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Speech and Writing in Relation to Schemas

'A word is only as good as the knowing structure which uses it' (Furth, 1969, p. 111). The Froebel project findings give support to the 'cognition hypothesis of language acquisition' in that speech used by project children reflected prominent schemas as well as the content assimilated to schemas.

'The cognition hypothesis for language acquisition' (Cromer, 1979, cited in Lee, 1979), corresponds to the constructivist position on the relationship between speech and cognition, the early stages of which have been illustrated in Chapter 7 through Gopnic's work. The hypothesis is that speech is acquired in synchrony with acquired meanings. To the constructivist, speech is a necessary but not a sufficient condition for the construction of logical operations. Language is important but as part of a more general cognitive organization that has its roots in 'action'. 'Language is one of the elements of a cluster of signs resting on the semiotic function and in which symbolic play, deferred imitation and mental imagery participate' (Inhelder, 1980, p. 133). One implication of the 'cognition hypothesis' for teaching is that the language used by adults must be sufficiently elaborate to support and 'flesh out' advances in children's thinking.

The cognition hypothesis has been mainly supported by research on children over the age of 6 where speech forms alter to match increasingly complex concrete-operational thought structures. Before a child acquires *seriation* he or she will use speech that reflects *absolute size* notions, such as 'I am big, you are little'. As *seriation* proceeds towards greater differentiation, speech extends and *comparative terms* are used, such as 'I am bigger than you'. Similarly, when a child becomes able to think in *hierarchical categories* he or she will be able to make statements such as 'All sparrows are birds and all birds are animals and all animals are living beings' (Piaget, 1972a, pp. 78–81).

Sinclair-de-Zwart (1969) studied the relationship between speech and *conservation*. She found that 90 per cent of *non-conservers* used *absolute* rather than

comparative terms to describe quantity. Conservers were able to *co-ordinate* two sentences *when they were able to* co-ordinate two dimensions *cognitively.* They would say, as well as understand, that 'This is short but it is also wide'.

Support for the natural order of thought preceding language comes also from attempts to train non-conservers into becoming conservers by the use of speech. Children were given *comparative terms* in order to accelerate *comparative thinking.* Even when children successfully learnt the verbal expressions they rarely advanced conceptually. Similar results were found when attempts were made to generate *seriation* structures through speech training (Inhelder, 1969, p. 232; Tamburrini, 1982).

Not only do children not advance conceptually through verbal means alone but they also actually transform test questions to fit in with their existing level. Piaget calls this 'distorting assimilation'. *Pre-ordination* children were asked to give more sweets to one doll rather than another. They were then asked to repeat the question. They transformed the question into absolute terms, such as 'You said I had to give a lot to that one and a little to that one' (Duckworth, 1974, cited in Schwebel and Raph, 1974, p. 144).

The general route of development is from early gross generalizations towards progressive separations and finer differentiations (Jakobson, 1941, cited in Cromer, 1974). Early babbling developing into speech has been compared with early scribbling developing into drawing and writing. Several strands require a more detailed examination. Even symbolic play (which is widely accepted as important in early childhood education) has remained elusive when attempts have been made to measure its occurrence in an educational setting (Sylva et al., 1980). The route 'from action to thought' has aroused interest but has not been studied systematically and longitudinally. It is illustrated and given substance in Chapter 6 of this book. Early scribbling developing into drawing and writing is illustrated in Chapter 5.

As already stated, Piaget considers sensorimotor intelligence rather than language to be the true foundation of operational thought, with mental representation being the culmination of sensorimotor intelligence. Few people would deny that speech is the major vehicle in 'carrying forward' sensorimotor developments and learnings to symbolic levels of functioning. The problem has been how to document this hypothesized route.

One problem is that early 'two-word' utterances are ambiguous. After climbing in and out of holes in hollow wooden boxes for some time, Kamal (2 years old and still in the main an Urdu speaker) made a construction from a part of a cardboard egg box. He described it as 'two holes'. Various schemas could be involved, such as *the salience of the circle* (the shape of the hole), *going through the boundary, two-ness,* and so on, but cognitive features are difficult to abstract from such short utterances. Because of this difficulty many project observations were coded at a motor level though they may have contained a symbolic component.

Intention and meaning were clearer when utterances were made in context. What young children say usually relates directly to what they do and see. As speech use and comprehension increased, ambiguities decreased. Support for the cognition hypothesis in the Froebel project findings is almost too obvious. A random inspection of any schema illustrated in Chapters 5 and 6 will show the close relationship between schema and speech use. Professionals and parents could work together in order to facilitate the necessary links between forms of thought, the content of thought and appropriate speech. As already mentioned in Chapter 4, there were relatively few symbolic representations of project children that did not involve speech – indicating that children like to talk about what they are doing.

FROM MARKS TO WRITING

There are different views on when writing begins. It is generally held that writing is writing when another person can read what is written without too much difficulty. Looking at writing from a developmental point of view, it could be said that the origins are to be found soon after birth when the infant distinguishes things that move from objects that are static. Both the perception and production of writing can be seen in these terms. Print as a product appears to be made up of *fixed patterns.* Writing as a process gives information on the *movingness of writing:* 'The moving finger writes and having writ moves on.

The Froebel project children's early writing was consistent with early symbolic representations in general. The movingness of cars or planes was represented, as was the movingness of writing as a continuous movement of the pencil across paper. There were not many instances of this pretend, cursive writing but the few examples that were produced were usually called 'a letter' or 'a shopping list'. Several writers have drawn attention to the ubiquity of the 'shopping list' in early writing (Temple et al., 1982, p. 33; Payton, 1984, p. 37; Sanderson, 1987, p. 3). Perhaps shopping lists and letters as instances of writing in action are produced mainly in homes. The few instances of this kind of imitation on the part of the project children may reflect a paucity of writing in the home.

As most print in the general environment is fixed and does not contain information on the writing process, the project teacher made a point of writing, in the presence of the children, about things that were happening. The intention was to convey the message that reading and writing are everyday activities. Parents soon joined in with this and 'home books', containing positive messages about matters of interest, were carried back and forth between home and school.

Several project children represented the *linear configuration* of writing with short *horizontal lines* or with strips of sticky paper. Most of the project children's highly specific representation of what they called 'writing', 'letters' and 'names were

consistent with the graphic schemas they used for drawing other objects that shared a figurative similarity.

Pretend writing started with rows of discrete marks, such as short *vertical lines, crosses* and *circles.* Therefore, the project children's early writing, in a general sense, reflected both action and figurative schemas. When the children became interested in *circular* things in the environment and they were able to reproduce *circular* things in their drawings, the letter 'O' was singled out for reproduction rather than, say, the letter 'Z'. Letter shapes, like other shapes in the environment, were consistently assimilated to existing levels of mark-making. When *grid-like* marks were made, *grid-like* letters appeared, as did other *grid-like* configurations, such as cages, cranes, scaffolding, hammocks, the Eiffel Tower, railings and train tracks. Teachers and parents tend to show enthusiasm when standard letter forms appear. When an adult admired, at some length, a 4-year-old's upper-case 'H' the boy said, somewhat annoyed, 'It's a clothes line with two props'.

When project children were able to co-ordinate *vertical lines* with the *open semi-circle* they made a major step forward in the production of letter formations. This was achieved after much time-taking effort. Figure 5.18 shows Randolph's attempts to copy his mother's writing of his name. 'R', 'P' and lower-case 'A' are tackled with co-ordinated *line* and *semi-circle.* The *oblique line* has hardly started to emerge from the earlier *core and parallel radials.* Figure 5.19 shows the striking similarity between the graphic schemas used for letters and the drawing of a man.

Almost a year later, Randolph is still working spontaneously on all the letter forms needed for his name. 'The glasses' show a connection between two *core and curved radials* (Figure 5.13). The *curved radials* (arcs) are used five times in the spontaneous writing of his name. He now connects an *oblique line* correctly for his upper-case 'R'. From this time onwards, Randolph had no difficulty in representing the upper-case letters, 'A', 'M', 'K', 'V' or 'W'.

The similarity between general graphic schemas and letter forms is apparent in developmental studies of children's drawing and yet the similarity has often escaped notice. Eng (1959) gave enough illustrations from her niece, Margaret, to show the obvious link between letter and drawing forms but, as already discussed in Chapter 4, seeing commonalities requires attention to form rather than content. When Margaret managed to draw the *triangular* form (Figure 5.54) she not only drew an upper-case 'A' and 'M' but she began to draw *triangular* houses, groups of people wearing *triangular* capes, a sitting figure, a *zig-zag trajectory* behind a sledge, a dog kennel with a *triangular roof,* and so on.

The *open continuous triangle* (the zig-zag) opened up opportunities for the representation of zig-zag phenomena, such as 'steps', 'teeth', 'waves', stegosaurus and so on. Letter forms represented at this time were 'W', 'M', 'Y' and 'Z'. Figure 5.62 shows that Shanaz is able to draw all the letter forms needed for her name but she is not yet able to orient the letter 'Z' on a horizontal plane.