

Negotiating learning: the features of scaffolding

Bronwyn Parkin 2013 unpublished

Vygotsky's work on the zone of proximal development as the zone of good learning emphasised the role of 'more knowledgeable others' (Wood 1989) in leading the child out to the next level of development. While Vygotsky's work was cut short, many other researchers influenced by Vygotsky have investigated the process of drawing a child from independence to the next level of development through the ZPD. The notion of 'scaffolding', that is a negotiated, two-way pedagogy, was introduced by Wood, Bruner and Ross in the study of adult-child dyads (Wood, Bruner et al. 1976). Bruner described the process of scaffolding:

In general, what the tutor did was what the child could not do. For the rest, she made things such that the child could do with her what he plainly could not do without her. And as the tutoring proceeded, the child took over from her parts of the task that he was not able to do at first, but, with mastery, became consciously able to do under his own control. And she gladly handed those over.(Bruner 1986).

Some important features distinguish scaffolding from other provision of help to children. The features of the pedagogic process of scaffolding, taken from a number of sources, can be summarised thus:

- The 'knowledgeable other' serves as a 'vicarious consciousness' for the learner (Bruner 1986). From a socio-historical perspective, cognition is not individually possessed, but regarded as distributed, that is, shared amongst discourse members (Salomon 1993, cited in Daniels 2001). Until the novice has internalised the cognitive resources available, the adult lends cognition so that the goal can be achieved using culturally available means.
- The process of scaffolding is not a simple act of will on the part of the adult, but a negotiable transaction (Wood 1989).
- For scaffolding to be successful, *comprehension of the solution must precede production*. In other words, even though there may be many elements of the task that are out of the novice's reach, there must be a shared understanding between adult and child of the end goal (Wood, Bruner et al. 1976)
- The adult doesn't necessarily begin with the child's current interest: if there is some cultural imperative for completing the activity now, the adult recruits the child's interest in the activity (ibid: p98). In other words, the adult can provide the initial motivation, by sharing interest and enthusiasm such that the child catches the excitement and takes the first step in engagement.
- During the activity, the adult draws the child's attention to what is important, and maintains their 'gaze' on the important features of the task (ibid).

-The adult demonstrates or models parts of the task that the child cannot do independently in a way that supports the child to imitate the adult's actions for successful completion (ibid).

-Contingency is one of the most important properties of successful scaffolding (Wood 1989, Wells 1999). Contingent scaffolding is characterised by:

...how well the teacher is able to judge the need and quality of assistance required by the learner, and related to the way in which help is paced on the basis of students' developing understandings... The sensitivity and skill involved in responding contingently to students is sometimes seen as the defining quality of teaching (Hammond 2001).

Contingent scaffolding requires the adult to monitor and respond to moment-by-moment signs of success and failure by the child. As Wood explained, when the child shows signs of success, the adult hands over more control and greater degrees of freedom. If failure ensues, the adult provides more help, increases control and reduces the degrees of freedom for error (Wood 1989). Wood pointed out that maximal contingency is not nearly as easy as it might sound, even for adult-child dyads. The challenge of contingency in a classroom setting is exponentially greater!

The process of internalisation of cultural resources supported by scaffolding requires a transfer of control from adult to child as they appropriate resources. This transfer is recognised in the 'gradual release of responsibility' model (Pearson and Gallagher 1983). Bruner calls it 'handover' (Bruner and Watson 1983). It is important to note that handover is not a neat trajectory, more like a pedagogic shuffle. Contingency requires that the adult is always prepared to shift the balance of responsibility, taking it back or handing it over whenever the child needs it.

-Scaffolding requires at the very least a shared goal understood by all participants. If the goal is established, then other aspects of cultural knowledge come behind (Wood 1989). In general terms, the goal of scaffolding is the building of intersubjectivity between adult and child around the goal. The adult shares 'perceptions, conceptions, feelings, and intentions' (Wood 1980), in the form of language and behaviours which enable the child to take over the role of the adult.

-Because scaffolding is ends-oriented, it involves a negotiation from the child's established representations of the world towards a re-orientation, including new ways of talking. This is progressed through the reframing by the adult of children's talk, requiring the adult to introduce and model new forms of language through their responses. This process has been given many labels: Bernstein calls this 'recontextualisation' (Bernstein 2000), Sharpe calls it 'recasting' (Sharpe 2006), Gray calls it 'reconceptualisation' (Gray 1998), Mercer calls it 'redefining' (Mercer 1994) and Rose calls it 'elaboration' (Rose 2005).

-Vygotsky's description of the development of scientific concepts in the classroom argues that development moves in both directions: draws the child upwards towards abstraction and

generalisations, and at the same time the abstract moves downwards, readjusting the child's conceptual understandings in everyday concepts (Vygotsky 1986). This up-and-down process implies that scaffolding in the classroom must shunt back and forth from the thinkable to the unthinkable, from the familiar to the new, from the concrete and context-specific to abstract decontextualised meanings, building bridges between what children already know and the new learning goal. This shift includes the introduction of new forms of language to construe new meanings:

...scientific concepts... just start their development, rather than finish it, at a moment when the child learns the term or word meaning denoting the new concepts (Vygotsky 1986).

-While the term scaffolding was originally developed by Wood and Bruner to refer to the meaning negotiation between an adult-child dyad, its meaning within the classroom has broadened. It is often used to refer to the scope and sequencing of a topic over a series of lessons, the logic of which provides a predictable and logical format. Such planning supports students in seeing the learning goals and the processes to achieve those learning goals and is sometimes termed a 'macro-scaffold':

Scaffolding needs to be thought of in relation to the development of overall programs and curricula, as well as to selection and sequencing of tasks and to the specific classroom interactions that are part of those tasks. Here we are extending the notion of scaffolding beyond the moment-by-moment interactions between teacher and student to include also the nature and design of the classroom program (Hammond 2001).

-Power sharing in the process of scaffolding is by definition mostly unequal. It begins with a high level of control by the adult. As knowledge and language are appropriated, the learner takes an increasing amount of control. By the time the child has internalised and can use and apply new learning independently, scaffolding is no longer necessary, and the adult is a minor player in the context. As Edwards and Mercer argued, the only time power is equally shared is half-way through the scaffolding process. Maintaining equally shared power is not a goal of the educational context:

But education is concerned with introducing children and adults into pre-existing culture of thought and language. However active the students are, we cannot assume that they can reinvent that culture through their own activity and experience. It is a social process, and inherently includes an asymmetry of roles between teacher and learner. If the educational process is not to be completely compromised by the asymmetry of teacher and learner, then we need to develop an understanding of the process which recognizes and encourages that asymmetry in a manner that fosters rather than hinders learning (Edwards and Mercer 1987).

While scaffolding is negotiated, and child and adult each have roles to play, it is not democratic. The teacher is responsible and accountable for successful learning by the child, for providing the contingent scaffolds which establish and hand over shared meanings.

Central to scaffolded pedagogy is the skill of the teacher in making the scaffolding contingent. To contingently 'lend their cognition' whenever required to 30 students is a challenging undertaking, particularly difficult in a subject area such as Science where group work and 'hands-on' activities are valorised.

The potential for group work to provide valuable learning cannot be taken for granted. Working in the zone of proximal development requires the presence of a knowledgeable other to lend language and cognition at this unstable time. What then, is the effect of group work when students are not able to function on a task at independent, or near independent level, but are still working within the ZPD? If the teacher has divided the class into several groups, and is strenuously circulating, managing behaviour and keeping students on task, what chance is there of contingent scaffolding, of the teacher being able to lend consciousness whenever it is needed? Peers may be able to help other students (Rogoff 1990Ch 8), but they cannot be relied on for contingent, point of need scaffolds. The person who takes conscious responsibility for that is the teacher. This perspective would suggest that group work is a high risk strategy for students working in the ZPD, when the likelihood of contingent scaffolding is exchanged for unpredictable acts of help by well-meaning peers (ibid).

Not all support counts as scaffolding. Mentoring, coaching and tutoring may all include scaffolding, but another version of support is often observed in low socio-economic schools. This is when adults withdraw the student from the class, or sit beside the student in the class and coax them through a task, often a worksheet, often just telling the students what to write. The adult may have limited time to provide support, or be responding to habitual helplessness on the part of the student. Such a situation requires a different metaphor from scaffolding. This type of support is more akin to 'shepherding', when the adult herds the student in the right direction to complete a task somehow, regardless of whether they understand what they're doing.

In summary, scaffolding is contingent, goal-oriented support provided by a culturally knowledgeable other to novices with the intention of supporting the gradual handover, that is appropriation of knowledge to the learner. In the process, the scaffolder builds a bridge between the known and the unknown, gradually moving the learner towards new meanings and forms of language which express those meanings. Within the classroom, scaffolding is used to refer to the macro-structures of the scope and sequencing of learning, as well as the micro-scaffolds of language used in negotiating within lessons.

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