

Paper presented at the Sixth Annual Conference on Special Education, Irish Association of Teachers in Special Education, St. Patrick's College, Drumcondra, Dublin, June 9-11, 1994.

Developing a Cognitive Curriculum for Individuals with Autism

Certain core features of autistic thinking lead to pervasive difficulties in learning; these features include problems of autistic memory and the role of emotion in those processes. These aspects can be identified and interpreted by the teacher in the context of a cognitive curriculum that seeks to remediate the thinking of pupils with autism while recognising and respecting the distinctiveness of their styles of thinking and learning.

STUART POWELL is a teacher and psychologist, and has researched widely in the area of the psychology of autism and the teaching of children with autism. He is currently Reader in Educational Psychology at the University of Hertfordshire.

RITA JORDAN is a teacher and psychologist and was for eight years Deputy Head of a School for Autistic children. She currently holds the first UK Specialist Post in Autism in the Education Department of the University of Birmingham.

KEY FEATURES OF AUTISTIC THINKING

We suggest that there are two key features of autistic thinking: firstly the way in which information is coded, stored and retrieved in memory, and secondly the role of emotion in those processes. Below, we take each of these features in turn.

AUTISTIC MEMORY

One of the paradoxes of individuals with autism is their good, and in some cases prodigious, rote memory abilities compared to deficits in the recall of personal events.

Before we can explore the way in which autistic memory works we need perhaps to set out a framework for interpretation. The different aspects of long-term memory can, then, be described as follows:

memory for events - 'episodic' memory,
memory that involves general knowledge - 'semantic' memory,
memory for action sequences - 'procedural' memory.

In addition, these memories may or may not be related to the self and if they are then they are part of 'autobiographical' memory. A further dimension to consider is whether the memory is spontaneous (i.e. memory can be retrieved 'at will') or needs to be prompted in some way (i.e. 'cued').

Memory problems in autism have generally been attributed to problems in episodic recall but we have suggested elsewhere (Jordan and Powell, 1992) that the problem lies not in episodic memory as such (which may in fact operate more effectively than semantic memory in certain conditions) but in the part of autobiographical memory that has been referred to as 'personal episodic memory'. A difficulty here would mean that the individual would be able to recall autobiographical facts about themselves (personal semantic memory), episodes that did not include a personal element, general semantic/categorical knowledge and procedural knowledge for skills, but would have difficulties in remembering themselves performing actions, participating in events or possessing knowledge and strategies.

THE PROBLEM OF 'EXPERIENCING SELF'

To give an example of how this kind of difficulty manifests itself we cite an incident from our own experience:

A young boy with autism happily wrote in his 'news' on Monday morning that he had gone to the supermarket with his mother and father and to a restaurant for lunch, which was what he normally did at weekends. Only a few minutes later his mother telephoned to say that they had had a disastrous weekend, with the boy's father having to be rushed to hospital and all routines disrupted. When asked about this specifically, the boy could clearly recall the events vividly. He became upset and excited describing the arrival of the ambulance etc.

The memories were present, but were not tied to a sense of self that would allow the boy to search for them spontaneously when asked about his weekend; they needed to be cued. Without the specific cues, he resorted to his semantic memories about himself i.e. what he normally did at weekends.

We suggest (following Dritschel et al., 1992) that the development of personal

autobiographical memory depends on the existence of an 'experiencing self' which codes events as part of a personal dimension. While we know that individuals with autism are able to distinguish self from other, this can remain at the level of a self as seen 'from the outside' rather than as a continuing sense of self experienced 'from the inside'. We contend that a deficit in developing an 'experiencing self' would lead to the pattern of memory processing exhibited by pupils with autism. That is, there will be a difficulty in developing personal episodic memories.

The implication is, then, that the lack of an experiencing self has a profound effect at all stages in the processing of information. We are not implying that individuals with autism are 'unfeeling' or that they have no 'self' but rather that they have an inherent difficulty in encoding information that is present in any episode in such a way that it becomes readily useable to them in future situations.

THE ROLE OF EMOTION IN AUTISM

Individuals with autism may respond in highly emotional ways yet may not be able to identify or describe their own emotional states (or indeed those of others). One can (following Lazarus, 1991) distinguish *knowledge* (beliefs about how things work) from *appraisal* (a personal evaluation of the significance of this knowledge). Evaluative appraisal, then, describes a way of knowing that is not analytical but perceives situations directly, and in particular, in terms of its meaning for oneself. Appraisal works by bringing together the realities of the real world with personal interests. When it works in this way it serves to make problem solving both intentional and meaningful.

In everyday terms, we know that we remember events not simply in terms of objective fact but in terms of how we felt about those facts, we know that we remember emotionally charged events better than those of little emotional significance. In short, the way in which we are able to reflect on our own emotional perceptions of events is an important part of how effectively we memorise and so recall.

EMOTIONAL STATES AND RECOGNISING MEANING

If one can accept the above then it is only a short step to the notion that it is the emotional aspect of determining meaning that may account for difficulties in searching for and recognising meaning. Without meaning which is related to personal attitudes to the goal of the task, problems cannot give rise to intentional

behaviour which includes a model of the goal and the individual's directedness towards that goal. In essence, it is emotional states that allow that intention to come into being.

At one level we know that autism is associated with difficulties in both understanding the emotions of others and in communicating one's own. We should stress that we are not suggesting that individuals with autism do not *experience* emotion but rather that they have difficulty in establishing evaluative appraisal in memory in such a way as to make it useable in future situations. To give an example from our own experience:

When working with Jane (a 14 year old girl with autism) we found that while we could get her to identify and use aspects of photographs which related to what she had been doing, or to the objects that she had been using, it was much more difficult to get her to identify how she was feeling at the point at which the photographs had been taken. Clearly, if she could not identify emotional states in this way then presumably those states would not be available to her for the purposes of evaluative appraisal.

If individuals with autism are unable to make effective use of the positive effects of emotions on problem-solving, then this means that their learning will be restricted to the situation and to the domain of the original learning.

NEED FOR A COGNITIVE CURRICULUM: REMEDIATION

We have described two interlinked cognitive features that we suggest pervade the thinking of those with autism. Teachers need to both work with the autism and at the same time try to remediate it. A curriculum therefore needs to be 'cognitive' (Jordan & Powell, 1991) in that it must (a) recognise that the context for all learning is a type of thinking that we have described here as 'autistic thinking'. This kind of thinking is distinctive, radically different from the non-autistic and leads, therefore, to a radically different way of learning. It should also (b) attempt to deal with the root cause of the difficulties in learning that are apparent in autism; in short, it should attempt to remediate those difficulties.

SUBJECTIVITY AND MEMORY FUNCTIONING

There is a general understanding that in teaching towards better problem solving (in its widest sense) one needs to aim towards increasing objectivity, towards thinking logically and towards the suppression of emotion where that is seen to

cloud the problem solver's ability to think clearly. Yet it is subjectivity that enables us to make sense of problems in terms of how they affect us. We have tried to show that it is precisely this ability to be subjective that is an area of difficulty for those with autism. Subjectivity is, therefore, the place that the teacher needs to begin any attempt to make the memory functioning of the individual more effective.

We need to try to get pupils to recognise, and focus upon, how they felt in particular situations (rather than being content with memory for acts and objects) and we need to use emotionally charged situations as times for learning *about* emotions as well as about knowing certain things or ways of doing things. In the section below we elucidate some of the implications of this approach.

WHAT KIND OF COGNITIVE CURRICULUM?

We have already suggested that the difficulties we describe with memory and emotionality have pervasive effects, and indeed it seems likely that learning will be affected at almost every level. However, for the purposes of this paper we shall identify just three difficulties that commonly manifest themselves in the learning behaviour of those with autism: difficulties in interacting, difficulties in transfer of learning, and bizarre behaviour.

DIFFICULTIES IN INTERACTING

The memory problems described above mean that the individual with autism has difficulty in establishing the meaning of social events to the extent that he/she is able to identify the intentions of others. Without a sense of events being related in a personally meaningful way it becomes difficult to establish what is wanted by others or indeed how to relate one's own immediate needs to the social possibilities around.

So, individuals with autism have difficulty in reading the intentions of the teacher, and consequently in determining the direction of tasks and engaging with what is to happen. Because of this they are likely to make moves which seem inappropriate to, or totally disconnected from, the task. They may watch the teacher, but they are looking for signs at a behavioural level that tell them if their actions are gaining approval or disapproval, they are not checking back to compare their actions against their perceptions of the teacher's intentions, because they do not adequately perceive those intentions in the first place.

If the individual with autism has difficulties in making the kinds of response that enable a learning transaction to take place because of difficulties in reading intentions then he/she is not in a position to make the next step towards initiating within the problem solving context. In the light of this situation we consider below some approaches that the teacher might make.

MAKING INTENTIONS EXPLICIT

The teacher needs to make intentions so explicit that the pupil does not need to make any of the intuitive leaps that non-autistic learners consistently make. The difficulty is that explicit verbal 'explanations' of intent become prompts or even instructions to act. There needs to be a visual representation of the goal with perhaps a diagram, or pictogram, of the processes needed to get there. Thus verbal instructions need to be reduced to the minimum. The kinds of gentle persuaders that are often employed to soften the giving of directions need to be removed if they detract from the meaning of the intention itself.

WAITING FOR A RESPONSE

Teachers need to wait for a response to those intentions for as long as is necessary. We have found in our research that when we have forced ourselves to wait there has sometimes been a response long after one would normally expect any to occur. The silence and inactivity is uncomfortable in a human learning sense and particularly for the teacher whose professional training has led them to look for the need and the opportunity to intervene.

If the learner does respond then the teacher needs to engage with that response, rather than just redirect attention to his/her own agenda. The teacher needs to look for clues as to the learner's interpretation of the task so that redirection to the teacher's intentions can occur or, better still, the child's intentions can be incorporated into the task in a specific way, making the task 'collaborative'. Even re-direction should acknowledge the pupil's intentions and show their inappropriateness in an explicit way so that the pupil can be helped to understand the teacher's intentions.

It may be appropriate for the teacher to model the kind of links with the past that have connections with the present task and that are therefore purposeful. Again, this modelling needs to embrace the pupil's own role as a problem solver in the previous situation. Directing attention to related memories explicitly (again sometimes using concrete 'props' such as producing photos of a measuring task,

or re-enacting scenarios) does, at least, enable learners to get into the position where they are able to begin to use those memories in productive ways.

INTERPRETATION

If no response comes then the teacher needs to interpret any move as if it were a meaningful response (this is, after all, what mothers of young babies do, and is their way of 'kick starting' the process of transactional learning).

REFLECTING ON LEARNING

As interactions develop they need to be made explicit. Individuals with autism need to be shown either verbally, or by graphic representation, or by recreating situations, that they have acted as problem solvers within the situation. They need to be given time to learn that they have made a step in a transactional process of learning. Further, they need to be shown precisely what that step was and be given the opportunity to rehearse, replay or reflect on the fact of the interaction. The way in which this is to be achieved will vary from pupil to pupil. It may be enough to tell pupils what they have done, ask them to repeat it verbally and then perhaps question them on what they have just done. The transactional process of learning needs to be extended in this way so as to enable participation, and made explicit so that the pupil can learn to recognise it. As already noted, in our own work we have used instant photographs as a device within which to structure such reflective learning (Powell & Jordan, 1992).

TRANSFER OF LEARNING

Again, the problems with memory and establishing a sense of ongoing emotional appraisal will lead to a difficulty in searching the memory for useable information to enable effective learning in 'new' situations, i.e. there will be poor transfer of learning.

Individuals with autism need to be enabled to recall their role from similar previous problem solving situations. This may be possible through verbal recall, the use of photographs, or re-enacting. But, whatever the case, the procedure will need to be, again, overt and conducted at a pace that individuals can usefully join in with. Further, it is important that they are enabled to recall in a way that is meaningful within the present context; remembering a rote sequence is not helpful. So, in helping a pupil with autism to recall, the teacher needs to attend overtly to meaning within the present context.

There is a need to make explicit that which non-autistic children may otherwise perceive automatically for future reference. We suggest, then, that the learning of skills and knowledge should incorporate notions of the transferability of those things as part of the reflective learning process. Pupils need to engage in an overt process of making connections with future possibilities rather than be left to make those kinds of connections for themselves because, as we have seen, therein lie some of their difficulties. So, for example, when working on mathematical activities the pupil needs to have mapped out for him points in forthcoming craftwork sessions where particular skills will be useable.

BIZARRE BEHAVIOUR

In terms of the central features of autistic thinking which we described earlier it is clear that if individuals are having difficulty in establishing a sense of their own identity in the world, and in particular in the social world, then they will inevitably find it hard to identify the relevant features of social convention and relate their own behaviour to those features.

We have found that interpreting a bizarre behaviour as if it were an attempt at social interaction enables the learner to begin to conceive of himself/herself as a person who can initiate in this way. By focusing on making explicit what the learner is doing in terms of its potential as a social act (rather than condemning or redirecting), we may create conditions in which the individual can learn by inference what the non-autistic learn at an intuitive, perceptual level.

CONCLUSION

We have suggested that by working towards the development of an autobiographical memory, as an explicit and pervasive curriculum aim, it may be possible to establish in pupils with autism an awareness of their own roles as problem solvers. We are not claiming that such approaches can remedy the fundamental deficits of autism but that they may enable pupils with autism to achieve some success in their learning, albeit by a different route.

The pupil needs to engage in a process which involves the experiencing self in emotional appraisal; pupils need to learn to be subjective and to learn through their subjectivity. To be useful therefore, a problem state needs to relate to personal meanings, and the resolution of a problem needs to be seen in terms of changing or helping to establish the learners' views of themselves rather than simply changing their views of the problem.

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