Discovering the hidden realities of teaching and learning in the classroom

Emeritus Professor Graham Nuthall

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I would like to give a brief overview of the some of the things I have discovered about teaching and learning over nearly 45 years of research, carried out, on and off, as other duties permitted. I usually think of it as 40 years, but Jill says it is 45 years, and she should know because in my first research study, I borrowed her bike with the cane basket on the front to carry the heavy Phillips tape-recorder and all the wires and bits of string that I needed to record in the classrooms of long-suffering teachers.

One of the most important things about school classrooms is that they are both very familiar and at the same time very mysterious.

Because all of us have spent at least 10 years as pupils in school classrooms we are thoroughly familiar with what happens there. There seems to be nothing mysterious about teaching. We can all do it, maybe not well, but we know what to do.

From this point of view, the education process is transparent. Most people wouldn't expect anything to surprise them if they went into a classroom. It might have changed since they were pupils, but the essentials would still be the same. Because of this very few people worry that there is very little educational research compared with the size and cost of the education system (about $8 billion p. a. and nearly a third of the population involved on any weekday). After all we have evaluation systems in place. ERO visits and evaluates each school, there are end-of-school examinations, and national and international tests indicate that we are doing quite well.

When I started research on teaching a long time ago, I also believed that experienced teachers had largely got it right. I knew the difference between a highly effective teacher and someone who was struggling to maintain control and interest. But I was also aware that there had been a lot of research on methods of rating teacher effectiveness since the 1920s that had come to nothing. Different ways of rating teaching did not relate to pupil learning. Despite our familiarity with teaching, we really didn't know what teachers did that related to learning.

I thought at that time that, with the help of tape-recorders, we could provide a more systematic and objective description of how teachers interacted with their pupils that would allow us to find out what made a difference to pupil learning.

Meanwhile, of course, fashions in teaching methods came and went, without much evidence that they were more or less effective than the older methods. All we learned was that teachers inevitably reverted back to the methods that seemed to them to be tried and true.

In the last ten years or so, it has gradually dawned on me that what we are dealing with in classroom teaching is a kind of cultural ritual, like many religious rituals. We do it that way because we have always done it that way. Staff at the university lecture to students because that is what lecturers do. Primary school teachers have lively discussions with their pupils

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 see his work, he said he had lost it, or left it at home, or promised to finish it for homework. We never saw him actually do any work, or be interrupted by his neighbours, or actually go to the toilet. On one occasion when I was observing and recording his behaviour, he disappeared. I could see from our equipment that the miniature microphone that he was wearing was still working. I set out in search of him looking all round the school and grounds before giving up. Possibly he had gone home. His desk was near the backdoor of the classroom, and a few minutes he reappeared at his desk without, as far as I could tell, the teacher having any idea that he had been gone.

Near him at another desk was Jane. Her family came from China, and Jane is the English name she has adopted. Jane has several books on her desk that she is consulting. She has already written several pages of her research report and illustrated them with the most skilful drawings. She loves school and works very hard at the tasks she is set. Despite the teacher trying to stretch her, what she is writing is material that she already knows. In a later interview she explained that her father had taught her to recite the names of all the planets when she was 5 years old and she has read a lot about space exploration since then.

Further away at another group of desks is Debbie. The teacher and the other pupils know that she has very limited ability. She is very conscientious and uncomplaining, but the classroom is a difficult place for her. The boys sitting next to her delight in accidentally knocking her things off her desk. They insist that they have prior rights to any books she needs to do her work. And generally, surreptitiously interrupt and tease her. She is never included in the spontaneous talk between those around her. The questions the teacher has set her are the easiest ones in the set of prepared research questions.

This teacher has spent a lot of time showing the pupils how to go about doing their own research on the questions she sets them, how to write their reports, and so on. The classroom runs smoothly. Teacher and pupils mutually understand what is expected of them. As we observed, the teacher moved around the room, helping and encouraging where she saw the need. She saw Michael reading a resource book, with his report book open beside him. She was pleased to see him reading and his complaints about being interrupted indicated he was interested and involved in his task. She saw that Jane had several resource books open beside her and had already written several pages of her report. A glance at her report indicated she was working at the very high standard the teacher expected. The teacher also saw Debbie with her head down, slowly writing her report. She didn’t expect much of her, but it was good to see how conscientiously she was working.

The casual observer in that classroom would have seen a class of interested pupils busily engaged on their individual research projects, interacting with the teacher from time to time, walking to the display table to get further resource books as they needed them, some making use of the computer to look up relevant material on the internet.

The reality, however, was quite different. When we tested and interviewed the pupils we found that Jane learned very little that she did not know before the unit. Michael also learned very little because he read and wrote almost nothing, spending his time staring at pictures in

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 activity was supposed to be about learning. The pupil knew, from past experience, that the teacher would mark and evaluate the quality of her report. Handing in work and doing reports was the purpose of being at school.

Let me make it clear that I am talking about good teachers here. Teachers who do a lot of highly creative work on interesting and engaging their pupils, teachers who do extremely well at the things that the profession associates with excellent teaching. But underneath it all they knew little about what their pupils are actually learning or remembering.

I do not intend that this should be a criticism of teachers. Most put a lot of effort into doing what we all believe is good teaching. I was, myself, caught up for many years in the rituals of university teaching, trying my best to produce the best lectures. But like almost all of the rest of the staff, I never thought much about how the students actually learned, and never thought that I should know. Lecturing and setting assignments and exams was what you did at university.

Another of the significant things that we learned from our classroom research was that there was no difference in the learning of low ability pupils and high ability pupils. Given the same experiences, they learned in the same way. Examining all of the detailed experiences of Jane and Debbie (in the example above) showed that they learned from their experiences in the same way. This led us to believe that so-called differences in ability are not about how pupils learn, but are the result of the ways they manage their participation in classroom activities.

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 pupils. That it will add to the accumulating body of knowledge that teachers need to become true professionals.