The Art and Science of Teaching and Learning

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E. C. (Ted) Wragg has spent the last 30 years researching, thinking and writing about some of the key and enduring issues in education. He has directed numerous research projects and contributed over 40 books and 1,000 articles to the field and is regularly asked to commentate on educational issues for the media. He is an unusual academic, not only a prolific researcher and lecturer, but someone who teaches regularly in both primary and secondary schools.

In The Art and Science of Teaching and Learning, Ted Wragg brings together 18 of his key writings in one place, including chapters from his best-selling books, articles from leading journals, and some of his most amusing and important articles from his writing for the Times Educational Supplement, the New Statesman and The Guardian.

Starting with a specially written Introduction, which gives an overview of his career and contextualises his selection, the chapters are divided into five parts:

- classroom teaching and learning
- training new and experienced teachers
- curriculum in action
- educational policy and its implementation
- communicating with professional and lay people.

Through this book, readers can follow the themes and strands that Ted Wragg has written about for over three decades and clearly see his important contribution to the field of education.

E. C. Wragg is Emeritus Professor of Education at the University of Exeter.

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E. C. Wragg
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INTRODUCTION

Becoming addicted

There is something addictive about research. Its very routines are spellbinding: the search for an idea, planning a programme of enquiry, analysing the results, telling your fellows, hoping they will be as excited as you are, but knowing they will merely humour you by listening. Research seizes the imagination because it is a fundamental human drive that has gripped people from the beginnings of life. No one knows how the first cave-dwellers discovered and learned to use fire. Perhaps they were empiricists like Comenius, trial and error researchers who explored and savoured life at first hand, using their senses, sometimes even losing their life as a result of experimentation. There were no Nobel prizes for the first Homo sapiens to die from eating poisonous plants, but subsequent generations are eternally grateful. A few must have been rationalists, like Erasmus, making a priori judgements and then enquiring systematically to see whether or not they appeared to have substance.

I always knew that I would eventually want to join this timeless tradition and do research, once I had abandoned childhood ambitions to be a train driver or a professional musician. As a 16-year-old boy at school I studied poetry as part of the English course. One day I argued in class that it was difficult for naïve city youngsters of our age to develop a true appreciation of the verse we were required to read for our examinations, since it had been written by adults who were describing their more elderly experience. What we did, therefore, was merely learn the views and interpretations of authorities, like teachers and literary critics, for we had little equipment of our own. We could easily be fooled.

Arguments and counter-arguments were thrown across the room, until I made the bold assertion that even I, as an immature 16 year old, could write a poem the rest of the class would believe was a classic, although it would be nonsense. Later that day I produced two versions of a poem called ‘Nothing is so beautiful as Spring’, purportedly by Gerard Manley Hopkins, a writer we had studied, whose poems I loved, though there were few other poets in this category at the time. Only one, I told my fellows, was genuine, the other I had made up in a few minutes.

All but one classmate chose poem B, some saying it was ‘obvious’, as poem A was poorly constructed. The odd student out chose poem A, believing that it was a trick and I had selected a particularly bad poem by Hopkins, while writing a half decent one myself. ‘OK, fair enough’, I replied, ‘it is poem B, but can you honestly say that it is a good poem?’ Many picked out phrases like ‘When wheely weeds thrust skywards’ as a classic Hopkins line, just as we had been briefed.

The truth was, I had made up both versions. Only the first line of each ‘Nothing is so beautiful as Spring’ had come from a genuine Hopkins poem. The rest was invented nonsense.
There was no real resentment from my fellows at this young prig making a point. In the steel city of Sheffield, in the north of England, people pride themselves on their honesty, and 16 year olds are no exception. You want to do a bit of embryonic research? Fine. Twelve years later, when I was a university lecturer, I tried the same experiment on a group of postgraduates in English Literature. The results were almost identical, except that the graduates gave more sophisticated reasons why poem B was the genuine Hopkins. The one exception, on this occasion, argued that poem A was the real thing, but must be an early example of the writer’s work.

If my appetite for hypothesis-generating and testing was whetted at school, it was as an undergraduate studying modern languages that the drive to discover developed further. In my final year I wrote a dissertation about the early mediaeval love poets of Germany and Austria. Hours spent in the library scouring obscure journals for equally obscure articles was useful training for all the reviewing of research literature I would carry out later.

How did these early troubadours evolve? Was Der von Kürenberg really a woman? Where did Dietmar von Aist come from? Might they both have lived in a part of Upper Austria, near Linz, that I had visited? What would their music have sounded like, for only the text survived? It was an early lesson that research can produce as many questions as answers. The eventual offer of a research scholarship was seductive and I might have stayed on at university to write a PhD on the ‘particles’ in German, short words that are inserted into sentences for various purposes, had a worldly-wise tutor not queried my choice of such a tedious topic. ‘What do you really want to find out?’, he asked. ‘Something about what people do, and why’, I replied. ‘Well go and teach first then’, was his response.

As a teacher I was inspired by one of my colleagues, Keith Swanwick, later to be Professor of Music Education at London University Institute of Education. He was head of music at the school where I was teaching and managed to write a Masters thesis at Leicester University, alongside all his other commitments. As part of his research we carried out an experiment with his classes, not unlike the one I had done as a 16 year old. Keith went into each group and put on a record of a piece of music, telling them that it was being played by one of the greatest orchestras in the world, which was true. I followed him and played exactly the same record again, but this time told the class it was being performed by a very competent amateur group, the Wigan Society of Music Lovers. We also varied the order in which we appeared.

The pupils then had to rate their appreciation of these two supposedly different versions of the same piece of music on a number of seven-point semantic differential, polar opposite scales. The results showed yet again, as they had in my own naive childhood experiment, how easily pupils’ own judgement could be overridden. Irrespective of the order of our appearance the classes esteemed the ‘professional’ version much more highly than the ‘amateur’ one. Thirty years later I met a former pupil from one of the classes who said he still recalled this event vividly.

The excitement of such experimentation was so gripping that I decided to stop doing ad hoc research into the effects of authority on children’s attitudes and study teaching more systematically for a Masters degree. This involved observing student teachers in the classroom and relating what they did to their attitudes, anxieties and aspirations. Later my PhD was based on an analysis of the patterns of classroom interaction in nearly 600 lessons given by over a hundred student teachers, much more interesting than the German particles. As a result I became fascinated by the intricate processes of teaching and learning in school, and classroom observation has been my major research interest and tool of enquiry ever since.

Phases and focus

Setting out

Starting off as an educational researcher in Britain during the late 1960s and early 1970s was a relatively lonely business, for there were few opportunities and not many university
courses in research methodology. Like most others at that time I was an almost entirely self-taught part-timer, having to winkle out time for research in between teaching and extra-curricular duties. Ignorance about quantitative methods required extensive and avid reading. Several of the books were indigestible, miserable examples of texts written to please the writer’s reference group, not inform the student. Some of the classics, by contrast, like Guilford’s Statistics for Education and Psychology and Gage’s Handbook of Research on Teaching, were invaluable.

When I left teaching and was appointed to a lectureship at Exeter University the interview for the post made little reference to research, save for a passing mention of my Masters degree findings towards the end. The main focus was on training modern languages teachers, anything else appeared optional, though welcome, and I was always encouraged. It was at Exeter that I first met fellow spirits, especially David Evans and Tony Edwards, a psychologist and sociologist respectively, from whom I learned a great deal. Another psychologist, Paul Kline, was able to answer most of my questions about factor analysis, until I reached the point where I was able to do it by hand, albeit with an explanatory textbook never far from my elbow. It meant I could progress to teaching myself other multivariate strategies, such as cluster analysis, canonical correlations and multivariate analysis of variance, though these seemed powerful tools to apply to classroom observation data that could not always be precise, and sometimes might be downright fragile. They clearly had to be used sparingly and with due caution.

Early in my university career we had a visiting American professor for a year from Cornell University. Dick Ripple was like a breath of fresh air, coming as he did from a culture where educational research was much more deeply established. His own research was into the teaching of creativity and being able to take part in his project gave me an insight into a different kind of enquiry. The findings were fascinating, because it was one of the few experiments in educational research where, contrary to expectations, the control group outperformed the experimental group.

Class A was to spend half an hour each week for a term completing a set of fifteen booklets that would supposedly make them more creative. Class B, meanwhile, carefully matched for prior ability, would have ‘ordinary’ lessons. What confounded everything was that the teacher who supervised Class A was one of the profession’s dreariest downbeats, a dour man who kept telling the pupils that they looked bored as they filled in their purportedly teacher-proof programmed booklets. Class B was given to a teacher who had recently completed a course on the expressive arts and so gleefully seized this golden opportunity to try out a few ideas. Dick Ripple was dismayed when this supposed ‘control’ group handsomely outperformed the experimental group on a posttest of creative thinking, but I learned important lessons about research design and intended or unintended teacher effects.

Another important influence at the same time in the late 1960s was being able to carry out research with Patrick McGeeney. He was a co-worker of Michael Young, founder of the Consumer Association, the Open University and one of the greatest social entrepreneurs of the twentieth century. McGeeney came to Exeter University to research the effects of home background on school achievement. The purpose of the project was to identify places, all over England, where interesting work was being done to involve parents more in their school’s activities, and evaluate the effects.

My contribution to the programme, fitted in between university teaching commitments and my own classroom observation research, was to interview over a hundred parents in their own homes. It was in stark contrast to life in classrooms. Asking questions of such a wide variety of people in their natural social habitat opened my mind. I had been born in an inner city slum, so it was no surprise to witness poor housing conditions, but seeing some of the families in the dire conditions under which their children had to live and learn was a searing experience.

Some homes were happy and carefree, others were benighted and ravaged. One house had been smashed to pieces by a drunken father the day before I visited. Another
home was a cellar, water running down the walls, where a single mother lived, whose
careworn features and demeanour made her look like her 8-year-old boy's grandmother.
The lad had to go to bed at five o'clock in winter, as he could not invite friends to the one-
roomed hovel, nor go out to play. How could anyone who had not seen this dank cellar
really know what the child's life was like? What would a teacher say next morning if he had
not done his homework? Researchers are supposed to try and remain objective about
events, but I was deeply moved by these experiences. I still become enraged when pious
people pronounce that poverty does not matter in education, usually from a vantage point
located at a very safe distance away from it.

The McGeeney and Young project was a life-changing experience for me. Although
I would later write books for parents and school governors, they have never been a major
research focus. What I did learn was how to interview, construct and apply a schedule,
and then analyse the results. Moreover parents have often been interviewved, albeit as a
minor, rather than major element of my classroom research projects. In the 1990s, during a
large study of literacy teaching in primary schools, we would discover that three-quarters of
mothers and a half of fathers read books with their 5–7-year-old children, while a half of
mothers and a quarter of fathers read with their 7–11 year olds. Vivid images of the insides
of over a hundred homes from twenty-plus years earlier were still burned indelibly on my
memory. Most of all I had learned that the qualitative side of research was vital if we were
to understand what lay beneath events, and I have used a mixture of quantitative and
qualitative methods ever since.

Although creativity and home/school research were valuable adjuncts, my mainstream
PhD research in the early 1970s was classroom observation. Dick Ripple had pointed me
in the direction of American research by investigators like Ned Flanders and Ed Amidon.
Flanders was especially helpful, sending me the manuscript of his not-yet-published book
Analyzing Teaching Behavior. It was a godsend, as British classroom researchers were few
in number at the time. They included Neville Bennett, Sara Delamont, David Hamilton, Rob
Walker, Clem Adelman, Roy Nash, Ed Stones, and we met informally once a year, a self-help
group supporting each other.

Years later I visited Ned Flanders at his home in Oakland, after the American Educational
Research Association annual meeting had taken place in San Francisco. After dinner, when
I sat down at his splendid piano and played some Puccini, he suddenly produced a cello
and spontaneously joined in. Flanders taught me another of life's valuable lessons: how
important it is to support the next generation of researchers, something I have tried to do
since. During its low points research may seem a lonely and frustrating business, and duets
can be helpful from time to time.

At this time I applied for and got my first external research grant, from the Social Science
Research Council. The sum of £1,250, quite substantial at the time, enabled me to recruit
five part-time research assistants to observe, between us, nearly 600 lessons given by
student teachers. Collecting Flanders-type interaction data, whereby classroom events are
given a code every three seconds, can produce massive numbers of digits to be analysed.
I assembled over a third of a million of them and the resulting dataset was too large for the
university computer, so it had to be sent away to the Atlas machine at London University.
Today I would run it on my laptop in seconds.

Moving on

After seven years at Exeter I was reluctant to leave, but a professorship at Nottingham
University, with special responsibility for the initial teacher education programmes and the
opportunity to carry out classroom observation research, was too good to miss. For five
years in the 1970s I was able to work alongside experienced researchers like Eric Lunzer,
an expert on Piaget and much else, Jim Egglestone and George Brown, fellow classroom researchers, and Mick Youngman, who played the computer like a maestro. It was a hugely enlightening privilege. The team of academics was so strong that we were able to publish a whole series of booklets on different aspects of research methodology, the Rediguides, almost by whistling down the corridor and signing up whoever emerged.

Egglestone’s research, with Maurice Galton, into different styles of science teaching, was ground-breaking. It was similar to my own studies at Exeter and to Neville Bennett’s research into primary teachers’ preferred styles, except that Bennett assembled his typology from questionnaire responses, while Egglestone and I used live-classroom observation data. What appealed about this kind of enquiry was the close fit between research and professional practice. Among many other possibilities it offered the means to collect information about what teachers actually did in their classrooms and feed it back to them.

It was at Nottingham that I obtained my first very large external grant, for a four-year research and development project, from the Department of Education and Science, the Teacher Education Project. Working in collaboration with Clive Sutton, an experienced science education specialist at Leicester University, we carried out an extensive programme of research into such topics as classroom management, questioning, explaining, the use of group work, teaching high and low ability pupils in mixed-ability classes, and the language of classroom transactions. This was followed by the production of self-instructional texts for student and experienced teachers, showing how they could use our research findings to study and work on their own professional practice.

The main focus of the Teacher Education Project had been on secondary classrooms. At the end of the 1970s, when I returned to Exeter University as Director of what was then the second largest school of education in the country, I was keen to extend this kind of research and development work to primary schools. A large grant from the Leverhulme Trust for the four-year Primary Teacher Education Project in the 1980s enabled me not only to study similar topics in primary classrooms, but also to work with Neville Bennett, who moved to Exeter, as did later a string of high quality researchers with a major focus on classroom teaching and learning, like Charles Desforges and Martin Hughes.

As I carried out more classroom research the focus of what I did widened. Studying teachers’ practices soon involves an investigator in such matters as curriculum and educational policy. I have been fortunate never to have a period without a major research grant. Having access to external funding has brought major benefits, such as being able to work with the many talented contract research fellows listed in the acknowledgements section of this book. Between us we have been able to investigate such central topics as the teaching of literacy, teacher appraisal, competence and its rarely studied obverse ‘incompetence’, as well as the teaching of different subjects and age groups.

I have always carried on teaching in primary and secondary schools as a high priority, whatever the counter-pressures and distractions. This offers the opportunity to see classroom phenomena both as a researcher and a practitioner. It can be a bizarre and sometimes confusing experience, one day sitting in a lesson analysing someone’s strategies of explanation or questioning, the next day standing before a class trying out my own, but it is a conflict worth living with. Everything in my professional life, therefore, presses me in the direction of research into teaching and learning, and for me there is no more gripping topic.

Although such classroom transactions have been an enduring mainstream interest, as time went on I became more and more fascinated by the dense, and sometimes unpenetrated penumbra that surrounds them. Inevitably this focussed my research on to matters like the training of student and experienced teachers; how curriculum is really implemented on a daily basis, as opposed to distant notions of what is supposed or believed to take place; and the endlessly fascinating topic of what happens when intentions of policy makers filter down to the reality of classroom life.
6 Introduction

This sometimes involved communicating with lay and professional people, not just fellow investigators, as I have never wanted to write solely for the research community. Teachers are often deeply interested in accounts of research into their art and craft, but many prefer to hear about findings at a conference, or read about them in a professional journal or newspaper, rather than scour the books and journals, some of them elusive, in which the original reports appear. Not many academics write regularly in newspapers, or broadcast on radio and television, but contributing to sources which teachers, school governors, parents, members of the community might readily access has always been important for me, so I include in this collection a selection of such pieces.

Main areas of focus

This book is divided into four parts, covering some of the fields in which I have worked, and a fifth which contains newspaper articles aimed at practitioners and lay people. The distinction is sometimes slightly arbitrary, since classroom observation research can elide easily into teacher education, curriculum study, or policy implementation, so the dividing lines are not always crisp. The five areas are:

Part 1 Classroom teaching and learning
Part 2 Training new and experienced teachers
Part 3 Curriculum in action
Part 4 Educational policy and its implementation
Part 5 Communicating with professional and lay people

Each of these five sections has its own introduction in the book, and each of the chapters that appear in them has a short note indicating the context. In order to avoid overlap, or indeed so as not to bore the reader into a premature grave, some of the prose of the originals has been edited, but most of the text has been left in the form in which it was written at the time, despite the temptation to benefit from hindsight, I have not actually altered history.

One final point: the widely used star system has been employed in many of the quantitative sections of the book, to indicate the level of statistical significance:

*** Significant at or beyond the .001 level of probability (i.e. one in a thousand probability of occurring by chance).
** Significant at or beyond the .01 level (one in 100).
* Significant at or beyond the .05 level (one in 20).
n.s. Not significant.
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What is a teaching skill?

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Training new and experienced teachers


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