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Knowledge, Thought and Language Across the Curriculum

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seem to feel quite positive about it. It is gratifying (and compared to our previous experiences, quite unusual) to hear students say at teacher education meetings and elsewhere, that they have found this course practically relevant and one that has affected them more personally than various other courses they have taken.

One experience in teaching this course also suggests to us some broader implications that a process-oriented approach can have for teacher education in general. It would seem that giving students more responsibility in how a course is organised and taught and focussing directly on the process of putting theory into practice, markedly increases their commitment to it. It also increases staff enjoyment and makes it a real learning experience for them as well. It is a clear example of where Paulo Freire's dialogical model of teaching and his concept of 'praxis' really does seem to work. We therefore feel it worth conveying our experiences to all those involved in teacher education in the hope that others may find some useful suggestions for their own teaching in what we present here.

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KNOWLEDGE, THOUGHT AND LANGUAGE ACROSS THE CURRICULUM

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Language and Education

We know that children's differences in language ability, more than any other observable factor, affect their potential for success in schooling. It is only in the last two or three decades that educationists in general have felt it necessary to state a fact that earlier educationists regarded as too commonplace to warrant stating: that language is the central achievement necessary for success in schooling. It is clear that achievement in schools is highly dependent on the child's ability to 'display' knowledge. This display almost always takes the form of spoken or written language. Child language will often be the first contact teachers have on which opinions of student potential can be based, while in the closing stages of schooling language contact through formal or informal assessments is often the only link between students and those assessors who finally declare a child's educational fate. Nor is it an artificial or improper matter that language on display is the central achievement for school success. A school curriculum is a selection of knowledge from the culture: all those things in the culture (or from other cultures) considered worth passing on through schooling. Since all forms of knowledge are 'filtered' through language, the chief item of knowledge in any culture is its language. The chief object of the school is to encourage the complete mastery of the language of the culture, since without this mastery children are denied power and influence over their own affairs and an opportunity for success in education.

Yet there is far more to the link between language and education than even these important concerns. Education is concerned with the activities of 'thinking', 'knowing' and 'learning'. We have strong indications from studies in cognitive psychology and from studies in epistemology of the way language and thought, language and knowledge, language and the roots of the intellect, are connected. I shall refer to the views of a number of well-known and complementary authorities in presenting the case for this point about the centrality to be given to language in education through its priority in the activities of thinking, knowing and learning.

Language and Thought

Bruner, the cognitive psychologist, bases his views on the place of language in education upon empirical evidence, much of which he has been instrumental

in discovering himself, and upon wide contacts with children in learning situations. In summary his early conclusions (1966) about the link between thinking and language are these:

1. Intellectual growth is characterised by increasing independence of response from the immediate nature of the stimulus, an independence made possible by the mediating role of language; to give an example: if young children are asked to talk or write about something, it is easier for them to do so if the subject matter is present in the context; older children are more able to draw on their greater resources of language to compensate for things that are missing in the present context; moreover they are able to use that mediating language as a basis for further acts of language use.
2. Growth depends upon the development of an internal storage and information processing system that can describe reality. Again an example: older children, describing something in the present which is absent, are only able to do so easily if they have acquired sets of meanings relating to that something; using their 'storage system' they can attach names to these sets of meanings (the words and phrases of a language) and further, they can make statements about these sets of meanings (using the infinite range of possible sentences made available to them by their grasp of the language's structure). As far as we know the only genetically endowed information storage system that humans have is a language-based one: this means that all the experience-based memories that we have are to a large extent encoded in some language system.
3. Intellectual development involves an increasing capacity to say what one has done and what one will do. An example: even though little children's memories may be filled with immediately past experience, they will be unable to tell you much about those experiences. Why? Because they lack the language to link up with those memories; to map onto the concepts and to organise their thought into sentences; they will also have difficulty telling you clearly about what they plan to do, for much the same reasons.
4. Systematic interactions between a tutor and a learner facilitate cognitive development. This speaks for itself: the 'courtesy of conversation' in Bruner's view is part of the 'courtesy of good teaching': we learn language by using language in the company of experienced language users to receive or to give messages.

In a later paper (1975) Bruner sets out his ideas on language as an instrument of thought. I present these ideas here, interpolated with views from elsewhere.

Bruner talks about three different kinds of 'competence' that go together to make up 'language proficiency'. The first of these is that kind of 'linguistic competence' which is regularly mentioned by writers in linguistics. Chomsky, the linguist, has long been associated with discussion on this 'faculty'. He contends (1979) that there is a 'universal grammar' that is 'a genetically

determined property of the human species'; children do not learn or acquire this competence in any sense; rather they apply it in developing knowledge or language. Perhaps this complex idea can best be grasped by trying to imagine what knowledge of language would be left to us after the knowledge that we have of any single language is taken away. What remains is an innate readiness and capability for language, possessed by all members of our species because of that membership. Since it is something that education cannot affect or influence in any way, and since Chomsky's ideas on this matter remain very controversial in any case, this kind of competence need not concern us here.

The second kind of competence is 'communicative competence', first introduced as a term in the writings of the sociologist of language, Hymes (1972). This competence includes the ability to make and understand utterances appropriate to the circumstances in which they are made. Speakers bring to a particular setting certain assumptions and expectations about when and how to speak and the sorts of things that can be said to particular people in particular situations. Romaine (1983) emphasizes that an individual's communicative competence can be greatly affected by variations in setting; for example, what children in school can do with language in the relative security of their own classrooms may be quite different from what they can or want to do in front of a school assembly. While Chomsky's idea of 'competence' separates it from language 'performance' (what we really do with our language), communicative competence accepts performance as an integral part of the language capability that children develop. Performance has its own underlying 'competence' which is not fully 'linguistic'; it is influenced by entities removed from our linguistic faculties - other cognitive systems, for example, including our expectations about three dimensional space, about texture and sensation, about human behaviour, inanimate objects etc. More than this, influences outside the mind may be crucial: a child might otherwise have a high degree of communicative competence in a given situation, yet still be prevented by illness or nervousness from displaying that competence in performance.

An important point is that Chomsky's 'competence' is regarded by him as something that we all share to the same degree; it is in communicative competence where differences in language development show up, although, as Bruner points out, every normal person can be expected to achieve a communicative competence without special training. He says that this competence involves the ability to engage successfully in the 'concrete operations' that Piaget and his associates describe (1958; 1978). This second kind of competence is of central concern to teachers in infant and primary schools. Teachers in first and middle schools in particular have a key responsibility for promoting the development of children's communicative competence as fully as possible across a range of contexts, functions and styles of language.

The third kind of competence Bruner calls 'analytic competence' this is a necessary acquisition for engaging in 'formal operational reasoning' of the sort that begins to develop towards the end of the primary years and which is required from adolescents by the intellectual demands of the secondary school. This kind of competence is important not just in discussion about senior secondary schools; the foundations for analytic competence are laid in essential ways at earlier stages of schooling. However, it is children's ability to reach a sophisticated development in their analytic competence that finally determines their educational fate.'

Bruner describes the workings of analytic competence as:

the prolonged operation of thought processes exclusively on linguistic representations, on propositional structures, accompanied by strategies of thought and problem-solving appropriate not to direct experience with objects and events but with ensembles of propositions.

In short, Bruner suggests that analytic competence is the ability to use language for thinking, a possession that is not acquired without exposure to some long-term educational process that integrates rich and complex interactional language activities.

The language and thought debate, which I am broaching in this section, is a vital and fascinating chapter in human intellectual history. Steiner (1978) believes that the most stimulating discussion on the relation between language and thinking is that between the psychologists Vygotsky and Piaget. Since that debate in the 1930s Vygotsky's conclusion on this matter (1962) seems to have gained the upper hand, even while remaining very controversial. His view can be simply stated: thought and speech have different origins; in the *linguistic* growth of the child there is a pre-intellectual stage; correspondingly there is a pre-linguistic stage in *thought* development. It is when the two independent and different lines converge that thought becomes verbal and speech becomes rational. This convergence depends on outside factors: the child's exploration of the social aspects and the functions of language leads to the development of logic on which inner speech is based. For Vygotsky, then, verbal thought (thinking in language) is not an innate and natural form of behaviour; thinking in language is something determined by an historical-cultural process; we come to think in language partly because human cultures have found this a useful thing to do; and this kind of thought has specific properties and laws that cannot be found in either thought or speech on their own. Vygotsky concludes from his observations that the transition from inner to external speech (or vice versa) is not a simple translation from one language into another:

it is a complex, dynamic process involving the transformation of the predicative, idiomatic structure of inner speech into syntactically articulated speech intelligible to others.

Pondering these conclusions of Vygotsky's, Steiner puts all the products of human language into two categories: audible or voiced, and inaudible or unvoiced. In terms of quantity, there is every reason to believe that we speak inside and to ourselves far more than we speak outwardly to others. What has changed in recent centuries is the degree to which the diverse subject matters of internal speech have become acceptable subject matters for public discourse.

In explaining this Steiner says that 'the contribution of women, of the young, of the economically and socially less advantaged levels of the community to the aggregate of enunciation, has sharply increased'. This means that what once were intensely private matters (emotions, attitudes, values, fantasies, beliefs etc.) are now freely spoken of; and in the speaking we change our *inner* speech about those matters in subtle ways. We have changed the way we think about things by talking about them. In this process of interaction we have come to understand many things that we would not have been able to puzzle out for ourselves as individuals in former times. Our knowledge about ourselves and about our world has increased immeasurably, simply because the taboos on talk have changed or fallen away; the shift in the balance of discourse (since about the seventeenth century) has been outward. This process in general has been a liberating one for humankind, promoting relatively open societies that are based on free speech and that encourage dialogue.

One thinker concerned with the links between language, thought and human freedom is the German social philosopher, Habermas. He uses the phrase 'institutionalized discourse' to describe the change that has occurred in Western thought, largely since the Renaissance, that Steiner is pointing to as well. There has gradually developed a greater readiness to examine all kinds of issues in talk and to subject even our most firmly held views, prejudices and dogmas to criticism in language. Habermas would like to see more of this; he believes, for examples, that the problems or legitimacy that many Western social institutions face at present largely derive from a widespread failure to employ this critical discourse.

What others recommend, notably the philosopher, Popper, is the development and extension of that 'critical tradition' first introduced by the pre-Socratic philosophers in ancient Ionia. This tradition demands a widespread willingness to challenge accepted dogmas and teachings in discussion. It is already certain, however, that out of our ever-growing engagement in critical discussion vast advances in knowledge have accrued: through this critical process the link between language and the growth of knowledge has become an increasingly dynamic one.

Language, Learning and Knowledge

There is a close connection between 'knowledge' and 'learning'. Simply stated, learning is the acquisition of knowledge. In using the word 'knowledge' we usually see it as a shorthand way of saying other things for example we usually

mean 'knowledge' and understanding; when we say just 'knowledge', since it means very little to have 'knowledge' on its own 'knowledge' that is not available in some way to help us understand the world or operate within it. Also, in Education, we often use the word 'knowledge' in a broad sense to include things like 'skills' and 'values'. When we talk about children acquiring 'knowledge' through education, then, we are usually implying that their understanding of the world has been improved in some way and that this often involves the learning of skills and the development of values or attitudes. In this section I am using 'knowledge' in that broad sense.

Barnes, Britton and Torbe (1986) are three well-known figures in language and education theory development, even though interested in different aspects of that subject. They are in broad agreement, however, in their views on the links between language, learning and knowledge. In this section I present the views of these three theorists in outline; then, I focus on one of them in particular and show how that view of the relation between language and knowledge is very much in tune with an influential view in the philosophy of knowledge.

Torbe's central concern is with language management and the policies associated with 'language across the curriculum'. I give greater attention to these matters in the next section. He describes his stance on knowledge and learning as contrary to the orthodox view, which holds that we can judge that successful knowledge acquisition has taken place when the student has 'got it right'. He believes that those who see learning like that find it difficult to accept a very different model: a model of teaching and learning which values risk taking, welcomes conjecture and sees error-making as inevitable and necessary. In brief he concludes that all learners have to 'discover for themselves'.

Barnes research, teaching and writings centre on 'talk' as used by teachers and students in schools. From his studies he concludes that certain views on the nature of knowledge seem to be associated with corresponding views on the role of language in learning. In particular he contrasts a 'transmission' view of knowledge with an 'interpretation' view the former is concerned with the acquisition of information; the latter with cognitive and personal development. He sees the assumptions behind most approaches to teaching falling somewhere on a continuum between these two views; with the transmission view concerned mainly with the pupils' performance, and the interpretation view with their struggle to understand. These conclusions, and his research on problems related to them, have led Barnes to conclude that 'talk' helps learning in any activity that goes beyond the role and which requires understanding, especially the understanding of processes. For him, like Torbe, all learning takes place through changes in the learner's existing model of the world.

Britton is interested in expressive writing and the use of talk activities as an aid in developing quality in written work. He believes that it is part of the nature of human learning that it proceeds by anticipation. We tackle a problem forearmed with alternative possible solutions. More than this, learners bring

with them whatever they already know and interpret it in the light of new evidence. He suggests that it is through language that understanding develops in technical fields, since language brings our commonsense concepts to a point of engagement with the technical concept. Britton's ideas are shared by Barnes and Torbe. They also have much in common with current views in the philosophy of knowledge, views refined at length and stated most persuasively by Popper (1972), the philosopher of science.

Popper's major interest has been epistemology, a field that considers questions like the following: how do we come to have knowledge; and what does knowledge consist of? For Popper it is only through *language* that deliberate criticism occurs, and this is necessary for the creation of knowledge. Here are the points that he offers to support this case:

1. a thought, once formulated in language, becomes an object outside ourselves: that is, a thought does not exist for anyone else but the thinker; once put into language, though, it becomes a real world event;
2. language is capable of criticism and therefore is part of the world of objective standards: that is, we can try to say when someone is talking nonsense but there is no point in trying to say someone is thinking nonsense, unless we have the evidence of that person's language to go on;
3. only thought contents that are expressed in some language can stand in logical relationship to one another, such as equivalence, deducibility or contradiction: that is, we can use the language of one another to find out whether things are so or not, and this creates new knowledge.

A point basic to Popper's view is that the creation of knowledge depends on a rich language framework and the possession of that framework by people; for Popper human thought and human language evolved together: language helps to explain the brain, the mind, human reason and freedom.

Perhaps the link between Popper's and Britton's views could be made plainer: For Britton, when expressive talk is used as a means of education, children bring their commonsense views, as anticipations, into the learning context and are asked to present them in language that is ready for reconciliation with more impersonal and objective public statements; for Popper, all knowledge grows through a process of conjecturing and refuting: we bring our commonsense theories or conjectures, as expectations about the world, to our problems and then proceed to eliminate error from those theories.

These views seem to me to overlap to a great degree. What Britton describes as a 'learning method' in language work is an instance of what Popper proposes as his entire theory of knowledge: the most efficient way for human knowledge to grow, in Popper's process of conjecturing and refuting, is when our conjectures are made explicit in some language, because then they are available for criticism and improvement (along the lines suggested in 2 and 3 above). The task is to submit our theories to the most rigorous trial and error tests

available, thereby eliminating their error as much as we can. In this way, at a personal level, our own knowledge grows; and more generally, in this way too, humankind's knowledge grows.

It does lend weight to educational theorists' views on the links between language learning and knowledge to discover that those views match up with authoritative opinion from the philosophy of knowledge. With this expert support, the educational doctrine of 'language across the curriculum', which I introduce in the next section, has met with little theoretical opposition. As I will explain, the practical problems for that doctrine do not derive from any lack of support by educators at a theoretical level.

Language Across the Curriculum

Many of the thinkers already mentioned have been major contributors to the debate that ended in the doctrine of 'language across the curriculum'. The psychological thinkers of this century, who have been most interested in children's learning, have regularly approached their subject through considering language issues: Piaget, Vygotsky, Luria and Bruner are all noted antecedents of the doctrine who found rich implications for their work in the area of language. Added to these are those philosophers experienced in teaching children who derived from their experiences views about the links between language and learning: Wittgenstein and Popper both taught in Austrian schools and show the results of that practice in their writings. It is in the British school of curriculum theorists where the ideas of these and other thinkers began to come together. Notably Moffett's book *Teaching the Universe of Discourse* set the scene for a new direction in curriculum matters as they relate to language and learning.

Moffett's key idea is that our ability to think depends on the many previous dialogues that we have taken part in. Language across the curriculum, as an idea, emphasizes the fact that we often fail to exploit students' language, especially their informal and expressive talk and writing, as a learning resource in the classroom. Fillion (1983) sets out the three basic tenets of language across the curriculum:

1. language develops primarily through its purposeful use;
2. learning often involves and occurs through talking and writing;
3. language use contributes to cognitive development.

These claims have been largely substantiated in the research work of many of the theorists already cited, through their studies examining the observed behaviours of students and teachers. They provide the platform upon which a worldwide re-examination of the role of the students' own language use in their learning has taken place. *A Language for Life* (1975), the report that resulted from a major educational enquiry in Britain, allotted a chapter to the doctrine, using the title 'Language Across the Curriculum', thereby lending official

support to a set of ideas which was already extremely influential in Europe, Australasia and North America. Perhaps the most advanced in its thinking on these matters, of all the world's education authorities, the Ontario Ministry of Education in Canada has adopted the doctrine as part of its public policy. Below is that policy cited in full (1984):

Language Across the Curriculum

Language plays a central role in learning. No matter what the subject area, students assimilate new concepts largely through language, that is, when they listen to and talk, read, and write about what they are learning and relate this to what they already know. Through speaking and writing, language is linked to the thinking process and is a manifestation of the thinking that is taking place. Thus, by explaining and expressing personal interpretations of new learnings in the various subject fields, students clarify and increase both their knowledge of the concepts in those fields and their understanding of the ways in which language is used in each.

It follows, then, that schools should provide an environment in which students are encouraged to use language to explore concepts, solve problems, organize information, share discoveries, formulate hypotheses, and explain personal ideas. Students need frequent opportunities to interact in small group discussions that focus on the exploration of new concepts. In addition, they should be encouraged to keep journals in which they write thoughts, questions and speculations that reflect their learning.

Principals should provide leadership by encouraging all teachers to participate in developing and practising a school language policy, which is, in effect, a school learning policy. By allowing students to discuss and write in the language they already control, teachers can gain new insights into the difficulties that students are encountering in particular subject areas. In this way teachers can help students to avoid rote learning and to gain clear understandings.

The difficulties that arise in the task of bringing a policy of this kind into operation are many. I mention a major one of these at the end of this section and suggest how it can be overcome. Part of the difficulty for the doctrine of language across the curriculum is that its implementation requires major changes in teacher attitudes and in the choice of pedagogy that teachers make.

Some of the problems for language across the curriculum, though, can be eliminated by simply becoming clearer about what the doctrine means. Firstly, language across the curriculum is not solely or even especially a part of the responsibility of the teacher of English (or the teacher of any other mother tongue); it is the responsibility of every teacher at every level in important ways:

it is a doctrine about learning, after all, and that is the central concern of education. Secondly, language across the curriculum is not much concerned with language as product, or with promoting language assessment in some way: its focus is on language as an instrument for learning, not performance in language (although some implications for performance will no doubt follow if the quality of learning through language is to be highlighted). Thirdly, language across the curriculum is not concerned with some or other 'linguistic bias'; the enforcement of certain language styles or varieties is not an aim of the doctrine: An important teaching of *A Language for Life* is that teachers should place value upon the language that children bring to schools, and use that as a starting point for education, not as something to be changed or eliminated.

A great difficulty for 'language across the curriculum' is suggested in the last paragraph of the Ontario policy above. Because language across the curriculum, by definition, cannot be the responsibility of any single teacher located at one point in the curriculum or in the age range, then by necessity responsibility for the doctrine shifts in a major way to the school executive: language across the curriculum becomes a function to be assumed by educational administrators as perhaps their central curricular concern in schools. My own interest in these matters are practical ones, since I teacher Master's courses entitled *Language Policy Across the Curriculum* and *Fundamentals of Language Planning in Education* that are aimed directly at practising school administrators. Many topics and issues are relevant in designing school language policies. Maybin (1985) sets out some of these matters, in an introductory way, as they apply at primary school level. Morland (1977) gives a detailed and introductory treatment of secondary level language policy.

Summary

A good deal of schooling is devoted to 'language on display'; the chief object of the school is to encourage mastery of the language of the culture. Humankind's efforts to understand the links between language and thought provide a difficult but fascinating debate. Development in thinking prowess depends on growth in language. Although language and thought are not identical, they develop together.

Teachers in first and middle schools have a key responsibility in promoting children's 'communicative competence': this is our ability to make and understand utterances appropriate to the circumstances in which they are made. 'Analytic competence' is the ability to use language for thinking. The building of analytic competence is a prime task of the school; foundations for this are laid in first and middle schools and judgements about its quality usually determine a child's educational fate.

Our capacity to think in language is not innate; as a species we have learned to do it. In recent times we have come to share the products of our inner thought more and more. This extension of talk into new areas has led to great

increases in the growth of knowledge and a growth in human freedom. Learning takes place when we eliminate error from our existing conjectures about the world. For learning to be effective, language is necessary, because deliberate criticism occurs only through some language.

The three tenets of 'language across the curriculum' are that language develops through its purposeful use; that learning often occurs through talking and writing; and that language contributes to cognitive growth.

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