UNIVERSITIES INTO THE 21ST CENTURY

Teaching for Understanding at University

Deep Approaches and Distinctive Ways of Thinking

Noel Entwistle

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Universities into the 21st Century

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Series Editors' Preface

The series is designed to fill a niche between publications about universities and colleges that focus exclusively on the practical concerns of university teachers, managers or policy-makers and those which are written with an academic, research-based audience in mind that provide detailed evidence, argument and conclusions. The books in this series are intended to build upon evidence and conceptual frameworks in discussing issues which are of direct interest to those concerned with universities. The issues in the series cover a broad range, from the activities of teachers and students, to wider developments in policy, at local, national and international levels.

The current pressures on academic and administrative staff, and university managers, mean that, only rarely, can they justify the time needed to read lengthy descriptions of research findings. The aim, therefore, is to produce compact, readable books that in many parts provide a synthesis and overview of often seemingly disparate issues.

Some of the books, such as the first in the series – *The University in the Global Age* – are deliberatively broad in focus and conceptualisation, looking at the system as a whole in an international perspective, and are a collection of integrated chapters, written by specialist authors. In other books, such as "*Teaching for Understanding at University*", the authors look within universities at specific issues to examine what constitutes 'best practice' through a lens of available theory and research evidence.

Underpinning arguments, where appropriate with research-based conceptual analysis, make the books more convincing to an academic audience, while the link to 'good practice and policy' avoids the remoteness that comes from an over-abstract approach. The series will thus appeal not just to those working within higher education, but also to a wider audience interested in knowing more about an organisation that is attracting increasing government and media attention.

NOEL ENTWISTLE
ROGER KING

Author's Preface

The ideas in this book are a product of over 40 years of university teaching and research into student learning, and are intended to provide a conceptual framework for thinking about how university teaching influences student learning. While most books with similar titles focus on the practice of teaching, here the emphasis is on a critical consideration of why certain approaches to teaching are more likely than others to lead students towards a more personally satisfying and accurate conceptual understanding of the subject. The book draws on research specifically focused on student learning that has led to a new way of thinking about university teaching, taking serious account of the differences that exist between disciplines and subject areas within higher education. It suggests that there is an *inner logic of the subject and its pedagogy* that links broad educational aims with the teaching most likely to support student learning in a specific area of study.

In developing the ideas for this book I have drawn substantially on ideas and findings from an interdisciplinary and collaborative research study funded by the British Economic and Social Research Council as part of its extensive Teaching and Learning Research Programme. In our project, groups of researchers worked with teaching staff in 25 different course units from 11 universities to explore the extent to which fine-tuning of the teaching and learning environment could be carried out from analyses of students' ways of studying and their reactions to the teaching they had experienced. I am particularly grateful for the extensive discussions within the research team, and with collaborating colleagues in several university departments, all of which had an important influence on the development of this book. The later stages of writing were supported by the Leverhulme Trust, through the award of an Emeritus Fellowship, which allowed me to interview several prominent researchers to clarify my understanding of their ideas. I am most grateful for this support.

I am particularly indebted to my wife, Dorothy, who worked through successive versions of the book to help me find ways of expressing my ideas more cogently and clearly. She also collaborated in several of the research studies, as did my daughter, Abigail, whose own experiences as a student helped in formulating the ideas on students' understanding that became known as *knowledge objects*.

Thanks also to colleagues who commented on parts of the text as it was developing, including the publishers' reviewers, Piet Janssen and Velda McCune, but particularly my long-time mentor, John Nisbet, who read the whole book and gave valuable support and comments. I have drawn on the many discussions I have had with research colleagues in the projects I've worked on over the years, including Charles Anderson, Dai Hounsell, Paul Ramsden, Hilary Tait, Colin Smith, Velda McCune, Phil Odor, Paul Walker, Don Skinner, and, most recently, David Hay and Max Scheja. I have a debt to many other researchers, including John Biggs, Peter Davies, Hazel Francis, Ola Halldén, Ference Marton, Erik Meyer, David Perkins, Mike Prosser, Keith Trigwell, Lennart Svensson and

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A special "thank you" also goes to Jenny Hounsell who not only carried out the analyses for Appendix B but also most of those in the whole ETL project. Finally, I would like to express appreciation and thanks to my editor at Palgrave Macmillan, Suzannah Burywood, who has remained supportive and helpful, and above all patient, over the many years it has taken to complete this book.

Acknowledgements for Tables and Figures

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British Journal of Educational Psychology, © British Psychological Society. D. Hounsell & J. Hounsell (2007). 'Teaching-Learning Environments in Contemporary Mass Higher Education', in N. J. Entwistle & P. D. Tomlinson (eds), *Student Learning and University Teaching*, Figure 3, p. 101. Leicester: British Psychological Society.

Carfax. N. Entwistle, D. Skinner, D. Entwistle & S. Orr (2000). 'Conceptions and Beliefs about "Good Teaching": An Integration of Contrasting Research Areas', *Higher Education Research and Development*, 19, 5–26.

Kogan Page. N. Eizenberg (1988). 'Approaches to Learning Anatomy: Developing a Programme for Preclinical Medical Students', in P. Ramsden (ed.) *Improving Learning: New Perspectives*, p. 186.

Open University Press. Entwistle, N. J. (1987). 'A Model of the Teaching-Learning Process', in J. T. E. Richardson, M. W. Eysenck, & D. Warren Piper (eds) *Student Learning: Research in Education and Cognitive Psychology*, Figure 2, p. 23.

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Routledge. G. Brown (1997). *Assessing Student Learning in Higher Education*, Table 4.3, pp. 46–7.

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1 Teaching for Understanding in a Complex World

He sculpted his sentences neatly, measuring them out with a cadence that seemed to promise an ultimate moral that never came. Years of teaching had left him with that firm and didactic tone of someone used to being heard, but not certain of being listened to.

Carlos Ruiz Zafon, *The Shadow of the Wind*

In spite of the common stereotypes about lecturers, university teachers these days generally care deeply about their teaching. They strive to help students acquire a way of thinking within the discipline or professional area through which the students can look at a problem or an issue and imagine how to set about resolving it. But to decide how best to teach, university teachers need more than a knowledge of the basic teaching techniques; they have to acquire enough pedagogic expertise to be able to think imaginatively about how to present their subject to students. Only then can they understand which methods are most likely to work for the specific purposes they have in mind, and how to adapt to the rapidly changing demands made of them as universities adjust to the new challenges of the twenty-first century.

It is important to be clear what lies at the heart of university education. The eminent educational psychologist, Jerome Bruner, believed that university education should be concerned not so much about the knowledge obtained, but about the *ways of thinking* that leave their mark on students.

> The great disciplines like physics or mathematics, or history, or dramatic forms in literature, were … less repositories of knowledge than of methods for the use of mind. They provided the structure that gave meaning to the particulars. … The object of education was to get as swiftly as possible to that structure – to penetrate a subject, not to cover it. You did this by 'spiralling' into it: a first pass to get the intuitive sense of it, later passes over the same domain to go into it more deeply and more formally.
>
> (Bruner, 1960: 20)

The demands of modern society make it imperative that we continue to provide students with the intellectual and other skills necessary for living in a world, which Ronald Barnett argues has *super-complexity*. We are facing problems for which agreed solutions can no longer be expected, and so we have to think for ourselves and adjust quickly to new conditions. Increasingly, knowledge acquired at university can be no more than a springboard for coping with change and complexity in everyday life and the workplace.

Universities have always encouraged students to think for themselves, to develop their own understanding of complex issues and to make the habit of critical thinking part of their make-up. More recently, the emphasis in university education has been shifting towards personal and social skills, and specific employment-related skills, but it is important not

to shift the balance too far away from the enduring ways of thinking. Universities have to concentrate on helping students to develop skills, attitudes, knowledge and understanding that will be of maximum value in later life; not just providing an induction into the world of work in a specific profession, but also an effective preparation for life in the twenty-first century. As Diana Laurillard has argued:

> A university education capable of equipping students for the 21st century must pay close attention to the skills of scholarship – keeping abreast of existing knowledge, rigorous argument, and evaluation of evidence – no matter what the discipline. … University teaching must aspire to a realignment of research and teaching and to teaching methods that support students in the generic skills of scholarship, not the mere acquisition of knowledge. … The responsibility of every university [is] to offer its students access to expert teaching informed by current research, to give them the capabilities they need for their own professional lives.
>
> (Laurillard, 2006: 75–6)

The use of research evidence to devise effective teaching methods once seemed straightforward. In 1926 the psychologist James Ward thought that the relevance of research to teaching was obvious.

> Unless we maintain that the growth of mind follows no law; or, to put it otherwise, unless it be maintained that systematic observation of the growth of (say) a hundred minds would disclose no uniformities; and unless, further, it can be maintained that for the attainment of a definite end there are no definite means, we must allow that if the teacher knows what he wants to do, there must be a scientific way of doing it.
>
> (Ward, 1926: 1)

At that time, psychologists believed that general 'laws of learning' could be established that would generalize to all situations. Now, we know better; there is a host of competing ideas about learning and, even if we identify those most relevant to academic learning, we would still not be able to reach simple conclusions about how best to teach students.

> Too much attention is directed towards finding … 'the best method', even though fifty years of educational research has not been able to support such generalisations. Instead, we should ask which method – or which combination of methods – is best … for which goals, for which students, and under which conditions.
>
> (Dahllöf, 1991: 148)

Panaceas in education, as in medicine, prove illusive. Claims that any one method, whether e-learning or enquiry-based learning, or whatever, is the way to present course material cannot be sustained, either logically or empirically. No single method could ever be equally effective across the whole of higher education, given the range of differing institutions, the contrasts between subject areas, the differences among both students and teachers and the differing views about the purposes of education. What research can

offer is a way of thinking about how teaching affects learning and a range of concepts and principles that allow academics to think about pedagogic issues in a more precise way. That is what this book is offering.

Some initial propositions

One main argument running through this book is that there is an *inner logic of the subject and its pedagogy*. There is a logic which holds together the various strands of a discipline or a topic area, and there is a logical connection between the intellectual demands of the subject and how best to teach it. Effective university teaching thus depends on establishing a relationship between the specific subject content and the ways in which students are helped to engage with the ideas, so as to develop their own understanding. In this book, we shall need to keep in mind the necessary diversity of pedagogy in higher education, while establishing general principles that link university teaching with student learning.

The research we shall meet later on shows that university teaching depends, first and foremost, on understanding one's discipline in a sufficiently broad and deep way to be able to make that understanding clear to students. But it also depends on wanting to communicate that knowledge, expressing enthusiasm for the subject being taught and discovering how students come to understand that subject. A recurring theme in the book will be that academic understanding, for students, depends on developing a broad, integrative way of thinking about the topics they are studying, drawing on the explanatory frameworks used within a discipline or professional area and recognizing how evidence is being used to reach conclusions. Effective teaching then depends on staff using their own broad and deep understandings of the subject area to find ways of helping students reach their own integrative academic understandings.

The relationship between teaching and learning

The relationship between teaching and learning is often treated as being straightforward. The teacher presents the information and ideas, which the student then acquires. That view has led to an overemphasis on the *techniques* of presentation, whether through lectures, books, or e-learning. But the effects of teaching on learning are both subtler and more complex. Teaching influences learning directly, not just by making knowledge and ideas available but also by modelling ways of thinking or showing how evidence is used in building up an argument. Teaching also affects learning indirectly by influencing the approaches that students use in tackling their academic work. And this indirect influence comes not just from the act of teaching but also through the assignments set, the additional learning material offered or recommended, the support provided through tutorials and feedback on set work and, perhaps most importantly, what is rewarded through the assessment procedures. The importance of this indirect effect is an unequivocal finding from student learning research over the last 20 years and underpins the main argument being developed in this book.

In traditional university education, much of the face-to-face teaching still involves lectures, which take the form of a logical presentation of information and ideas, and yet often make it difficult for students to maintain interest and attention. There is an important distinction between 'lecturing' and 'teaching', which will become the focus of our later discussion. As one student, interviewed recently, explained:

> I was raised in the US and maybe they do things a little bit differently there. I'd never experienced a lecture before coming here. I had experienced teaching, and to me lectures seemed very, very different, because you'd be sitting in the middle row, sleeping through the whole thing: in teaching that never happened. It was always a case of the teachers gauging you, and you responding back. In our course here, most of us didn't speak with each other until the third or fourth year, because I don't think anyone felt like they were really being engaged from the front. But just once, we had a very different experience, an entirely different method; teaching rather than lecturing. The professor was asking very simple questions, and he was kind of building up a general theme or building up an idea, and by asking the class the questions he was pulling them along, you know, and forcing them to reach this conclusion at the end. Because he could relate to the students, there were generally three or four people shouting out their answer, and everyone was thinking about it.
>
> (MSc student taking electronic engineering)

Lecturing is a skill in its own right, but university teaching goes beyond that; it is not just a matter of learning a few techniques or gathering tips on presentation. It is a complex art, which depends on a deep understanding, not just of the discipline or profession but also of how best to make that knowledge accessible to students in the most effective and congenial ways. As with any attempt to explain difficult ideas, it depends on a sense of audience – knowing how to pitch the explanation at the right level. And that, in turn, involves an *act of imagination*, seeing how to present ideas and set up conditions for learning in ways that will engage students' interest and encourage them to develop their own understanding of the subject area. Done well, university teaching can help students to acquire a way of thinking and learning that is indelible, and can be useful throughout their life; done badly, it can alienate them from the whole idea of learning and studying. Academics thus have a moral responsibility to teach just as well as they carry out their research, and as in every specialism, evidence and theory, as well as experience, play an important part in shaping practice.

▶ The nature of educational research

The first thing to realize about research into human behaviour is that it rarely leads to the degree of certainty that is expected in, say, the physical sciences. Humans have a good deal of freedom in determining their own behaviour, and therefore even the most precise measurement of past actions or attitudes cannot possibly lead to accurate predictions of future behaviour. Moreover, the concepts used in social science are rarely defined with the degree of precision and agreement as in the 'hard' sciences. Techniques of data collection generally lead to estimates, rather than accurate measurements, while the findings themselves are always affected by the specific context within which people

operate. As a result, emerging theories remain provisional and open to challenge – as in a subject like history – but there are, nevertheless, important similarities with other forms of empirical research.

Educational researchers are trying to find explanations for the observations they make, for example, about how students learn and how teaching affects that learning. In physics, fundamental theories are by now well established and show consistent relationships between causes, situation and effects, but research in education looks at the behaviour of people who have a unique personal history and whose actions are influenced by their own attempts to make sense of the situations they meet. And these actions depend not only on past experience but also on their own intentions and goals, and on the interpretations accepted within their own cultural milieu. In everyday life, there is a strong tendency to expect a single cause for an event or action, but looking for simple solutions in education has led, all too often, to 'bandwagon' effects emerging from one or other currently popular method of teaching, and also to grossly oversimplified explanations of student failure that allocate blame solely to students, for being 'dim', lazy or lacking interest.

Research challenges sweeping generalizations by exploring the complexity of actual teaching–learning contexts to reveal more realistic patterns of explanation. In doing this, education has to draw on a wide variety of evidence, using complementary methods of collecting and interpreting that evidence. Good educational research depends on using *disciplined enquiry*, in other words collecting and interpreting evidence in systematic ways and according to agreed procedures, but not restricted to any dominant methodology.

> In discussing disciplined inquiry … we give no narrow definition of the term. Too many writers seem to limit the term 'research' to quantitative empirical enquiry. While much has been and will be learned from social survey, measurements, and controlled experiments, the study of education requires non-quantitative as well as quantitative techniques … [and includes] naturalistic observation. … An inquiry generally sets out to answer a rather narrowly defined question [but] the specific findings of such enquiries are usually less important than the conceptualizations they generate.
>
> (Cronbach & Suppes, 1969: 14)

> Educational research consists in careful, systematic attempts to understand the educational process and, through understanding, to improve its efficiency.
>
> (Nisbet & Entwistle, 1972: 113)

There are thus distinctive forms of disciplined inquiry into the effectiveness of teaching and students' ways of studying, which can be used to strengthen our understanding of the processes involved. These research methods often rely on the interplay between large-scale surveys of students using questionnaires and in-depth interviews with staff and students. The qualitative analyses of interviews do not lead to measurable quantities, but they do provide important insights into influences on learning. Those insights can then be used in conjunction with the quantitative findings from surveys. For these reasons, educational researchers use evidence cumulatively to draw conclusions, just as academic historians do, judging the strengths and weaknesses of the evidence, and testing the plausibility of the arguments presented. There can be no single study or specific research approach that will reach conclusive, applicable findings.

Using interviews can lead to a form of knowing which contrasts sharply with that more commonly used in academic scholarship. Conventional scientific analysis

> is the essence of academic work and thus has a comfortable feel for academic teachers, but it tends to underplay the humanness of teaching which involves making sense of contradictions and dilemmas, wrestling with ideas and methods; interacting with students and colleagues; and juggling the demands of teaching in an increasingly crowded portfolio of professional responsibilities. The complementary form of knowing, narrative or story, … is increasingly being favoured as a way of revealing the human scale of teaching.
>
> (Ballantyne, Bain & Packer, 1997: xix)

In research studies, a whole series of extracts from interviews is used to justify conclusions, but in this book we can only use them to illustrate the findings, and also to help bring them to life by relating the ideas more immediately to personal experience. Throughout the book such extracts have been set in a contrasting typeface to distinguish them from quotations from other sources.

Another 'complementary form of knowing' about university teaching comes from the educational researchers' own professional experience as academics. Their understanding of the nature of university teaching and its relationship to student learning is formed through continuing reflection on both research evidence and personal experience. And current teaching practice itself has been increasingly changing to take account of research findings. This two-way interplay between research and professional experience means that research-based suggestions for enhancing the quality of teaching and learning are often closely in line with what is already becoming accepted as 'good practice' in university teaching. But research helps to explain why particular methods work in certain circumstances, and so guides further developments in practice.

Research into teaching and learning can now offer a coherent set of concepts through which to think about ways of teaching, soundly based on cumulative evidence and also fitting in with experience. The relationships between these concepts enables researchers to create conceptual frameworks that allow staff to reflect more deeply on their practice – not just on the knowledge being taught but also on the academic understandings and distinctive ways of thinking that are the essence of university learning. These conceptual frameworks are models of the interactions between teaching and learning, but they are heuristic rather than computational, intended to guide practice rather than predict outcomes. No one framework can be claimed to be 'right', but a coherent set of concepts soundly based on research findings can be helpful, and that is what the frameworks offered in this book are designed to offer.

▶ The structure of the book

The book builds up an overview of teaching and learning by looking, first of all, at learning, then what is to be learned and finally how to support that learning through teaching and the provision of a supportive teaching–learning environment. The content has been divided into five distinct parts. The first three introduce ideas and evidence about a whole range of influences on student learning and suggest why and how teaching affects

the quality of student learning. In the final two parts, this evidence is used to build up a picture of how these research findings can be used to establish guidelines for teaching for understanding and to evaluate and 'fine-tune' that teaching.

In Part 1, we look at learning initially in terms of general principles about how people learn and how differences among individuals affect what is learned; then we consider research into how students learn and study in university settings. In the process, we shall meet some of the most influential concepts used to think about how teaching influences learning. Part 2 focuses on the subject matter, how students come to understand it and the targets set by staff in deciding what they would like their students to learn. Part 3 brings us to teaching, initially by looking at its conceptual basis, and then by describing examples of research into teaching, across a range of subjects in settings, that has been designed specifically to help students reach a deeper level of understanding. In these three parts there is a deliberately light touch in the provision of references, using them in an indicative way, rather than to support every conclusion reached. The lack of detailed referencing will mean that some ideas may seem not fully justified, but hopefully the text will be more readable.

In Part 4 we shall be going into more detail of how to set up teaching and learning environments, and so a rather more formal referencing system is used. The discussion will centre on how to design teaching–learning environments that act synergistically to make learning more effective and more congenial for the students, guided by a heuristic model of influences on student learning. In the final part, we shall be looking at ways in which university teachers can monitor the effectiveness of their own teaching in ways that are conceptually robust and technically sound. It will also consider the role that professional development can play in guiding effective university teaching.

'Bridge Passages' have been used to introduce each chapter. Research into teaching and learning has been gradually evolving over the last 30 years, and these bridge passages have been used to draw attention to that historical development, illustrated through my own involvement in this research field. The 'voice' in these passages is deliberately more personal, partly to provide a 'storyline' as the overview is built up, and partly to point up some of the key ideas and issues in the chapter that follows.

Underlying this whole treatment of university teaching, as already explained, is the notion of an *inner logic of the subject and its pedagogy*, a term chosen to highlight the crucial importance of the distinctiveness of the contrasting subject areas and the need to match teaching methods to the specific requirements of learning in each subject or topic, at whatever stage of the degree or postgraduate course, and within whatever institutional context.

References

Ballantyne, R., Bain, J. & Packer, J. (1997). *Reflecting on University Teaching: Academics' Stories.* Canberra: Australian Publishing Service.

Barnett, R. (2007). *A Will to Learn: Being a Student in an Age of Uncertainty.* Buckingham: Open University Press and Society for Research into Higher Education.

Bruner, J. S. (1960). *The Process of Education.* Cambridge, MA: Harvard University Press.

Cronbach, L. J. & Suppes. P. (eds) (1969). *Research for Tomorrow's Schools: Disciplined Inquiry for Education.* Macmillan: New York.