New Learning
Elements of a Science of Education

In this, the era of the 'knowledge society', more is expected of education than ever before, yet disappointment in education seems pervasive. New Learning analyses the state of education today and presents an exciting vision of what schools could be like. It addresses the fundamental questions: what kinds of workers, citizens and individuals will our future need, and how can schools refashion themselves and become more relevant?

The focus of New Learning is on learners and their learning – the extraordinary diversity of their backgrounds and interests, and the dynamics of educational environments which can engage all to fully maximise the effectiveness of learning.

This book by internationally renowned experts Mary Kalantzis and Bill Cope is an imaginative, future-oriented exploration of contemporary education. It is an indispensable resource for educators, pre-service teachers, and anyone interested in the challenges and opportunities facing teachers and learners today. The supplementary web site NewLearningOnline.com includes extracts from books and interviews, case studies, keyword definitions and additional learning material.

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New Learning

Elements of a science of education

Mary Kalantzis and Bill Cope
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Preface

The art of teaching and the science of education

Teaching happens everywhere. Many people are naturally quite good at teaching. They explain things clearly. They are patient. And they have the knack of explaining just enough, but not too much, so the learner gains a sense that they are gradually mastering something, albeit with a more knowledgeable person’s support. Parents are teachers. Friends are teachers. Sales, service and maintenance people are teachers. Co-workers are teachers. You can find the practice of teaching in action everywhere in everyday life. In fact, it is impossible to imagine everyday life without it. Teaching and learning are integral to our nature as humans.

Some people profess to be terrible teachers. They’d rather not have to explain to a novice how to do something. ‘It’s quicker and easier to do it myself’, they say. Or, ‘I just don’t have the patience to explain things’. Such people are rarely as bad at teaching as they think and say they are. Everyone has been a learner and has had direct experiences of having been taught. Such everyday teaching is more art than science, more instinctive than articulate, and something that is never far beyond the range of anyone’s capacities.

Teaching is also a vocation, a profession. People in the business of teaching are good at their job when they have developed and apply the dispositions and sensibilities of the person who is a good teacher in everyday life.

But there is much more to the teaching profession than having a natural knack, however well practised. There is also a science to education, which adds method and reflexivity to the art of teaching, and is backed up by a body of specialist knowledge. This science asks and attempts to answer fundamental and searching questions. How does learning happen? How do we organise teaching so it is most effective? What works for learners? And when it works, how do we know it has worked? The science of education attempts to answer these questions in a well thought-through and soundly analysed way.
Parents, friends and workers tend not to think as systematically about teaching and learning as professional teachers do. Scientific thinking and disciplined practice are what distinguish the profession of teaching from the art of teaching. If you want to be a teacher, you undertake training in the discipline of education.

This book is an introduction to the systematic thinking that is the science of education, designed for two audiences. One is a general readership including professional educators interested to reflect upon some fundamental questions about the nature of the profession, and the science that underpins that profession. Another is people embarking on a program that will lead to a teaching qualification. For both audiences, this book offers a distillation of key ideas of the discipline of education, and the body of knowledge upon which the discipline is grounded.

More than simply reflecting on the traditions of the discipline, however, this book ventures into a re-conception of education for our dramatically changing times. The title ‘New Learning’ points to the need to redesign the way we ‘do’ education as a social experience known currently as ‘schooling’, to meet the demands of our changing times and to benefit from the opportunities that these changing times offer us. Today’s science of education needs to be able to ‘read’ contemporary social conditions and adjust our educational institutions and processes if it is to be truly useful. We want to suggest that a redesigned science of education is required today as a foundation of knowledge for a renewed teaching profession. As such, we hope this book will help experienced and beginning educational professionals to re-conceive the scope and shape of the profession of teaching and the science of education.

The meaning of ‘science’

What is ‘science’? The more profound and important the concept, the harder it seems to define, and the more it seems to be plagued by a wide, even contradictory, range of meanings.

Mention the word ‘scientist’ and the first thing that may spring to mind is a person in a laboratory coat, conducting an experiment. You might think of the chemistry, physics, geology and biology taught as subjects in school or university. This meaning of ‘science’ mainly refers to the natural and technological worlds.

Think a bit longer and you’ll realise that term is also used to describe some of the ‘social sciences’. By the time we come to realise that the word encompasses both the natural and social worlds, its scope is huge – from forests to politics, from physics to education.

If we tease out the underlying meanings of ‘science’ across such a broad range of domains of application, we might conclude that it refers to a privileged kind of knowledge, created by people with special skills who mostly work in research, academic or teaching jobs. It involves careful experimentation and
focused observation. Scientists systematically explore phenomena, discover facts and patterns and gradually build these into theories that describe the world. Over time, we come to trust these as the authority of science.¹

These meanings of science are quite unexceptionable. In this spirit, we might create a science of education that focuses on the brain as a biological entity and the mind as a source of behaviours (cognitive science). Or we might set up experiments in which we carefully explore the facts of learning in order to prove what works or doesn’t work. Like the medical scientist, we might give some learners a dosage of a certain kind of educational medicine and others a placebo, to see whether a particular intervention produces better test results (randomised controlled experimentation).² This is the conventional view of science. And these kinds of thinking can be perfectly useful.

Often, however, we need to know more. It is indeed helpful to know something of how the mind works, but what of the cultural conditions that also form the thinking person? We need good proofs of which kinds of educational interventions work, but what if the research question we are asking or the tests we are using to evaluate results can only measure a narrow range of capacities and knowledge? For instance, what if the tests can prove that the intervention works – scores are going up – but some learners are not engaged by a curriculum that has been retrofitted to the tests? What if the tests only succeed in measuring recall of the facts that the tests expect the learners to have acquired – simple, multiple-choice or yes/no answers? A critic of such ‘standardised testing’ may ask, what’s the use of this in a world in which facts can always be looked up, but problem solving and creativity are now more sought-after capacities, and there can be more than one valid and useful answer to most of the more important questions?³

For these reasons, we want to outline a broader understanding of the discipline of education, based on a broader definition of science. There’s nothing wrong with doing science in its narrower senses, so long as this work is balanced with a ‘bigger-picture’ view of science.

‘Science’ comes into English from the Latin word *sciens* (‘knowing’). However, our modern conception of science is not just any old knowing. It consists of a variety of specially focused things you do that distinguish everyday, commonsense knowing from an organised, ordered, socially and historically constructed knowing, which is regarded as trustworthy because of its authority, effectiveness and openness to critique and refutation. These special ways of knowing distinguish the everyday practitioner of an art from a professional. As we explain in further detail as this book unfolds, some of these special things you do to know when you are being scientific are experiential (including focused reflections of what you know from your everyday experience and careful observation in new and unfamiliar settings), others conceptual (carefully defining concepts and building theories that tie these concepts together into patterns of meaning), others analytical (explaining how things work as well as whom and what they are for) and still others applied (testing how knowledge works in practice, being creative and
innovating). There are, in other words, quite a few different types of things you can do to know, in a way that is more systematic in its methods and reliable in its results than everyday, casual knowing.

The discipline of education is grounded in the science of learning, or how you come to know. It is a science that explores what knowing is, and how babies, then young people, then adults, learn. Education-as-science is a specially focused form of knowing: knowing how knowing happens and how capacities to know develop. It is, in a sense, the science of all sciences. It is also concerned with the organisation of teaching that supports systematic, formal learning and the institutions in which that learning occurs.

We want to make this special claim for the science of education for some practical as well as principled reasons. Too often, education is regarded as a poor cousin of other disciplines in the university – the natural sciences, the humanities and the other professions, for instance. It is regarded as something that enables other disciplines, rather than being a discipline in its own right. This is reflected in lower levels of research funding, student entry requirements and the destination salaries of graduates. Education seems to be less rigorous and derivative, its disciplinary base borrowed from other, apparently more foundational disciplines – sociology, history, psychology, cognitive science, philosophy – and the substantive knowledge of various subject areas such as literature, science and mathematics.

For sure, education is broader ranging and more eclectic than other disciplines. Education draws on a number of disciplinary strands – epistemology, or the philosophy of knowledge, the cognitive science of perception and learning, developmental psychology, the history of modern institutions, the sociology of diverse communities, the linguistics and semiotics of meaning – to name just a few of education’s disciplinary perspectives. These and other strands come together to make the discipline of education.

More than the equal of other disciplines, however, education is the soil in which all the other disciplines grow. You can’t do any of the other disciplines in a university or college except through the medium of education. No other discipline exists except through its learning – an individual learning the accumulated knowledge that has become that discipline, and the social learning represented by the whole discipline itself and its community of practitioners.

Education is the systematic investigation of how humans come to know. It is the science of sciences.

Towards a ‘New Learning’

We set out to explore new territory in this book. It is our aim is to build a vision for the future of education – ‘New Learning’ – which does not simply reflect and reproduce the heritage institutions and practices of schooling. Social, cultural and technological change are throwing into question the relevance and appropriateness of heritage education. So, although our counterpoint is the educational
processes of our recent past, the focus of this book is the design of New Learning environments that are more engaging, more effective and more appropriate to our contemporary times and our imaginable near futures. How do we create learning environments that work better and that provide more equitable outcomes for all?

Some foundational values and principles underlie the theory and practice of New Learning. The first is that diversity, understood in a broad and all-encompassing way, is a key feature of contemporary cultures that must figure at the core of our thinking about education. One-size-fits-all schooling may have worked in the past as a form of social control and a strategy for selecting the few into higher education. Today, such an approach to education is more and more widely acknowledged to be not working very well. For a host of reasons, it is not well suited to the needs of today's society. Our contemporary designs for learning must accommodate the differences in knowledge, life experience and motivation amongst our learners, as well as a wider range of rapidly changing occupational destinations, and a need that is just now being recognised: for highly creative problem solvers able to re-imagine and reinvent entire ways of living in order to address increasingly urgent social and environmental challenges.

The second foundational principle is that education must cultivate deep knowledge, hence the grounding of the theory of New Learning in epistemology, or the theory of the possibility, origins, nature and extent of human knowledge. The third principle is that education needs to develop and maintain a systematic focus on designing learning experiences and tracking learning processes. Our measure of success as educators is the effectiveness of learning as reflected in learner performance.

The fourth principle that makes this book different is its globalist content and aspirations. Our case for New Learning is grounded in a ‘new basics’ of education applicable anywhere in the world. These consist of the knowledge competencies, and sensibilities necessitated by changing technology, culture and economy in our times. Paradoxically, however, such a globalist approach is necessary, not only because the teachers and learners are facing more and more of the same dilemmas all around the world, but because one of the key dilemmas of the New Learning, as we see it, is diversity itself – amongst learners and between the settings in which learning occurs. If we can negotiate learner and contextual diversity at the local level, we can do it globally; and if we can do it globally, we will be able to do it better locally.

In this globalist spirit, we engage with theories and case studies from many parts of the world and many cultural traditions. One of the reasons we use this globalist frame of reference is practical. Nowadays, ideas and policies about teaching and learning circulate around the world faster than ever, influencing education at a local level. Also, practically speaking, people undertaking teacher education programs today are more likely than was ever the case in the past to end up teaching in different parts of the world in the course of their careers. Teaching has become an international profession. Teachers are migrants. Teachers are ‘foreign’ students when they do their first or second degrees away from
home, or take international student exchanges as part of their degrees. Teachers take their students on visits to faraway places. Teachers go on extended working holidays, often as young people, but increasingly today after their families have grown up and as they are nearing retirement. More than ever in the past, teaching is becoming a peripatetic profession, a profession of global travellers and this is one of its great attractions. Formal teaching standards and registration requirements are adjusting to accommodate such movement. If you are a lawyer, you can't easily move from one jurisdiction to another. But as a teacher, the world awaits. In fact, teachers are increasingly being recruited across borders. Your difference may also be a virtue, no matter how distant the destination. Your native language skill – in Mandarin, or English, or Arabic – will mean that you are ‘in demand’ in many places other than your home country. Even if you are a speaker of a small or immigrant language, you are likely to find minority communities of speakers of your language in many of today’s world cities, who need your special cultural and language knowledge.

In addition to these practical considerations, this book is globalist as a matter of principle. Given the differences amongst the learners in our classrooms and the increasingly interconnected world in which we are living, it is simply imperative that educators view their profession from a global perspective, and develop in themselves and their learners dispositions and sensibilities that are cosmopolitan and worldly-wise. The students in your class may have been born or end up spending their later lives around the corner or at the other end of the Earth.

Nor do we assume that everyone ‘doing education’ as a course of study will become a teacher in the conventional sense. Or that a teacher will remain in the one career for all of his or her life. Sometimes people studying education head off on professional tangents, using the skills they have learnt to become trainers, mentors, knowledge managers, coaches, counsellors and leaders in organisations and communities. Indeed, career flexibility is likely to become the norm. The benefits for the profession will be great – as professionally trained educators go out into the wider community and prove the mettle of the science and profession of their training, and as they return to education with experiences from other fields.

For this reason, we pitch our arguments at a high level of generality. This book is not about the nitty-gritty of lesson plans and timetables and the organisational structures of schools as we know them. It is about the idea of learning, and how learning is organised in a carefully premeditated way in the human processes of education. Even more broadly speaking, it is about the creation of persons with new kinds of capacities for the ‘knowledge society’.

Our exploration, then, is more than a distillation of the stuff of the discipline of education as we have come to understand it. It is that, for sure, but more. We outline a theory of New Learning, a different kind of learning for a future whose horizons are open. To support our case, we discuss the changing dimensions of work, citizenship and everyday life, which seem to be insisting upon a revolution in education. We explore learner diversity, equity, the nature of learning and the dynamics of pedagogy that will work in contemporary educational settings. We
examine the changing nature of teachers’ work, school organisation and the blur-
ing of the boundaries between institutionalised education and learning that is lifel-ong and life-wide.

Our focus throughout is on the nature of learning, and thus learners. The word ‘education’ most commonly suggests something that has been designed for learn-
ers by teacherly types who know what will be good for them. In this conception, the institutions, systems, curricula, textbooks, assignments and assessment pro-
cedures of education often seem to have been created by experts positioned on high and handed down to learners. This perspective is characteristic of the old teaching. Such an approach may have had its place in the past, and its perennial limitations, too. But it often appears out of place today for the learners who will be the workers, citizens and persons-in-community of the near future. Our ver-
sion of New Learning changes the balance of agency, granting that learners play a much more active role in the process of learning than was allowed in the past. So, in this book we set out to view education’s designs from the learner’s perspective.

This focus on learning, in its turn, requires a new view of teaching. Teachers are professionals who diagnose learner needs; design learning experiences appropriate to these needs; monitor learner performance; and create learning pathways based on this performance. By focusing on today’s learners, the New Learning also works towards the creation of a new kind of teaching professional doing a different kind of job.

Not that the past should be disregarded – on the contrary, the New Learning stands upon the deep knowledge of the discipline and the long and wide experi-
ences of educational practice. It does not discard, but extends and develops the theories and practices of the education and the body of knowledge that underpin the discipline. Even though our primary aim is to imagine the new, in the words of 17th-century physicist Isaac Newton, we can only do this because we are ‘standing on the shoulders of giants’.

How this book is organised

This book outlines the elements of the science of education. It is a distillation of the main ideas at the core of the discipline, that body of knowledge that concerns itself with human learning. As such, it is just as concerned with the art of teaching and the very practical processes of engaging with learners. It is supplemented by a website (www.NewLearningOnline.com) that includes extracts from key texts, keyword definitions and learning tasks.

Guiding narrative (in this book)

This is our outline of the science and discipline of education. Each chapter is divided into three stages: education and social life in the modern past, chang-
ing education in recent and current times and the theory and practice of a New
Learning. This division is roughly chronological – roughly, because much of the past remains present. We live in a state of what might be called ‘uneven change’. In this sense, the three stages in each chapter are more importantly analytical than they are chronological, each stage representing a perspective or approach. Each chapter works its way through a number of dimensions of education. One chapter after another, the main narrative cycles around this threefold stage structure, progressively building a many-dimensional picture of the trajectory of change in education and a wide variety of educational paradigms or ways of thinking.

Navigational aids (in this book)

This book covers an enormously wide ground. For practical reasons, we provide three kinds of navigational aid to help you through the text. Each chapter begins with an Overview, which summarises the main points. The main narrative is then divided into small parts with a structure of subheadings so you can locate particular ideas easily. There are three main subheadings in each chapter, covering the three stages in the argument and culminating in our case for New Learning. Within each of these three sections, we come back to the various dimensions of the area of education discussed in that chapter. Finally, each chapter ends with a summary table that captures the three stages in the argument (the columns) and shows the intersections with the various dimensions of education discussed in the chapter (the rows).

Breakout boxes (on the web)

We want to expose those coming newly to the discipline of education to different points of view representing a range of theoretical perspectives across the discipline of education, from different eras and from different parts of the world. These are mentioned and cited at relevant points in the text, and can be found on the web at NewLearningOnline.com. Some of these texts address theoretical questions (and are often difficult to read if you are unfamiliar to the disciplinary genre they represent – but being intellectually challenged, even to the point of having to move beyond your comfort zone, is a part of the learning process). Other texts are more practical and descriptive, and thus more accessible. Either way, these are original sources. We wanted you to hear people speaking in their own voices, rather than tell you what we think they are saying.

Keywords (on the web)

It is in the nature of science to create a technical language that is more precise in its meanings than everyday language. This technical language may at first seem unclear, particularly when precise meanings are confused with commonsense meanings. For this reason, every chapter has a keywords section where you can
look up technical terms that have been introduced in that chapter. This glossary of keywords, laid out in the order in which they are presented in the book, is to be found at NewLearningOnline.com.

Knowledge processes (on the web)

This book introduces many of the ways in which teachers can help learners engage with learning. It also suggests that you try them out as a learner and teacher yourself. We want to encourage you to be a knowledge-maker and a learner. For this reason, each chapter has supporting ‘knowledge processes’, to be found at NewLearningOnline.com. Here, we suggest lines of inquiry and research you might pursue to build your own understanding of the science of education. In other words, this section is an invitation to be a scientist yourself, to build your own knowledge.

Notes

1. For an introductory discussion of the meaning of ‘science’, see Chalmers 1976. See also: Phillips and Burbules 2000
2. See, for instance, National Center for Education Evaluation and Regional Assistance 2003; Shavelson and Towne 2002
3. For a critique of a narrowly ‘evidence-based’ view of the educational sciences, see: Schwandt 2005; Erikson and Gutierrez 2002; Popkewitz 2004
Acknowledgements

As much as this book is a recap of things we have been doing, thinking about, talking about and writing about for several decades, it is also a social product. Where does one begin to describe the influences that have come to bear on writing a book like this, and the people who have helped us in the process? The following is a list of the most direct connections, at the expense of not doing justice to the influences of the wider intellectual and social context.

Our educational journey began in a small Catholic primary school in western Sydney, Australia. Lately, we have become very conscious that much of what we are saying now we started thinking back then – in the curriculum work we did with the support of, and in collaboration with, Mark May, Wendie Batho, Kerry Stirling and Allan Coman. We are also conscious of the degree to which the joint work with our ‘genre’, then ‘Multiliteracies’, colleagues has shaped our thinking from the 1990s till today – Courtney Cazden, Norman Fairclough, James Gee, Gunther Kress, Allan Luke, Carmen Luke, Jim Martin, Sarah Michaels and Martin Nakata.

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