



because that is what primary school teachers do. Secondary school teachers write notes on the blackboard, set homework, and send their pupils on their way every 50 minutes or so, because that is what high school teaching is about.

These rituals are built into the way schools and tertiary institutions are designed, with classrooms and lecture theatres, and blackboards. And they are strongly supported by set of unspoken beliefs about learning and teaching, and pupils' minds and abilities, that have evolved through a lot of practical experience over many years.

But it also dawned on me that these rituals, these images that we all have of effective teaching, are not about learning. They are really about the effective management of classrooms. They are about the visible here and now of classrooms, not about what is going on in pupils' minds. We know that if you go into the classroom of an effective teacher, the pupils will be busily engaged in a variety of learning activities, they will be highly interested and eagerly asking questions. They won't want to stop when the bell goes. In the classroom of a less effective teacher, they will be bored or irritable, easily distracted, teasing and doing other things when the teacher's back is turned.

How we started to discover that teaching (as we commonly practice it) is about management rather than learning was by switching the perspective of our research. In our earlier studies we had, like most other researchers, been looking at the classroom from the perspective of the teacher, trying to relate all the different kinds of things that teachers do to what pupils were learning.

The breakthrough came when we started to look at the classroom through the eyes of individual pupils. We did it by having pupils wearing their own individual microphones, and setting up sets of miniature video-cameras in the ceilings of the classrooms. We did a lot of testing and interviewing the pupils, getting them to talk about their experiences and their learning. What we discovered was that what teachers thought was going on in their classrooms was quite different from what was actually happening for individual pupils.

These were startling and exciting discoveries. I sometimes think of this new perspective as the equivalent of the physicists view of physical reality. We all know that the world is made up of solid objects that hurt when we bump into them, but the physicists can prove that they are actually made up of space containing unimaginably small spinning particles or waves of energy. What you see is not what is there.

Let me introduce some of our significant findings with a true story. It's about a class of 10-11 year olds with a teacher who has focused on teaching her pupils to think for themselves. The class are doing a science unit on the planetary system. The teacher has put a lot of work into preparing interesting research questions to focus the pupils' thinking and organising resources for the pupils to use in carrying out their research. The research questions are graded in difficulty and written out on cards, with hints about how to go about answering them. These cards have been pinned up to the back wall of the classroom on top of a set of wonderful pictures of the planets and space stations and astronauts.

The teacher has given each individual child a list of the specific research questions they should undertake, based on her judgement about the level of difficulty they can handle.

We observed and recorded throughout this unit and almost all the time the pupils appeared to be busily engaged in carrying out their research tasks. But let me describe what was happening for individual pupils. Michael was sitting at his desk, apparently reading a book.

He had his report book open and had written the heading “If I was an astronaut”. From time to time he went up to the teacher and complained that his neighbours were teasing him and interrupting his work. The teacher usually responded by gently reprimanding his neighbours. Michael is a low achieving boy who long ago decided he wanted to be a truck driver like his father and could see no point in schoolwork. Although he gave the appearance of working, he never completed anything. He would often ask permission to go to the toilet or get something from his bag, and spend at least 5 minutes out of the classroom. When the teacher asked to

books, or just staring, lost in a world of his own. He was more likely to interrupt those around him than be interrupted. Debbie, however, learned a considerable amount. When she was allowed access to relevant books, and was not being surreptitiously interrupted and annoyed, she worked steadily on her research questions. They were not as difficult as the questions that Jane was set, but they did involve a considerable amount of information that was new to Debbie.

What we found from this and our other studies was that teachers knew very little about what was actually happening to all but a few of their pupils. The pupils knew how to give the appearance of being attentive and involved, but their main concern was their participation in their relationship with their peers. Most of them maintained an underworld of interactions with their peers, whispering, passing notes, or just sending subtle non-verbal signals to deal with their own issues and sustain their status and reputations.

In many classrooms, what matters is not learning but the production of visible products: completed worksheets, well written and presented reports, sets of answers to problems. When you listen closely to what teachers and pupils say about their work, it is about how long it will take to finish, does it all have to be done before Friday, do we need to make a good copy.

In another classroom that we observed, the pupils were studying ancient Egypt. One of the research topics concerned the building of the pyramids. A girl showed the teacher how she had printed out coloured pictures and text about the building of the pyramids from the family computer at home. She had cut and pasted this material in her report book and was very proud of the result. But the teacher said to her that she was not to do that. She must write it out in her own words, not just paste it from the internet. As this talk between them progressed, it became clear that the girl could not understand why the teacher wanted her to rewrite it. Her own writing was untidy and she couldn't explain it nearly as well as the internet text. It seemed a silly thing for the teacher to ask.

What this teacher, like most teachers, had not done was let the pupils in on the secret that this

Törk, it isrs is 8.11th

We found enormous individual differences in the ways pupils experienced the same classroom activities, and consequently enormous differences in what they learned.

Our studies have begun to discover the specific kinds and sequence of experiences that pupils need in order to understand, learn and remember new concepts and beliefs. And we have begun to discover the ways in which the daily classroom experiences of pupils shape the ways in which they think and approach problems. I think we have been very successful so far. We can tell why some pupils learn some things and not others. But there is a long way to go.

In all this research, I have deliberately avoided research that evaluates new methods of teaching. There is almost no way such evaluations can be done effectively, and even if they could be, they would only produce recipes that teachers would have to follow without any idea of how or why they worked.

Instead, my vision is that we will be able to produce a deep understanding of how pupils experience classroom activities and how their minds are shaped by those experiences. This deep understanding will provide teachers with the basis on which they themselves can plan effective learning activities that will match the needs and interests of their pupils. It will provide them with the understanding they need in order to monitor, on a moment-by-moment basis, what their pupils are learning or not learning, understanding or misunderstanding.

You can think of it as the underlying knowledge of anatomy, physiology, and biochemistry that the modern health professional needs in order to diagnose and monitor the treatment of patients. The difference is that what the teacher needs to know about the minds and experiences of pupils is much more subtle and complex, but nevertheless necessary to genuinely effective practice. And our research makes it clear that it is never going to be achieved except through careful pupil or student-focused research in classrooms.

Without this knowledge, fashions in teaching methods will continue to come and go without adequate justification. Attempts to reform the inequalities that now exist in the present system will continue to go round in circles.

We have a multi-billion dollar industry whose major purpose is to produce learning. And yet we know so little about how it actually works. It is my hope that the Trust will contribute substantially to uncovering the mysteries of pupil experiences and learning. That it will provide the opportunity for professionals to investigate how classrooms shape the minds of