

SPECIAL ENVIRONMENTAL EDUCATION FOR THE LEARNING DISABLED

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Summary

Children who are learning disabled have much to gain from environmental education. However, the authors argue, a specific and differentiated approach to curriculum design is required if pupils with severe learning difficulties are to reach their potential in this area. Such pupils need access to a special educational environment in which their learning is supported by adult mediators who are able to structure appropriate experiences and use appropriate communicative techniques to enable participation in relevant activities. In this context the socio-cultural dimension is as important as the physical world in promoting learning.

An essentially developmental curriculum is outlined. This curriculum assumes an approach in which skilled adults exploit the socio-cultural dimension to support pupils in responding to their environment. It draws on the English National Curriculum, but also on an ‘underpinning curriculum’ that lays the foundations for learning in pupils who are unlikely to reach Level 1 of the National Curriculum before the end of their school career. It is argued that the strategies used most effectively for children working within Level 1 and the strategies used in developing positive attitudes towards the

environment are mutually supportive. This curriculum provides experiences through which children are helped both to develop knowledge and skills and also to move beyond guided practical involvement towards an understanding of ethical issues, and a sense of personal responsibility for protecting the environment.

The curriculum content is divided into three inter-connected stages, involving respectively: awareness and exploration, developing familiarity and taking responsibility and moving towards abstract knowledge. Learning outcomes and teaching approaches are suggested at each stage and case studies are used to illustrate the scheme. Suggestions are made for the use of natural and published resources.

1. Introduction

Despite the current political agenda for “deconstructing special education and constructing inclusion” (Thomas and Loxley, 2001), environmental education for children disabled by profound and multiple learning difficulties must still be approached quite differently from environmental education for children in mainstream lessons. This is particularly true where multi-sensory impaired children are concerned, but it is also a consideration for children with severe communication and interaction difficulties associated with conditions such as autistic spectrum disorder.

It follows, of course, that the need for a differentiated approach to environmental education becomes less as children’s level of learning disability drops from profound to severe to moderate difficulties in accessing the National Curriculum. This is not to imply that all relevant environmental issues are adequately subsumed within the nationally prescribed subject disciplines; indeed, such a piece-meal arrangement has an inbuilt lack of coherence (Nath, 2002). Nor do we wish to imply that children’s progress in understanding their environment should simply be measured against a scale of curriculum access: reflex performance indicators only show teachers how much understanding their pupils can make available for scrutiny. Given that the main purpose of cognition “is not to produce thoughts but to guide intelligent action” (Rogoff, Gauvain and Ellis, 1991, p.321), then we must distinguish between “learning to know and learning to display knowledge for evaluation” (Lave and Wenger, 1991, p.112).

Many children who receive specialist provision (including a majority of the 300 pupils at Whitefield Schools and Centre, London, where the present authors work) are deceptively poor at displaying their knowledge for evaluation; they lack the necessary presentational skills and they also lack awareness of any exchange value the outcomes of their learning might have. When tested, these children perform below National Curriculum Level 1. A few of our pupils reach adolescence before they demonstrate an understanding of Foundation Stage curricular material, designed for children in the earliest years of their education.

Our first priority for every learning disabled pupil is that they learn to know and care about their environment rather than learn to display knowledge for evaluation. Unlike their academically able contemporaries, for whom the emphasis is on learning to “understand the power of linguistic manifestations linguistically” (Bourdieu, 1992, p.109), learning disabled pupils need to be preoccupied less with learning from talk and

more with learning to talk in a way that helps them to actively engage with their environment.

By mentioning talk, we are introducing a socio-cultural dimension to our interpretation of what constitutes a child's environment. For us, as practitioners involved in special education for the learning disabled, the perspective from cultural psychologists is as essential as that from scientists working on physical properties of the environment. Therefore, prior to exploring the environment as a subject for study by pupils with learning difficulties, we shall touch upon what key features of a special educational environment affect children's development of knowledge and understanding.

2. Key Features of a Special Educational Environment

2.1 Invariance

In order to appropriate resources from their environment, children need to have means of noticing pertinent invariances and means of acting appropriately in respect of them. Invariance is a crucial property of environmental states and events because without it, confronted by a state of flux and chaotic formlessness, there would be nothing for us to adapt to, in phylogenetic time, and nothing to learn, in ontogenetic time (Richardson, 1996, p.5). If a child's ability to notice or to act is impaired, then he or she will miss out in respect of developing the 'educated attention' necessary to become a discriminating learner and will be deprived of access to a full cultural heritage. Without skilful intervention by somebody willing to act as a mediator (Feuerstein, 1980, p.15), a child in such a predicament will inevitably become chronically disabled as regards his or her capacity to acquire and use knowledge.

Children do not just happen to notice invariances in a learning situation. Their ability to attend to certain features of their environment is a consequence of previous interactions which have afforded them the dynamic mental patterns required to transform those external invariances into information where before they did not have the appropriate internal systems to do so. As Richardson (1996, p.113) says, "We become capable of being more interactive. That is what is happening in development. It is the same statement as saying that we come to know more and thus to be able to know more."

2.2. Scaffolding

Perkins (in Salomon, 1993, pp.96-100) describes making choices about what to attend to, drawing upon representational, retrieval and constructive resources, and selecting a path of action, as belonging to an 'executive function' of cognition. A person alone, a child whose ability to learn is impaired, might experience considerable difficulty in trying to exercise that function. A 'person-plus,' a child plus supportive surroundings, is liable to benefit from ceding the executive function to an external authority such as a more able peer, a teacher, a book or a computer. Submitting to a task designed to develop automaticity can work well. The danger is that the child becomes an over-dependent, passive recipient of others' instructions, vulnerable to neglect or worse forms of abuse.

A sense of agency, a share in the ownership of the executive function, no matter how it is distributed in a teaching and learning community, is obviously important if a child is to feel safe and realise his or her potential for fulfilment. Children nevertheless rely heavily on adults to interpret situations that appear ambiguous; searching their faces for cues regarding safety in a process termed ‘social referencing’ (Rogoff, in Light, Sheldon and Woodhead, 1991, p.73). Adults assist and guide children, ‘scaffolding’ their participation in activities (Wood, Bruner and Ross, 1976, pp.89-100) so that they can extend their competence.

2.3. Zone of Proximal Development

Vygotsky called the territory between a child’s individual capacity to perform a task and the extended performance the child could achieve with scaffolding, the ‘zone of proximal development’ (1978, p.86). Motivating the child to traverse this zone involves confounding his or her expectations, provoking a state of ‘disequilibrium’ (Piaget and Inhelder, 1969) or ‘cognitive dissonance’ (Festinger, 1957, p.2). The challenge for teachers is to strike just the right balance between assistance and dissonance. In response to any failure by a child to perform a task successfully, teachers should increase their scaffolding; whereas success on the child’s part should result in reduced scaffolding. Even trained experimenters find this ‘contingent response’ rule difficult to adhere to for more than 85% of the time (Wood, p.105, in Light, Sheldon and Woodhead, 1991).

The corollary of making contingent responses is giving contingent instructions to a child. Special school teachers continually assess each pupil’s individual progress, and revise their theoretical constructs in accordance with the feedback they receive. Indeed, when children are developmentally very young, a teacher may hijack their unintentional acts and treat them as if they were intended components of an envisaged performance; a technique Wood calls ‘leading by following’ (p.109, in Light, Sheldon and Woodhead, 1991).

Teacher-pupil relationships are bound to be somewhat ‘asymmetrical’ (Goldbart, 1994) in these circumstances, and ‘intersubjectivity’ is likely to be manifest in “joint patterns of awareness” (Trevarthen, 1980, p.530) rather than shared meanings or “the mutual understanding that is achieved between people in communication” (Rogoff, 1990, p.67). Brown et al. (in Salomon, 1993, p.193) argue that a didactic approach is effective when constructing a zone of proximal development for a particular task, in so far as “the teacher incorporates children’s actions into her own system of activity.” As a result of such engagement, the children are “exposed to the teacher’s understanding without necessarily being directly taught” (Brown et al., in Salomon, 1993, p.193).

2.4. Legitimate Peripheral Participation

Lave and Wenger (1991) describe uneducated exposure to the cultural artefacts used by a teacher as “legitimate peripheral participation.” Their notion of peripherality is not intended to marginalise children as participants in any given situation, but rather gives them a vantage point, “an opening, a way of gaining access to sources for understanding through growing involvement” (Lave and Wenger, 1991, p. 37). How is legitimate

peripheral participation translated into learning, “the process by which a learner internalizes knowledge, whether ‘discovered,’ ‘transmitted’ from others, or ‘experienced in interaction’ with others” (Lave and Wenger, 1991, p.47)? Lave and Wenger neither attribute a prescriptive value to their view of the child’s peripheral situation as a learner nor propose ways of operationalising it for educational purposes. Instead, they set aside “learning as internalization” in favour of “learning as increasing participation in communities of practice” (Lave and Wenger, 1991, p.49). For them, understanding and experience, albeit peripheral experience at first, are mutually constitutive; there is no dichotomy between cerebral and embodied activity. Rogoff’s argument is similar; she says,

“the problem of specifying the process of internalization may be a problem only if priority is given to the internal or individual functioning, with the internal given responsibility for bringing something across a barrier. If, as I suggest, individuals are seen as appropriating some aspects of activity in which they are already engaged as participants and active observers, with the interpersonal aspects of their functioning integral to the individual aspects, then what is practised in social interaction is never on the outside of a barrier, and there is no need for a separate process of internalization.” (Rogoff, 1990, p.195)

2.5. Distributed Cognitions

This relegation of internalisation illustrates a central tenet of cultural psychology; namely, that “subjects and objects, practitioners and practices, human beings and sociocultural environments interpenetrate each other’s identity and cannot be analytically disjoined into independent and dependent variables” (Shweder, in Stigler, Shweder and Herdt, 1990, p.1). Writing in the same radical constructivist vein, Gergen declares that “what we have traditionally viewed as single individuals can more fruitfully be conceptualized as intersections of an array of relational units” (in Stigler, Shweder and Herdt, 1990, p.585), adding for good measure that “the locus of understanding is removed from the heads of individual persons and placed within a relational space” (p.602).

Reducing the theory of ‘distributed cognitions’ (Salomon, 1993, ch.4) to a stark question of “which side of one’s skull hosts the information” (Perkins, in Salomon, 1993, p.90) is not helpful; we should instead be concerned with the ‘access characteristics’ of the system that provides a framework for the information: “what knowledge it includes access to, via representations that afford what access to information, by way of what retrieval paths for accessing the information, and with what access to further constructions based on that knowledge” (Perkins, in Salomon, 1993, p.91). Moreover, if limitations in a learner’s short-term memory hinder the flow of information and prevent the assembly of new knowledge structures, the surrounding system should provide a ‘surrogate short term memory’ (Perkins, in Salomon, 1993, p.92). Two postulates underpin the theory of distributed cognitions:

1. The surround - the immediate physical and social resources outside the person - participates in cognition, not just as a source of input and a receiver of output, but as a vehicle of thought.

2. *The residue left by thinking - what is learned - lingers not just in the mind of the learner, but in the arrangement of the surround as well*” (Perkins, in Salomon, 1993, p.90).

Our unit of analysis is a snapshot of the ‘person-plus’ engaged in cultural activities that are “simultaneously the effect and the cause of the design and construction of the architecture of the mind” (del Rio and Alvarez, in Wertsch, del Rio and Alvarez, 1995, p.217). ‘Person(s)-acting-with-mediational-means’ would therefore seem to be an apt description of the agent involved (Wertsch, 1991, p.119). However, Wertsch uses the term ‘mediational means’ in association with a ‘tool kit analogy’ (Wertsch, 1991, p.124) reminiscent of Vygotsky’s ‘psychological tools,’ (1981, p.136), thus narrowing down its applicability; so, Marx Wartofsky’s three-level hierarchy of artefacts (adopted by Cole, in Wertsch, del Rio and Alvarez, 1995, p.194) is a preferable way of categorising the resources available for mediational purposes.

2.6. Artefacts

‘Primary artefacts’ would be described as tools in vernacular language; they include primitive items, such as axes, needles and bowls, as well as technologically advanced constructions, such as computers and telecommunications networks. ‘Secondary artefacts’ consist of representations of primary artefacts and representations of modes of action that entail using primary artefacts; their function is to preserve and transmit modes of action. ‘Tertiary artefacts’ are less obviously of practical use; they are instrumental in creating enclaves where the social norms, tasks and conventions are different from those prevailing outside their boundaries, allowing playful exploration as opposed to utilitarian activity. Schooling can be construed as a tertiary artefact system (Cole, in Wertsch, del Rio and Alvarez, 1995, p.197).

Learners in general, and schoolchildren in particular, do not always exploit artefacts in the ways intended by their teachers. This is partly because “the interpretation, relevance, and meaning of resources available for activity are shaped by the desires with which people come to situations (Pea, in Salomon, 1993, p.55). It is also because of a phenomenon Norman has called ‘the psychology of materials and of things’ (Norman, 1988, p.9). This phenomenon can be illustrated by an anecdote concerning shelters for railway passengers.

Reinforced glass panels in the shelters were frequently smashed by vandals. When the glass was replaced by plywood panels, the breakage stopped, even though the force required to break the wood would have been no greater than that required to smash the glass. The vandals switched to writing on and carving the wood. Norman concludes: “Glass is for seeing through, and for breaking. Wood is normally used for solidity, opacity, support, or carving. Flat, porous, smooth surfaces are for writing on. So wood is also for writing on.” The railway shelter designers were “trapped by the affordances of their materials” (Norman, 1988, p.9).

2.7 Affordances and Effectivities

Affordances are not fixed properties of materials. The noun ‘affordance’ was coined by

Gibson (1979, p.127) to help explain that the notion of invariance is related at one extreme to the “motives and needs of an observer” and at the other extreme to the “substances and surfaces” presented by the environment (Gibson, 1979, p.143). Gibson’s conception of affordances addresses “the mutuality of person and situation components in the control of perception-action sequences” (Snow, in Sternberg and Wagner, 1994, p.28).

Like an ecological niche, where the habitat presents suitably adapted inhabitants with demands and opportunities for development, a situation can be said to yield affordances for individuals who are ready to perceive them. Specific affordances prompt actions peculiar to their nature, as the anecdote about using wooden instead of glass panels suggested, but different affordances will be selected or ignored according to which interests have priority at any given time. For instance, a wooden chair would ordinarily afford convenient seating and yet, in the absence of fuel for a wood-burning stove, it might be perceived as firewood by somebody who was desperately cold.

While acknowledging that challenges from the external environment influence the perception-selection process, we must not forget the complementary role played by people’s learning histories. Each person has a unique set of response components, conative and affective aptitude constructs as well as cognitive assemblies “probabalistically interconnected in multiple associative networks” (Snow, in Sternberg and Wagner, 1994, p.27), which they bring to any situation that requires action. These response components reflect the “possibilities and constraints afforded by the assembly and control history of the performing person” (Snow, in Sternberg and Wagner, 1994, p.27), and they translate into potential actions known as ‘effectivities’ (Snow, in Sternberg and Wagner, 1994, p.28).

The appropriation of affordances can only be realised when commensurate effectivities are brought to bear upon the situation. For schools, this complementarity implies that instructional tasks should be differentiated for each individual pupil on every occasion, since the relevant contextual information will always vary. Given adequate differentiation, children’s abilities emerge as “unique coalitions of affordances and effectivities in particular person-treatment systems” (Snow, in Sternberg and Wagner, 1994, p.29). The onus is on the school to enable the child to demonstrate ability, by setting tasks that are provocative and yet conducive to harmony at the interface between the would-be learner and the intended learning situation.

Let us now turn to the practicalities of special environmental education for the learning disabled, whilst keeping the latter ideal in mind.

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Biographical Sketches

Ms. Laura Pease graduated from Oxford University in 1979 and then completed a PGCE. After teaching for three years in a mainstream primary school, she moved into special education at the original Whitefield School in London, where she taught multi-sensory impaired children and became head of a pioneering department specialising in educating the deafblind. She then took the lead in setting up a new specialist school within Whitefield, catering for a range of pupils with complex needs arising from moderate to profound learning difficulties and sensory impairment. She continues as head of this school and she is also a senior deputy head at Whitefield Schools and Centre.

With a Masters degree in deafblind education, Ms. Pease is a qualified teacher of visually impaired children with particular interest in curriculum development. Currently she is lead tutor for one of the postgraduate specialist teacher training courses run by Whitefield in partnership with Kingston University. She has lectured widely in deafblind education, and her publications include papers for *SENSE* (a charitable organisation concerned with deafblind people's needs) and the RNIB, the report of the research referred to above and, as co-editor, *Teaching children who are deafblind*.

Mr. Niels Chapman received his Bachelor's degree in English and Education from Sussex University in 1972, followed by a Diploma in the Education of Handicapped Children from London University in 1978. In 1987 Cranfield Institute of Technology awarded him a "best thesis" prize for his M.Phil. dissertation on changing children's attitudes to learning. He subsequently became a visiting fellow at Cranfield. He is currently writing a doctoral thesis on the postgraduate education of SEN specialist teachers, for submission to Bristol University.

Mr. Chapman is the Head Teacher and Chief Executive of Whitefield Schools and Centre, which is the largest special education complex in the United Kingdom. He has created links with three universities and other bodies that give external accreditation to the wide range of professional development courses offered at Whitefield. The Centre for Professional Development and Information, based at Whitefield, offers the only directly taught course in the United Kingdom that leads to the Government's mandatory qualification for teachers of multi-sensory impaired children (including the deafblind).

Mr. Chapman has published in several journals on special education and related fields. He represents special school head teachers on the Foundation and Aided Schools National Association committee, and in this role regularly gives advice on Government education policy issues.