Chapter two: Implicit theories

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Chapter 2

Implicit Theories

> Who is there . . . that hath not opinions implanted in him by education . . . which must not be questioned, but are here looked on with reverence as the standards of right and wrong, truth and falsehood; where perhaps these so sacred opinions were but the oracle of the nursery, or the traditional grave talk of those who pretend to inform our childhood, who received them from hand to hand without ever examining them?
>
> John Locke[1]

To see the value of the approach to learning that I am going to describe, it is necessary to see what it is an improvement on. Why do we need to talk of 'implicit theories', 'learning amplifiers' and the like? What is wrong with common sense? Surely it would not be *common* sense if there were not a lot of truth in it? And why do we need a new kind of psychological model? There seem, if anything, to be too many already. As I said in Chapter 1, the first job of anyone who is selling an apparent solution is to show the clientele that there is a problem, and that currently available products are not good enough. That is what I want to do in the next two chapters. First I am going to describe some aspects of people's implicit theories about learning and ability, and show how they often interfere with learning; and then in Chapter 3 I shall take a quick run through the kinds of model of learning that psychologists have to offer to education, showing how and why they have developed to the current point.

WHY 'IMPLICIT'?

Most of what we know we are not able to describe. We are aware of thoughts, perceptions, feelings, actions and so on, but we are not aware of where they come from. We have to accept the unconscious as a fact, not in the classical Freudian sense of the dark cellar where we try to hide away our most awful secrets and memories, but simply as the inscrutable source of most of our experiences and responses. We cannot say how it is that we walk, nor, as a rule, where it was that we learnt to talk with the accent that we do. We can have a feeling that someone close to us is upset without being able to say *how* we know. We find ourselves, on the first day in the classroom as a new student teacher, suddenly behaving in a strange way, and realise that somewhere below the surface we must have been harbouring a model of a teacher from our own schooldays. Someone throws us a ball and we reach out to catch it, without any consciousness of the complex calculations that must have gone into the prediction of its speed and trajectory. As we pass a bunch of girls in the corridor they start to giggle, and without a pause we feel hurt, certain without any question that we must be the object of their sniggers.

All our spontaneous reactions arise as a result of our interpretations of events; and these interpretations are the products of our own learning. Out of years of experience we have distilled habits, expectations, hunches and beliefs that are the basis for our current view of the world. Parts of this huge storehouse of learning are available to our conscious scrutiny: we know what it is we believe and why. But much, probably the vast majority, of it is known to us only through its effects, and is not accessible to introspection. It is like a computer program which controls the way that the computer operates but is not itself on the screen, open to inspection. We call these contents of mind 'theories' because, like scientific theories, they are generalizations drawn from experience about the way the world works, which are used as a basis for predicting and interacting with it. And many are called 'implicit' because, unlike scientific theories, we are unable to articulate what they are. Learning at its most general is the business of improving our theories, elaborating and tuning them so that they keep track of the changes in the world and come to serve us ever more successfully.

GENERAL FEATURES OF IMPLICIT THEORIES

These theories, which give rise to our 'common sense', have a number of general characteristics – apart from their frequent tacitness.[2] They are in some ways similar to scientific theories – though there are important differences. Our personal theories are not necessarily logical – much of what we 'know' is useful despite the fact that it would not bear much rational scrutiny. And they are often not general, far-reaching and coherent, like those of the scientist, but are rather piecemeal and purpose-built. In many areas of life, coherence is of much less importance than having a quick, efficient, situation-specific routine that you can run off without much thought. (It is unwittingly following such routines that leads us to catch the train we usually get, on the odd occasion when we actually want one going in the opposite direction.)

They are powerful determinants not only of what we think, but also of our spontaneous behaviour. They seem to be relatively stable: often they are remarkably resistant to change, even in the face of good evidence. People are quite able to declare, 'I don't care *what* you say. I still believe that . . .' (That is an issue for student teachers, who may come out of their training courses still convinced of the rightness of their original opinions, despite hours of discussions that showed – to others – how off-beam or simplistic those opinions are; and also for classroom teaching, where pupils' implicit theories are often equally resistant to change.) Yet it is true as well that people sometimes *do* change their minds when the conditions are right. Quite what this means we have already touched on: there has to be some sense of personal dissatisfaction with their way of looking at things, coupled with the availability of an alternative that seems intelligible, plausible and fruitful.[3]

Another feature of these implicit theories is that they often have greater control over some aspects of our behaviour than others. For example, it is not unusual for people to show a dissonance between what they say about an issue and the way they actually deal with it. We may profess a love for the classics, but spend most of our time reading thrillers. Teachers may concur with a pupil-centred view of teaching, but in the heat of the moment, in the classroom, behave quite differently. Adolescents may subscribe to one theory about AIDS in personal and social education (PSE) lessons, and quite another on the river bank in the dark. When a

personal theory has control over what we say rather than what we do, it is sometimes called an 'espoused theory'; when it has more influence over how we actually behave, it is called a 'theory-in-action'.[4] The difference between opinion polls and election results shows the disparity very clearly.

The next point I want to make generally about these implicit theories, before we have a look at some of their contents, is their tendency towards simplification, overgeneralization and dogmatism. They have been picked up, for the most part, unconsciously and uncritically: the opinions or habits they contain seem to us to be 'common sense' precisely because we have never thought to question them. They appear 'obvious' or 'inevitable' or 'natural' ways to think or behave. When people from different cultures meet, for example, there is much room for misunderstanding as they act according to different acquired sets of 'manners' that seem, to each, the only right and proper way to behave. This causes trouble in multiethnic schools, where behaviour which to one group of pupils is deferential (such as avoiding eye-contact with an adult in authority) is to the adults involved a sign of insolence; or where an activity that the school requires, such as changing clothes for PE, is felt by girls from a particular culture to be 'unseemly' and an invasion of privacy.

Such theories are resistant to scrutiny, and are often held with a great deal of emotional force – witness (at the time of writing) the outcry from the Moslem world about the book *The Satanic Verses*. Supposed alternatives may be attacked – as in this case – or equally strenuously ignored. They may make no allowances for differences of opinion, or for the fact that 'circumstances alter cases'. At the beginning of a teacher training course, students' opinions about education sometimes reveal this black-and-white character. Statements are delivered that seem to be written on tablets of stone, and which are couched in terms of all, none, always and never. As the foundations of such attitudes are slowly uncovered by experience and discussion, and as they are put to the test, so they may not only change in nature but become more contingent, more differentiated, as well. People become more inclined to say 'It depends'. Adolescents are notorious for jumping from one dogmatic, absolutely obvious and incontrovertible opinion to another, depending on the people they happen to be with, or the mood they happen to be in, as they search for the security of some

simple philosophy to hang on to in the midst of the vast swirling uncertainties in sexual feeling and personal style.

The next, crucial, point to make about implicit theories is that they frequently make no distinction between what is true and what is believed: if something is believed to be so, then to all intents and purposes it *is* so. Some of our beliefs are held provisionally: we know them to be conjectures, and are willing to revise them if things turn out differently to how we had supposed. But many of the beliefs that we have picked up and incorporated into our ways of looking at things are treated as reality rather than hypothesis. About such matters we do not believe we are right – we *are* right. As the anger rushes up, we are not conscious of *assuming* that this child is being insolent: we *know* she is, and we have no doubt that the anger is righteous. When someone in the staffroom is preoccupied and fails to say 'Good morning', how we respond, and feel, depends on which of our implicit theories happens to be nearest the surface. On one day we may think, 'Jane looks pretty harassed. I'd better wait until later'; on another, 'What's got into Lady Muck this morning?'; on a third, 'Oh help, I must have done something wrong. I wonder what I can have done to upset her?' Mostly we are not able to see these *as* interpretations, but view them as realities to be dealt with – by backing off, bridling or placating respectively (all of which may be no help at all to Jane, who has just received a letter to say that her father has had to go into hospital).

THE ORIGINS OF IMPLICIT THEORIES

There is a final distinction between everyday, implicit theories and those of 'proper' scientists, and this refers to their origins. Formal theories are often derived intellectually from the joint consideration of experimental results and earlier theories, whereas implicit theories are picked up to a large extent from three sources. One is our own first-hand experience of the physical world, out of which we construct our webs of expectations and predispositions. When crossing the road, for example, most adults are able to judge the speeds of passing cars quite precisely, so that they are able to launch themselves safely into gaps in the traffic. We learn about heat and gravity and animal behaviour from fires

and falling over and playing with the cat. I shall refer to theories which were principally learnt in this way as 'gut theories'.

The second source is the everyday social world: the way the people around us talk and behave. Their speech and reactions reflect their implicit values and beliefs, and, through our daily interactions with them, as we learn to rub along, so some of their way of looking at things rubs off. Theories that derive principally from these informal social sources I shall call 'lay theories'. It should not be too surprising, for example, that having spent 15,000 hours or so ourselves as pupils in school, our implicit theories about education in general, and learning in particular, are heavily influenced by the models and ethos to which we were exposed. It is common knowledge in the teacher training business that the way students start to teach usually reflects quite strongly the way they were taught. It is also common for students to discover on teaching practice that these habits of thought and action are quite persistent, and may spontaneously subvert beliefs and intentions that are more consciously held.

Both the first two sources are informal. Our third source is much closer to the world of the scientist, for it consists of what we are explicitly told. Even before we learn to speak, we are being instructed by parents about how to behave and what is so, and this process is amplified at school, where the process of deliberate instruction is intensified. If this source comprises the explicit curriculum of education, the values and attitudes picked up from the second source constitute the 'hidden curriculum'. I shall call these 'formal theories'.

IMPLICIT THEORIES ABOUT LEARNING

Let us now illustrate some of the beliefs that have been found to underlie people's ways of thinking and acting in educational contexts. Amongst all the implicit theories that form the basis of educational practice, none is more significant than those that concern learning itself. The traditional model of secondary school learning was developed in the British public schools and was filtered via the grammar schools into the state system at large, where it remains embedded (and reaffirmed by the current reforms) in much school organization and many teachers' minds

today. The dominant approach to primary education, on the other hand, derives more from the powerful influence of pioneers such as Montessori, and theorists of child development such as Piaget.

Recent research has shown that, while changes are being introduced to these underpinnings, and while also some more experienced teachers begin to question them, nevertheless the following key beliefs continue to provide much of the guiding framework for school ethos and individual teacher pedagogy.[5] It might be useful for you to use them as a self-assessment inventory, to help you reflect on the beliefs that your experience has led you to espouse. I shall present them at this stage without critical comment – though you will rapidly see that many of them are at odds with the picture of learning that I outlined in Chapter 1.

'Knowledge is objective. It is discovered by experts (mostly from universities) and, if it has made its way through the syllabus and textbook barriers, then it is *ipso facto* accurate and important. It is like diamonds that are mined (by a process called "research"), polished and then put on display for ordinary people to gawp at and make notes about.' This attitude is more common among science teachers, though it is found elsewhere too. (Note that we must keep in mind the distinction between 'espoused theories' and 'theories-in-action'. Many science teachers would now *espouse* an approach to science as a human creation, a network of conjectures, rather than as a body of immutable 'facts' hewn from nature by the painstaking application of a systematic method – yet in their daily lives as teachers they may give no sense that this is so, apart, perhaps, from the occasional informal discussion with the sixth form.[6])

Alternatively, science teachers may see their knowledge principally as *skill*, as comprising a set of useful abilities that range from the rather specific, like doing a clean titration, to the rather general, like 'making observations and deductions'. Maths teachers are sometimes undecided as to whether their subject consists of 'discoveries' or 'creations'; but mostly, like some of their science colleagues, and many language teachers, they are more inclined to see knowledge as useful routines that can be learnt for doing things with. Some English or PSE teachers would take another tack, seeing knowledge more as *self*-knowledge, where the 'content' comes from within rather than from outside.

'Of all forms of knowledge, abstract intellectual knowledge and skill are the most important and the most valuable, and success at acquiring them merits a high status and increased choice and earning power in the job market. Being able to solve equations that have no personal relevance; interpret experiments without wondering who first did them; remember the difference between glacial and river valleys; express opinions about books that have not meant much; have conversations in French about your pets with someone you neither know nor trust – these kinds of activities are of importance, certainly more so than the ability to wrestle, to bake, to dive, to meditate, to chat up and to enjoy your own company.'

'It is not important whether the knowledge has direct out-of-school relevance because (1) it is intrinsically worthwhile, and (2) it ought to be automatically generalizable (at least by bright children) to novel appropriate situations. What our abstractions are doing is "training the mind": we are inculcating good habits of thought which will stand people in good stead, regardless of what they end up doing. By detaching the content of learning from the immediate pressures of relevance and need, we are developing valuable general qualities such as rationality.'

'The teacher's job is to present this knowledge, and to train the skills for using or manipulating it, in a way that is clear, well-structured and at an appropriate level and pace.' There are a number of variations on this theme. The teacher may be a *petrol-pump attendant*, whose job it is to fill a child up with high-octane, unleaded knowledge that has been refined elsewhere and delivered to the school by textbook-tankers. (At various times in the year she turns into an *inspector* whose job it is to check for leaks in the child's tank and to see how far he can go on the fuel he has been given.) Teachers of these kinds are inclined to describe their work in terms of 'conveying' or 'imparting' the knowledge, 'getting it across', 'giving a grounding' in whatever-it-is, and so on.

In the same group we might put the *regurgitators*, who see themselves like parent birds who have to take subjects that are too 'tough' and 'chew them over' for pupils so that they will not be too 'hard' for them to 'get their teeth into'. In order to do this, they must see knowledge as something that is created, or at least interpreted, by human beings; but it is their job to do this, not the

pupils'. Teachers with all these implicit theories about knowledge must put their energies into seeing that their knowledge is up-to-date and accurate, and that they can deliver it in a clear, well-paced fashion. Good lectures and logical handouts are what they aspire to.

Then there are the *lion-tamers* or the *sculptors*, who see their role in terms of training and moulding. They have a clear idea of what children are to be able to do by the end of their course, and are leading them methodically towards the goal of competence. Children are to be processed, and if they do what they are told to do, and do it 'properly', then they will 'develop' or 'acquire' the target skills. Their focus as teachers is on devising an effective mixture of demonstrations and exercises or 'problems': first they demonstrate how to do it, and then the children practise doing it for themselves. Maths teachers will 'go through it' on the board, answer questions and then offer a kind of coaching service to individuals who get stuck with any of the problems they have been set to do. A similar procedure is familiar in science, where equivalent demonstrations and exercises may be set. As Dennis Fox points out, 'Curiously in science laboratories these exercises are often called "experiments". Anything less like a real scientific experiment, with all its essential uncertainty and unpredictability, would be hard to imagine.'[7] There is not much of a role for the learners' individuality in this model: they lay themselves out on the lathe of the structured, sequenced exercises, and gradually their minds will be turned into the desired shapes.

Next come the *watchmakers*, who see knowledge as a collection of components that have to be assembled in the learners' minds. They often speak of 'building' understanding, frequently using basic ingredients called 'concepts'. There is a grand design, which is usually known to the teacher but not to the learner, and pieces are gradually assembled in the 'right' order. There may be some sense of partnership with the learner in the construction process – after all the building is going on in the learner's mind and she is therefore the only one who has direct access to it – but hers is not to question either the components or the objective. She is to 'grasp' ideas and concepts, and 'make connections' between them.

There are, of course, other ways of looking at the role of the teacher which we shall explore in greater detail later. In particular, we will look at the models of the teacher-as-*sherpa*, acting as a

knowledgable local guide to an explorer of unfamiliar terrain; and teacher-as-*gardener*, where all the 'growing' is done by the learner-plants themselves, as they convert nourishment into their own fabric in a way that the gardener can assist, but is powerless to determine. All he can do is arrange the conditions, and then let nature take its course.

'Learners are essentially passive. Their job is to retain or understand knowledge, and to master approved ways of manipulating it.' This assumption underlies, to a greater or lesser extent, all the previous models of teaching bar the last two.

'Learning itself is a pretty simple process which involves adding new bits of information, making connections and developing habits. It has a mechanical rather than an organic feel to it, and the focus of interest is on the process of *teaching* – if we can get the teaching right, then learning will happen as a fairly straightforward consequence. Learning as an activity is engaged and driven by teaching, or at least by good teaching.'

'Learning is something that principally happens in special places – schools – under the guidance and control of special people – teachers. Sure, we might be prepared to admit, when it is drawn to our attention, that children learn to walk, talk, feed themselves and socialize without such an explicitly educational support system; but for *real* learning, the sort that equips you to be a responsible citizen and a rational adult, we need syllabuses, timetables and exams.'

'Not only is abstract intellectual learning the kind that is of most value; learning is itself a primarily intellectual process. It involves mental activities (which so far are treated as unproblematic, remember) like understanding and figuring things out.'

'School learning can therefore be largely disconected from the learners' personalities – provided they are normal and happy. In so far as feelings and emotions are involved at all, a mild level of interest is desirable: we need to be concerned about feelings only when they are getting in the way and gumming up the smooth working of the mind, like treacle poured into an engine. They then constitute a problem to be resolved, so that normal service can be resumed. The solution to this problem should primarily be sought

in the learners' own characters, and/or in emotional difficulties that they may be experiencing out of school. When all is going well, personality and emotion can safely be ignored.' (A recently published 'teachers' guide to the psychology of learning', for example, has no entries in its index for *emotion*, *feeling*, *personality* or *relationship*.[8])

'Likewise learning is an individual business. It may take place in a social setting – in a sense it must do if a teacher is present – but that merely provides a context for the learning and does not determine, in any qualitative way, the nature of what is learnt. In the right social environment – peaceful, stimulating and supportive – learning will proceed more quickly and smoothly. But as to what is learnt – that is decided by the interaction between the individual learner and the subject matter, with the mediation of the teacher. The meaning of what is to be learnt is inherent in the subject. If groups of learners get together and seek to negotiate the meaning of a lesson or an event, they are likely to wander away from the true meaning – the blind leading the blind.'

'Learning is a homogenous activity, resulting in retention and understanding. It varies not in kind, but in terms of how much or how well the pupils have learnt. And the *processes* whereby we learn are general-purpose: the way we learn does not vary much from subject to subject or context to context. We may do better in one subject than another, but this is a reflection of aptitude, interest or motivation, not of the cognitive approach we take (or of the social relationships between pupils).'

'Once something is learnt "properly", then the "learner" knows it, and unless she "forgets" it she will (should) be able to show that she knows it in the future. Whenever what she knows is actually relevant to a question or a problem, it ought to become available. The idea of relevance, of the ability to see that what was learnt there-and-then is applicable here-and-now, is not problematic: the mind is organized in such a way that, when a piece of knowledge or a mental skill is needed, it automatically pops up like a piece of toast. The odd occasions when this phenomenon of *transfer* does not happen are a nuisance, representing nothing more important than temporary malfunctions of the system. Once it is 'in', there should not be much problem in getting it 'out'. Thus formal

examinations provide effective measures of what has been learnt, and generally diagnostic tests of learning or of stage of cognitive development are valid and reliable.'

'Therefore the difficulty with learning lies in acquiring the information. All the weight of our efforts to promote learning must be at the "front end". That is where the problems are to be encountered.'

'Because the main ingredients of this theory are the teacher, the subject matter and the individual learner, it is to these three that we must look for explanations when learning becomes difficult or fails. Perhaps the subject is too difficult, or contains concepts that are too hard. Perhaps the teaching was inadequate: it was confusing or boring or the teacher didn't know his stuff. Or perhaps it is the learner's fault.'

'Learning success is largely determined by two learner variables: ability and effort. Failure to learn usually reflects a deficiency in either or both of these variables – the learner is of low ability or unmotivated.' Actually the reasons that people give for success and failure depend on who they are.[9] Teachers tend to attribute pupils' success mainly to pupil factors such as 'effort' and 'ability' – but also to their own skill as teachers. Failure, on the other hand, is taken to reflect a *lack* of effort or ability, material that is too 'hard', and the good old standby 'home conditions'. Pupils tend to attribute success to their own efforts and abilities, while failure is often put down to lack of parental help and the difficulty of exams. Parents like to take credit for success, but are willing to share it with the teachers; failure is the pupils' 'fault'. Parents are also inclined to use 'home conditions' as an explanation for failure – provided it is clear that it is other people's homes they are talking about.

'When failure is due to lack of effort or ability (as it all too often is) it is personal. It reflects the individual's unwillingness or incapacity to take advantage of what is on offer to all. Both of these – to be thick or not to work hard – are legitimate sources of personal shame. Stupidity and laziness are negative indicators of one's worth.'

'The word "ability", as in "ability level", "high ability", "less

able" and so on, denotes a real, personal characteristic which is fixed, limiting, pervasive, predictive, monolithic, measurable and valuable.' 'Fixed' means that it is not subject to significant changes over time, and often is *innately* fixed. 'Limiting' means that the 'ability' people have fixes the upper boundary of what they can achieve and/or the rate at which they can learn. (Other factors such as 'motivation' may prevent a person achieving up to her 'ability level'.) 'Pervasive' means that this limit is operative across the whole range of school subjects, and possibly across the entire cognitive domain. 'Predictive' means that, knowing a person's 'ability', one may predict his future performance. 'Monolithic' means that 'ability' is a simple, coherent thing: it is not composed of many elements. 'Measurable' means that it is possible to discover and quantify 'ability' with the aid of certain diagnostic tests. 'Valuable' means that 'high ability' is better than 'low ability' and that a person's 'ability level' says something important about what she is worth.

THE TRADITIONAL VIEW UNDER PRESSURE

The beliefs that learning was simple, intellectual, cognitive, individual and so on were embedded for many years without question in the way teachers taught and the way schools were organized. Today many of them are the subject of open debate and teachers often feel torn between the different stances towards the business of education that conflicting views seem to imply. On one side there is the Education Reform Act which is built on acceptance of a traditional view of school, strongly based on these beliefs. On the other, there are progressive calls for an education that is concerned with the direct relevance of school activities to young people's ideas, needs and interests. These calls derive from a number of concerns, which teachers often share, such as the changing population of schools and changing attitudes in society at large. Young people are staying on longer at school, and many of them are not going to succeed in the traditional academic subjects. With a high level of youth employment, hard work at school no longer guarantees a 'better job', and young people are less and less inclined to accept respectfully hours of study that seem to them (and to many of their teachers) to have no point or pay-off. Classes

contain youngsters from a greater variety of cultural and ethnic backgrounds. Attitudes to the education of girls have changed radically. And so on.

Yet much of the practice in schools continues to be based on the assumptions that were current when the foundations of our school system were being laid a hundred years ago; assumptions that I am going to argue can now be seen to be false. We can no longer assume, for instance, that learning is a single process: rather, different people have different ways of learning, and people have a range of learning styles that they deploy in different situations. We can no longer assume that something learnt in one situation ought automatically to transfer to another: rather, people's knowledge is often tied (and for good reason) to the specific materials and purposes for which they originally learnt it. We can no longer assume that poor performance on a test reflects a failure to 'learn': rather, we have to allow that people may often be unable to retrieve and manifest what they actually do know. We can no longer ignore the experiences and strategies that learners bring into the classroom with them: rather, their idiosyncratic resources influence markedly how, and how well, they learn. We can no longer assume that students' demeanour in class is a reflection of their 'personality' or 'ability': rather, it frequently reflects a rational (though not necessarily conscious) choice about how best to deal with a particular subject or teacher. We can no longer assume that learners' feelings are separable from their mental performance: rather, they are inextricably linked.

As I argued in Chapter 1, the new theory of learning also casts considerable doubt on the validity and even the existence of the construct of 'ability'.[10] The theory suggests that 'ability' may represent only a crude summary of a more complex picture: that learners possess a whole repertoire of learning strategies, some of which are relevant to school but not available (i.e. not copied on to, or cross-referenced with, the 'files' that a learner habitually uses in school); some of which are available and not relevant; and some of which are both available and relevant. It suggests that this repertoire is learnable, and that it can be developed in extent, in refinement and in the success with which the right strategies become available in the right circumstances – circumstances in which their use would actually prove successful. If people's learning power does not develop, this is due not to a 'lack of

ability' but to the absence of appropriate experiences, and/or of the emotional or situational conditions which enable those people to explore and extend the current boundaries of their skill as learners. We will explore these conditions later in the book.

LEARNING MEANS AND LEARNING ENDS

What I am going to argue in general is not that the 'traditionalists' have got it all wrong and the 'progressives' have got it all right. What seems obvious to me is that different kinds of learning need to be approached in different kinds of ways. Sometimes there are facts to be learnt and skills to be mastered. I would not want my body to be operated on by someone who did not know the names of the major bones or how to make a clean incision. I am perfectly happy that the person who flies my jumbo jet has been put through thousands of hours of careful training that he or she was probably not consulted about. But equally I do not want the educational psychologist who is called in to help with my daughter's learning problems in school to be trying to sort her out according to some cook-book method. I want him to have developed a warmth and openness when dealing with people that cannot be trained in any mechanical way.

The central questions about school, therefore, are: what kind(s) of learning are we aiming to produce; does everybody involved understand what we are aiming to do, and why; and are we using the right approach for the job? Too often debates about teaching methods are conducted on an antagonistic basis, with a level of subtlety reminiscent of the 'Four legs good; two legs bad' argument in *Animal Farm*.[11] Discovery learning is good, rote learning is bad; free play is good, desk work is bad; experiments are good, note-taking is bad; and so on, as if the issue were a moral and absolute one.

The problem, as I said in Chapter 1, is that you cannot tell whether a learning or teaching method is good or bad until you know the kind of result that is being sought. Teaching styles are *never* good or bad in any absolute sense; they are appropriate or inappropriate. If you want children to know their tables, and to be able to use them spontaneously when they are working with numbers, the best teaching method is the one that delivers –

provided it does not at the same time do any damage to children in other areas of their learning. *If* chanting is efficient and enjoyable, why not use it? Or if you want children to be able to deal successfully with conflict with other people, then rushing in and mopping up every little crisis the minute it occurs may be exactly the least helpful thing to do, despite your own discomfort and hostility. The problem is that people's contributions to educational debates of this sort are frequently expressions of their own implicit theories, derived from happy or unhappy experiences of their own, or their children's, schooldays. They are not open-minded enquiries into the best tool for the job. What are we trying to achieve in education? That is the issue where morals and values are at the heart of the matter. How do we achieve whatever it is we have decided we want? That is a pragmatic question, and the place where psychology can be of help. At *this* stage sentiments and beliefs, however heartfelt, have arrived too late and are merely a nuisance.

If one pitfall that we have to try to avoid is choosing the wrong educational approach for the wrong job, the other is confusing the pupils about what we are doing. It is a frequent source of conflict between pupils or students and teachers when they have differing underlying views about the appropriate way of achieving an educational goal – or even undisclosed disagreements about the goal. There are two classic mismatches. In one, students have the view that the appropriate kind of learning environment is one that involves negotiation, and in which their experience and opinions will be valued and acknowledged. Perhaps they see this as being their 'right', and react to being lectured at or told what to do as if it were an insult. The attitude is not uncommon in undergraduates and teacher training students, especially if they are recently out of school. They feel that being talked at is being treated like a child – the one thing that upsets them more than anything. So for them the issue is not suiting the teaching method to the goal; it is suiting it to the level of maturity of the learners, so that they do not feel 'patronized'. Their teachers and lecturers, however, may see their job more as pump attendants or lion-tamers – and will therefore be constantly faced with learners who seem to them to be stroppy, unappreciative and unwilling to get down to a bit of 'real work'.

Interestingly, the converse mismatch is also alive and well in the teacher training sphere. Here it is the students who are expecting

to be given clear information and firm guidelines about how to teach – while the lecturers are asking them to sit down with their eyes closed and reflect on their schooldays, or to engage in classroom role-plays. Here the teachers have a 'gardening' view, in which they see their job as being to provide nurturing soil for the students' own growth, helping them to discover their own beliefs, values and natural strengths. The students, meanwhile, are getting increasingly frustrated as they wait to be sculpted. They are convinced that somewhere there is a detailed blueprint of the British Standard Teacher which is being kept from them for no good reason, and that if only the teachers would stop messing about they could get on with the 'real business' of learning to teach. You can easily tell the lecturers in the two groups, by the way. The former call what they are doing 'teacher training'. The latter are very insistent that it is 'teacher *education*'.

SUMMARY AND READING

People's implicit theories direct their attention, channel their thoughts and limit their actions. This applies as much to their reactions to education as anything else. These theories are often very stable and resistant to change, especially when people may not be aware of what they are explicitly. Making implicit theories explicit is an important precursor to supplanting them with better theories. They derive from three major sources: first-hand experience; informal social interaction and vernacular language; and formal instruction and tuition. Still embedded in the way people think about education, and the way they teach, are a variety of misapprehensions about the nature of learning. Some of these have become the subject of conscious scrutiny and are therefore undergoing change; others are still exercising latent control. This chapter has brought some of these to light in preparation for the challenge to them that the book as a whole represents. There are different ways of learning that deliver different kinds of learning product. This must force educators to specify clearly what kind of goal they are aiming for *before* they enter the debate about appropriate teaching methods.

This chapter has drawn on the growing body of work on people's belief systems and 'folk psychology' that is appearing in the

cognitive, educational and especially the social branches of psychology – the latter fuelled largely by the pioneering research in 'attribution theory' of, for example, Bem and Weiner. Rom Harré's *Personal Being* provides an elegant discussion of some of the issues. Paul Heelas and Andy Lock's *Indigenous Psychologies* takes a cross-cultural perspective. And Adrian Furnham's *Lay Theories: Everyday Understanding of Problems in the Social Sciences* is a good introduction which contains a chapter on education. From the educational direction come two strands of research. That on teachers' implicit theories is well represented in *Teacher Thinking*, editied by R. Halkes and J.K. Scott. And work on pupils' implicit theories in the sciences, which raises an exactly parallel set of issues, is critically reviewed in *Pupils' Informal Ideas in Science*, edited by Paul Black and Arthur Lucas. A more technical book in the cognitive sciences tradition is *From Folk Psychology to Cognitive Science: The Case Against Belief* by Steven Stich. Jerome Bruner's recent *Actual Minds, Possible Worlds* also refers to the issue of teachers' beliefs.[12]

NOTES

(1) Axtell, J.L. (ed.) (1968) *The Educational Writings of John Locke*. Cambridge: Cambridge University Press.

(2) Some of these general features of implicit theories of education are reviewed by Dann, H.D. (1986) Reconstruction and validation of teachers' interaction-relevant subjective theories. Paper presented to the Third European Conference on Personality, Gdansk, Poland.

(3) These conditions are clearly spelled out in the context of science teaching by Hewson, P. (1981) A conceptual change approach to learning science. *European Journal of Science Education*, **3**, 383–96.

(4) These terms are used by Driver, R. and Erickson, G. (1983) Theories-in-action: some theoretical and empirical issues in the study of students' conceptual frameworks in science. *Studies in Science Education*, **10**, 37–60; and derive from Argyris, C. and Schon, D. (1974) *Theory in Practice: Increasing Professional Effectiveness*. San Francisco: Jossey-Bass.

(5) In what follows I am drawing heavily on (though going somewhat beyond) a paper by Fox, D. (1983) Personal theories of teaching. *Studies in Higher Education*, **8**, 151–63. I have also made reference to the following: Northedge, A. (1976) Examining our implicit analogies for learning processes. *Programmed Learning and*

Educational Technology, **13**, 67–78; Parsons, J. M., Graham, N. and Honess, T. (1983) A teacher's implicit model of how children learn. *British Educational Research Journal* **9**, 91–101; and Pope, M. L. and Scott, E.M. (1984) Teachers' epistemology and practice. In Halkes, R. and Olson, J. K. (eds), *Teacher Thinking: A New Perspective on Persisting Problems in Education*. Lisse, Holland: Swets & Zeitlinger.

(6) Feldman, C. and Wertsch, J. (1976) Context dependent properties of teachers' speech. *Youth and Society* **8**, 227–58. This work is referred to by Bruner, J. (1986) *Actual Minds, Possible Worlds*. Cambridge, MA: Harvard University Press.

(7) See note 5.

(8) Howe, M. J. A. (1984) *A Teachers' Guide to the Psychology of Learning*. Oxford: Blackwell.

(9) See research by Bar-Tal, D. and Guttman, J. (1981) A comparison of teachers', pupils' and parents' attributions regarding pupils' academic achievement. *British Journal of Educational Psychology*, **51**, 301–11.

(10) See, for example, Nisbet, J. (1982) Changing views on ability. *Educational Analysis*, **4**, 1–5.

(11) George Orwell (1987; original ed. 1945) *Animal Farm*. London: Secker & Warburg.

(12) For example, Weiner, B. (1985) An attributional theory of achievement, motivation and emotion. *Psychological Review*, **92**, 548–73. Harré, R. (1983) *Personal Being*. Oxford: Blackwell. Heelas, P. and Lock, A. (1981) (eds), *Indigenous Psychologies*. London: Academic Press. Furnham, A. *Lay Theories: Everyday Understanding of Problems in the Social Sciences*. Oxford: Pergamon. Halkes, R. and Scott, J. K. (eds) (1984) *Teacher Thinking: A New Perspective on Persisting Problems in Education*. Lisse, Holland: Swets & Zeitlinger. Black, P. and Lucas, A. (eds) (1990) *Children's Informal Ideas in Science*. London: Routledge. Stich, S. (1983) *From Folk Psychology to Cognitive Science: The Case Against Belief*. Cambridge, MA: MIT Press. Bruner, J. S. (1986) *Actual Minds, Possible Worlds*. Cambridge, MA: Harvard University Press.