A CALCULATOR, A TAPE RECORDER, AND THOU

ABSTRACT. Examples are given of transcripts made from tape recordings of the author working with groups of 10-year-old children on problems to do with calculators. Attention is focused on the teacher's role in the interactions which take place. Suggestions are offered for the possibility of a structure of the strategies available to a teacher.

EXPLANATIONS

I should first explain the 'thou' in the title. 'I-thou-it' was the title of an article by David Hawkins (1969) in which he beautifully analogised the relationship between teacher, pupil, and a third necessary thing which gave some meaning and purpose to the discourse between the first two.

The function of the teacher receives what he calls an 'electronic analogy':

Think of circuits that have to be completed. Signals go out along one bundle of channels, something happens, and signals come back along another bundle of channels; and there's some sort of feedback involved. Children are not always able to sort out all of this feedback for themselves. The adult's function, in the child's learning, is to provide a kind of external loop, to provide a selective feedback from the child's own choice and action. The child's involvement gets some response from an adult and this in turn is made available to the child. The child is learning about himself through his joint effects on the non-human and the human world around him.

and then, more prosaically:

The function of the teacher, then, is to respond diagnostically and helpfully to a child's behaviour, to make what he considers to be an appropriate response, a response which the child needs to complete the process he's engaged in at a given moment.

It is this particular function of the teacher that I wish to discuss, but before doing so it is worth a brief explanation of the 'it' of David Hawkins' title. He goes on to say:

I remember being very impressed by the way some people, in an encounter with a young child, would seem automatically to gain acceptance while other people, in apparently very friendly encounters with the same child, would produce real withdrawal and, if they persisted, fear and even terror. Such was the well-meaning adult who wanted to befriend the child - I and Thou - in a vacuum. It's traumatic, and I think we all know what it feels like. I came to realize (I learned with a good teacher) that one of the very important factors in this kind of situation is that there be some third thing which is of interest to the child and to the adult, in which they can join in outward projection. Only this creates a possible stable bond of communication, of shared concern.


Now I think the 'it' is very important, and it goes a long way towards giving a rationale for the use of apparatus in the learning of mathematics. But that is beyond the scope of this article. Unfortunately neither the tape recorder, nor even the calculator, really serves as 'it' in what follows. The tape recorder is merely there to record what happens, and it was used to record most of nearly 20 sessions, each lasting about 45 minutes, in which groups of children round about the age of ten worked at problems with four-function electronic calculators.

The techniques of using a tape recorder are fairly simple. No attempt was made to hide it. Any mechanics of where to put it or plug it in were discussed with the children. They usually drew my attention to the flashing light which indicated the tape had run out. Apart from that they appeared quickly to become oblivious of its presence.

The recordings were not always perfect, especially with larger groups. Most of the time I remembered to say the name of any child talking, and to try to repeat what each said (in as natural a way as possible), so that enough information was recorded to facilitate the making of an accurate transcript. Even so, transcribing took a great deal of time, and many short passages had to be played back a large number of times in order to identify what was being said or who was saying it.

One of the surprising things was how often my supposed repetition of what a child had said was rephrased, sometimes altering the sense slightly or including more information that the child had given, or even misinterpreting it. This makes the process of tape recording a salutary experience, and if more teachers occasionally recorded themselves in action it would no doubt increase their awareness of how they listen to children.

Wherever possible my repetitions were edited out of the transcripts; that is, when they were nothing more than repetitions. They were kept in where a question from a child was put back to the group, or where a statement was being queried, or where the repetition formed a natural part of the conversation.

Karen: What about 90?
DF: What about 90?

Rachel: It's half way.
DF: Half way, is it?

Alan: We've got a one there.
DF: We've got a one there but I want one exactly.

The calculator is nearer to being David Hawkins' 'it' because without the