of a symbolic tool. It has been pointed out (Taber, 2014) that it has a strong parallel with the idea of the experiential gestalt of causation, which has been suggested to be a common way in which people understand action in the world, and which influences much learning about natural mechanisms in science classes. Andersson (1986) has suggested that a wide range of reported alternative conceptions in science may be understood in terms of this pattern of thought. Leontiev and others developed a 'second generation' of CHAT which extended the mediation triangle to collective activity by including rules, community, and division of labour. CHAT offers an important theoretical perspective for understanding and analysing education (Smardon, 2009).

Language in development

Vygotsky put a strong focus on the role of language in human learning and development. For example, he looked at the role of private speech, talking to oneself, that is common among young children. Piaget was also interested in this feature, and for him it linked to the egocentric nature of the child: the difficulty young children have decentering from their own perspective and seeing the world from a different viewpoint (Piaget, 1959/2002). Most adults sometimes talk out loud to themselves, but most of their internal dialogue is undertaken as verbal thought without being

spoken. Children, however, often accompany an activity with a commentary that is spoken out loud even though only intended for themselves.

Talking to ourselves, whether out loud or internally, invites an explanation. Language is not necessary for thought (not all our conscious thinking is verbal), but is needed for communicating *with others*. Vygotsky suggested that private talk actually had a strong social element, as language had its origins in the need for people to communicate to each other. Vygotsky considered that the child adopted the tools of communication with another as a means to help plan and carry out actions - even when no one else was present. Later such talk would be internalised, but in its origin private talk is social in nature (Vygotsky & Luria, 1994). This reflects the general principle that in development what is acquired on the intra-personal plane (within the mental life of the individual) follows what is acquired on the inter-personal plane (in interaction with others). Once this tool becomes available, it could be used not only to communicate to others, but to support the individual's thinking, and so aid planning, problem-solving, reviewing experience, etc. A key skill for a scientist is to be able to critique their own ideas, considering the potential objections and challenges others may suggest, and so looking to weed-out weak ideas, and strengthen the more promising against criticism. Part of learning to be a scientist is to learn to engage in this kind of internal dialogue, having in effect mentally modelled (internalised) potential interlocutors.

Conceptual development

Vygotsky (1934/1994) discussed the nature of concept development, and in particular the relationship between spontaneous concepts and 'scientific' (or academic, or schooled) concepts in the learner's development of a conceptual system. Scientific concepts (such as xylem, symbiosis, oxidation, transition metal, photon, magnetic flux density - but Vygotsky's category was broader and would also include gestalt switch, price elasticity of demand, the industrial revolution, distributive justice, the baroque, and so forth) cannot be acquired by familiarity with instances met in everyday life - which may be sufficient for acquiring so-called natural kind concepts such as cat or tree. They therefore need to be taught by being explained through language.

In particular, Vygotsky considered words to be key tools, acquired through mediation, which were essential to developing high level thinking and mature concepts. Children may learn new words from conversations without initially having a sophisticated understanding of their intended meaning

- clearly limiting their communicative affordances (Fodor, 1972). Vygotsky thought that personal word meanings evolve - a process that can be mediated by talk with others and through internal processes of conceptual development. Once a word is acquired, initial impressions of what it could mean can be tested and developed in conversations with others, and indeed in internal dialogue.

Vygotsky saw conceptual development as an interaction between spontaneous and scientific concepts. Spontaneous concepts, with their experiential grounding, allow scientific concepts to be understood as more than just formal definitions – so, in effect, the student can develop a 'feel' for what is meant by technical notions such as momentum or density or combustion or excretion, or indeed (by building up layers of concepts ultimately grounded in spontaneous concepts) what is meant by atomic orbital, electromagnetic induction, or cellular respiration). Scientific concepts provide sophisticated tools for thinking and communicating about spontaneous concepts. So, spontaneous concepts abstracted from perceived regularities in experience can come to be understood in terms of, for example, friction or viscosity or thermoregulation.

The notion of a dialectic is operating here as both types of concept are themselves changed in the interaction - Vygotsky used the image of the spontaneous and scientific concepts moving or growing towards each other. In effect the resulting system of concepts is neither spontaneous nor scientific (nor just a collection of these two types) but some kind of hybrid that is the synthesis of the thesis-antithesis of spontaneous and scientific concepts. Our mature concepts are actually melded concepts that draw upon both sources (Taber, 2013).

These ideas are reflected in more recent influential work exploring the metaphorical nature of human concepts (Lakoff & Johnson, 1980). This suggests that our abstract conceptions are built upon direct perception in terms of metaphors that allow us to extend the use of terms that originally had direct experiential referents. So, we know what a *big* mistake is, and why the time to the holiday is described as *long*, and so forth. We refer to the element carbon being 'above' that of silicon in a reproduction of a periodic table laid flat on a desk, and to nucleophiles being 'hard' or 'soft'. Darwin (1871/2006) wrote of the '*Descent of Man…*', which was an enquiry into whether Homo sapiens had 'descended [sic] from some pre-existing form' (p.778), rather than an account of his 'fall' from grace.

This is again consistent with the general principle of constructivism: human cognition builds up complex abstractions incrementally from what can be directly perceived in the world (Taber, 2014). Language is a core resource for these processes. A child who understands what *big* means in

relation to a big dog, a big chair, a big bed and a big box (i.e., examples where big is something perceived as large in relation to others of its kind), is through mediation via dialogue able to appreciate how within the culture an idea can be said to be big even though an idea is not perceivable and does not have a physical size.

Even with the tools of language, communication between minds is inevitably fallible, and the teaching of concept abstractions is clearly challenging. The teacher is charged with introducing the learner to the cultural tools of the subject being taught (e.g., concepts such as oxidation, transition element, alkali metal, halogen) and helping the learner to engage with these tools with support till the learner can internalise them so that they become part of the available repertoire of interpretive resources for making sense of, and communicating, experience. The skilled teacher will use models, stories, gestures, images, analogies, similes, and various other mediating tools (Lemke, 1990; Ogborn, Kress, Martins, & McGillicuddy, 1996): Vygotsky's perspective would suggest that these devices support the process of understanding the abstract concepts in terms of the learners' existing interpretive repertoire of spontaneous concepts (or existing melded concepts deriving partially from them).

Given the importance of spontaneous concepts in concept development, it can be valuable to spend time eliciting student ideas at the start of a topic - a very common constructivist technique in science teaching (Driver & Oldham, 1986). The effective teacher does not just present the academic ideas in the abstract, but tries to work with the students' own thinking and shift it towards the target knowledge (Scott, 1998). Dialogue between pupils to share, explain and challenge ideas has been found to have much potential to support this process (Tudge, 1990). Mortimer and Scott (2003) highlight the importance of dialogue in science teaching, and the role of the teacher in eliciting students' ideas and supporting the process of engaging students in active dialogue as they move towards understanding and adopting authoritative science concepts.

The zone of proximal development and assessment

One of Vygotsky's best-known ideas is the so called 'zone of proximal development' (ZPD). Vygotsky considered that the usual approach to assessing students by giving them a test they should complete unaided and without reference materials was often inappropriate. He discussed the kind of intelligence testing that calculated students' mental ages. Binet had introduced such

tests to identify pupils who were retarded in their development compared with their physical age and who would not benefit from being in class with their same age peers (Gould, 1992). This was progressive at the time (certainly an improvement on the previous method of measuring the size of a pupil's head). Vygotsky's insight was that several pupils of the same mental age may have very different potentials for further learning in the near future.

Vygotsky imagined a kind of 'phase space' relating to the potential competencies of a learner. At any moment in time a learner's current level of development would encompass a wide range of competencies, a zone of actual development (ZAD), outside of which lie all those things they cannot yet do (techniques they have not mastered, problems they could not solve, etc.). In effect, traditional educational assessment looked to identify the extent of the ZAD in relation to some particular domain – such as perhaps what the student already knowns and understands about acids or the extent to which the student can find solutions to exercises requiring the use of the equations of motion. Vygotsky, however, considered it was much more useful to know about the extent of the zone around the ZAD which reflected what the learner could not yet do autonomously, but was ready to do with suitable support (i.e., the ZPD). This zone of next, or proximal, development would (like the ZAD) vary from student to student, and indicated what the student was ready to learn.

If we want to assess people purely in terms of what they can do unaided without support, the traditional test or examination makes sense. If, however, education is about preparing people for their roles in society - where their work will be mediated by others and a wide range of cultural tools - then it would seem to make more sense to assess people in situations that better reflect how people actually work, and learn, in the workplace, in organisations, and in other social contexts (see Chapter 20). So, contexts such as project-based learning, working in teams, open-book exams, assessment by interactive interview, etc., would seem much more useful foci for assessment (cf. Chapter 23). In recent decades, there has been a strong emphasis in many countries on a shift from summative assessment to diagnostic and formative assessment - assessment to support learning - at least *during* educational courses if not at their conclusion. Vygotsky was arguing for diagnostic assessment - assessment in, and of, the ZPD - in the 1930s. In science education, there has been an ongoing programme of work to develop diagnostic tools to support diagnostic assessment in teaching (Treagust, 1995).

Scaffolding and pedagogy

A key notion developed from Vygotsky' ideas is that of 'scaffolding' learning (Wood, Bruner, & Ross, 1976). If one accepts Vygotsky's principle that learning precedes development, then teachers should be looking to get their students working in their ZPD. Students can be very busy (and successful) working in their ZAD, but this does not support further development. Drill and practice might increase efficiency (accuracy, speed) but does not help a student move on to a new level of skill or understanding (cf. Chapter 11). However, by definition, a student given a task considered beyond their ZAD, in their ZPD, will fail: *unless* they are given suitable support (see figure 19.2). So, learning activities need to be both beyond the ZAD, and yet mediated to allow success with suitable support. Scaffolding is structure put in place to enable the learners to succeed in such a way that they will learn new competencies.

Scaffolding has entered the educational lexicon, and the term is sometimes used very loosely. Designing educational scaffolding is a challenging task because it has to be matched to the ZPD (Taber & Brock, 2018). Insufficient support leads to frustration and failure. Yet support that takes over too much of the task will not encourage learning. The scaffolding therefore has to be dynamic, so it moves the learner in manageable stages from legitimate peripheral participation (sometimes starting as just an observer) to taking over full central participation (with the teacher now being purely an observer), giving the learner full agency and allowing the learner to internalise the new competency. This model is used, for example, in the professional preparation of new school teachers. A new science teacher-in-preparation initially observes the regular teacher at work, before assisting them (perhaps by supporting students during deskwork), before taking responsibility for leading on particular tasks (e.g., introducing a laboratory activity) and so on until they are eventually preparing, teaching, and assessing, sequences of lessons monitored by the experienced class teacher. Such preparation may include regular shifts between studying in the university and teaching on school placement (Taber, 2017), potentially supporting the development of personal concepts melding classroom experience and taught pedagogic theory.

As one example from school science learning: at the end of secondary chemistry education, a student might be expected to identify an unknown (a cation, an oxidation state, the concentration or purity of a reagent, etc.) through a series of measurements involving back titration. As well as carrying out the laboratory actions, the student will need to access and manipulate chemical equations, and undertake a series of calculations - having first mentally mapped out the activity to

conceptualise how a series of processes can lead to the solution to the task. It is expected that a successful student in advanced chemistry can undertake and solve such a problem. Very few students studying at senior school level are initially able to complete such a task even when the appropriate mediational tools (laboratory apparatus, reference works, the relevant symbolic systems, etc.) are available. This is so, even when the components of the process are individually within their ZAD (they know the chemical equations, have the required mathematics, etc.).

The teacher's role here is to set up the learning so that the scaffolding is initially rich enough to take the learner through the task, but is then gradually reduced (the term used is 'faded') as the student internalises more of the individual components. The teacher could begin by reducing the whole activity to a recipe to be followed, but that would likely support limited learning (cf. figure 19.2: a key competency here is understanding, and being able to plan according to, the overall logic of which measurements and symbolic manipulations are needed).

The teacher might then instead decide to provide a briefing sheet asking basic questions about relevant prerequisite knowledge that will be needed (perhaps about titration, redox, balancing equations, half-equations, etc.) and a flow chart with all the required stages (to help the student appreciate the logic and see where the steps fit into a larger picture), and a list of the relevant chemical equations. The teacher may also encourage students to work in pairs as this will require them to talk through and explain their thinking to each other. Later in the term when a similar activity is undertaken the flow chart provided may omit some information that the students have to identify and input, and no chemical equations will be provided. At some later stage the students will be expected to build the flow chart themselves when planning their activity. Eventually students would be expected to design and undertake the activity alone, drawing only upon reference materials.

There are different types of possible scaffolding tools that can be introduced. Elsewhere, I have suggested scaffolding planks (platforms for new knowledge) and poles (provided outlines lending support, or provided outlines lending epistemological support) as two examples (Taber, 2002). The 'planks' help the learner identify and organise existing prerequisite knowledge and the 'poles' help set out a framework for carrying out the new activity. Both may be considered to help limit the 'degrees of freedom' among which choices might be made (Taber, 2018). In the back-titration example, the titration practical briefing sheet (a scaffolding plank) sets out which previous learning is going to be called upon, and the flow chart (a scaffolding pole) directs the purpose and nature of each stage of the laboratory work and subsequent analysis.

Much teacher scaffolding uses speech. The typical nature of the language game in the classroom, where, for example, teachers ask series of questions to which they already know answers (Edwards & Mercer, 1987), can be seen as functioning as part of the scaffolding process by breaking ideas down into manageable learning quanta, limiting the degrees of freedom within the talk - reducing memory load by highlighting what is to be considered now (a kind of scaffolding plank) - and managing the sequencing of ideas being presented and considered (a kind of scaffolding pole).

Special needs and gifted pedagogy

One area of Vygotsky's work was 'defectology' (a term which seems ugly and incorrect in modern English usage), the study of children for whom development was impeded by some defect. Regardless of the term, Vygotsky's perspective was progressive. Vygotsky felt that too much emphasis was placed on measuring the level of defect, rather than looking to compensate for it. Vygotsky's theoretical perspective implied that for learning activities to be educative they needed to challenge the students in their ZPD but provide support to allow the student to achieve. This suggested that if a child was visually impaired or deaf, for example, this would exclude them from some of the usual cultural mediation supporting the acquisition of the symbolic tools that were the basis of higher cognitive functioning. A child with some disability would fail to develop normally in terms of cognitive development not because of lack of potential of the cognitive apparatus, but rather because normal development would not be mediated in the usual ways. For Vygotsky then the aim was to find compensatory means to provide the tools needed for development. Students need to be provided with support in their ZPD, and if the usual means of mediation were not accessible, alternatives needed to be found or developed. (An example would be braille as an alternative to print - an alternative tool for accessing texts.)

One area sometimes classed under special needs or inclusion is the issue of those students who are considered as 'gifted' (or in different educational contexts, 'talented' or of 'high ability'). Conceptions and definitions of giftedness vary, but in many educational contexts there will be some students who have developed further than their peer group such that learning activities which are appropriate for most of the group have little value for the gifted learner (Taber, 2007).

Whilst some traditional approaches treat the gifted child as a discrete category from others, it is also possible to see the label of giftedness as dynamic and contextual - that is, specified in relation

to a particular lesson and activity - so that who is considered as gifted might vary over time and according to curriculum subject or even topic. Some students will have extensive experience of part-time work or hobbies or cultural traditions which put them at a very different starting point for learning particular material. An obvious example would be a child from a bilingual home in a class being introduced to a 'foreign' language that is effectively L1 (first language) for *that* child. In science, some students bring to class extensive experience of building mechanisms or circuits, or collecting natural history specimens, or amateur astronomy.

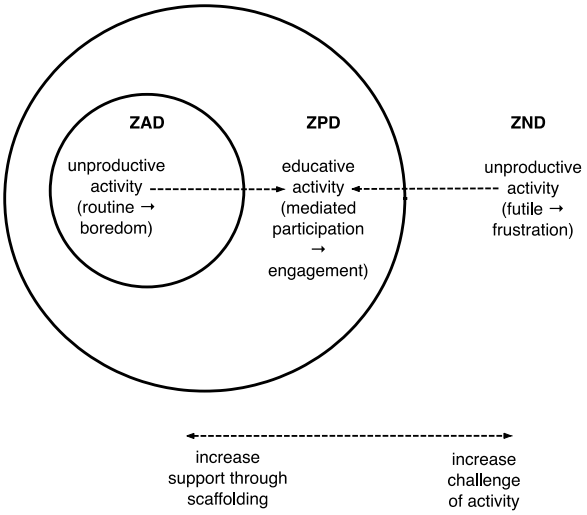

Figure 19.2: Educative learning activities are those that balance task challenge and the support provided

Vygotsky's theory suggests that 'good learning' takes place in the ZPD, and therefore educative experiences are those experiences that are both challenging and suitably supported (see figure 19.2). Activities that are within the ZPD of most students in a class may well fall within the ZAD for gifted students and so have little educative value for them. In principle (if not in practice) the solution is simple: the teacher needs to shift the balance between challenge and support for the different students in a class. Gifted learners require more challenging activities, or less scaffolding, than others in the class (Taber, 2016).

Whilst the need for more challenge for these students is widely recognised, Vygotsky's theory offers a novel perspective suggesting starting planning teaching so lesson activities are challenging for the most able in the class, and then designing differentiated scaffolding to provide the optimal balance of challenge and support for all the different students in the class. If teachers are able to

plan differentiated teaching in this way, there ceases to be any value in labelling particular students in a class as gifted or having special needs.

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