Chapter 1: The biological nature of learning

"Thus, the task is not so much to see what no one yet has seen, but to think what nobody yet has thought about that which everybody sees."

Schopenhauer

In this chapter we look at how research into the workings of the brain and our innate abilities throws new light on how children can best learn. Topics covered include:

- **The language predisposition.** Why we need to exploit our innate talent for learning language, and other predispositions, in our teaching systems.

- **Collaboration is a survival skill.** We work best in small, self-supporting groups, just like our ancestors did. Why boosting children's collaborative and social skills plays an essential part in their education.

- **The motivation behind learning.** Why children need opportunities to control and channel their creativity both inside and outside the classroom.

- **Constructivism.** Why what children do in school needs to be relevant to their lives outside school.

- **Cognitive apprenticeship.** Experience is the best teacher. The importance of vocational training.

We will start with two simple assertions: humans are born to learn and learning is what we are better at than any other species. These old and essentially intuitive insights are now supported by the new biological understandings yielded by brain imaging technologies developed since the late 1980s. Non-invasive brain mapping has enabled researchers to watch learning occur as specific patterns of activity within the brain light up on a computer screen. The brain is revealed as a flexible, self-adjusting, biological system which grows and reshapes itself in
Chapter 2: Learning in the 21st century

"A great many internal and external portents (political and social upheaval, moral and religious unease) have caused us all to feel, more or less confusedly, that something tremendous is at present taking place in the world. But what is it?"

Pierre Teilhard de Chardin

In this chapter we look at the gap between what children are taught (based on models of learning from the industrial age) and what they need to know to succeed in the 21st century.

- **Shifting the emphasis of education.** How lifelong learning must now take priority over academic schooling.

- **Moving beyond the basics.** The current educational obsession with improving test scores and basic skills provides only part of what employers are looking for. Where do the other essentials of creativity and communication come in?

- **A march towards folly.** Why counterproductive education policies should be challenged (and why they aren't).

- **The “plastic brain”.** Research shows that we make our brains as we use them. How understanding the development of children's brains in their early years could improve their education and life chances.

- **The pyramid model of education.** How current educational funding models favour older learners over younger.

- **A biological model of learning.** Why the learning skills of children need more than just classroom-based instruction to thrive.

- **Lifelong learning starts at birth.** Why society needs to care about what happens to children outside school.
Chapter 3: The economy and the learning needs of children

"The more sure one is that the world which encompasses human life is of such and such a character (no matter what his definition), the more one is committed to try to direct the conduct of life, that of others as well as of himself, upon the basis of the character assigned to the world."

John Dewey

In Chapter 3 we look at how living in a consumer society is impacting on career patterns and family life.

- **The age of anxiety.** More children are being born into affluence but get less and less time with adults who love them. What is the impact on children's development and learning?

- **A tribe apart: teenagers.** Teenagers are also spending less time in the company of adults than ever before. Why adolescents need to be needed.

- **Let the professionals handle it.** We've become reliant on schools to promote children's learning. Why out-of-school provision is even more important.

- **The game of school.** How what is taught in schools needs to be relevant to the real world to have meaning for children.

- **Education and learning in a post-family era.** Why we need to regain a balance between home, schools and the larger community.

- **The cost of over-institutionalising learning.** How over-emphasising schooling stifles the entrepreneurial spirit.

- **The need to think smarter.** Why we won't solve the problems of today with the techniques of yesterday.

- **The need for "eureka time".** Why the obsession with tests, grades and homework is killing joy and creativity in childhood.
Chapter 4: How mass education eclipsed apprenticeship

"Most of the learning in use is of no great use."
Benjamin Franklin

Chapter 4 is the first of several chapters which put today's educational systems into an historical context.

- Learning and schooling are not synonymous. What research tells us about how our ancestors learnt.
- A natural model of learning. How we are biologically suited to learn through apprenticeship.
- The origins of mass education. How learning became confused with schooling.
- The American model of education. Built to nurture loyal citizens.
- The European model of education. State education and mental gymnastics.
- The school in loco parentis. How schools came to replace parents and the community as the locus of learning and moral development.
- The school as the secular church. How the state came to decide what we should be taught.
- The appliance of science to social affairs. Why the scientific theories of Newton and Darwin changed perceptions of how we live and learn.
- Using science selectively. How politicians pick and choose scientific theories to suit their own educational agendas.

A search for an understanding of learning is enhanced by a history of how humanity has approached the transmission of collective wisdoms. In delving into this history – and the philosophies that have informed it
Chapter 5: Scientific schooling for an industrial age

"Every human being should become an effective, economic unit."

Henry Pritchett

In this chapter we look at the radical changes that took place in society and education as factory working took over from craftsmanship in the 19th and 20th centuries.

• The nature versus nurture debate. Why the two schools of thought did not meet.

• The rise of the "efficiency expert". How science reached industry and changed the way people function.

• The scientific management of work. How the quest to increase productivity turned people into workers, not problem-solvers.

• Science reaches the school. How the emergence of the "factory school" fed the demand for basic skills – the three R's.

• Compromise and mixed motives. Why early state education ignored children's learning needs.

• The legacy of the factory model of schooling. Can education systems designed for a different time fit the needs of society in the 21st century?

The behaviourists' appliance of science to education and their excessive emphasis on nurture was in stark contrast to the ideas about nature that had been developed earlier by Johann Pestalozzi in Italy and Friedrich Froebel in Germany. These early 19th century pedagogues built on the ideas of Socrates, Saint Thomas Aquinas, Kant and Rousseau to suggest that successful education must start with a child's ability to understand
Chapter 6: The struggle of ideas

"Reforms that deal with the fundamental stuff of education – teaching and learning – seem to have weak, transitory, and ephemeral effects; while those that expand, solidify and entrench school bureaucracy seem to have strong, enduring and concrete effects."

The RAND Corporation

In Chapter 6 we examine the conflicting philosophies of learning that dominated education in the 20th century, and how they evolved.

- **Plato and Rousseau.** The teacher-based approach, or the child as instinctive learner?


- **The tension between economics and education.** How Dewey recognised the link between industrial efficiency and the destruction of communities.

- **Edward Thorndike (1874–1949).** Developing the science of education; basic skills and testing reign.

- **Dewey seeks the middle ground.** How basic skills and thinking skills go hand in hand.

- **Intelligence and its development.** Why intelligence is more than just IQ.

- **The lasting impact of IQ testing on schools.** How testing labelled children for life.

For most of the 20th century there were two dominant, and competing, schools of thought about learning and curriculum development. These duelling philosophies had their roots deep in Western thought, and are in many ways diametrically opposed. The first had its origins in Plato's
Chapter 7: Big is better

“I drive my car to supermarket, The way I take is superhigh, A superlot is where I park, and SuperSuds are what I buy.”

John Updike

In this chapter we focus on the post-war years in the United States and Britain, when booming economies led to major expansion of education systems, and the employment of different teaching methods.

• The cult of bigism. The rise of the consumer society.

• The organisation man. The warnings of William H. Whyte; how bigism leads to conformity and mediocrity.

• Education and the cult of bigism. How bigger schools are not necessarily better for students.

• The rapid rise of experiential education. How the 1965 Education Act in England boosted progressive teaching methods.

• Schools can’t do everything. The importance of family and community in education.

• The fall of experiential education. How simplistic views of progressive learning proved to be its downfall.

• Bigism under assault. How late-20th century changes in politics and society have left schools confused about their purpose.

If there was ever a golden era of education in the United States and Britain it was the 25 years after World War II, a time of phenomenal economic growth when, for one example, the real wage of the American worker more than doubled. Similar economic growth in Europe fuelled the expansion of education systems there and in all cases schooling was seen as the driver of economic success both at personal and societal lev-
Chapter 8: The case for working smarter, not just harder

"The emerging shift in the workplace from ‘command and control’ hierarchies to empowered high-performance teams has powerful implications for schools, if schools were ever allowed to truly experiment."

The Institute for Research on Learning

In this chapter we look in more detail at the impact global economic changes had on the workplace and on politics towards the close of the 20th century, and the implications for education systems.

- **Tough times.** How joblessness and bureaucracy triggered rebellion in Britain in the 1970s.

- **The changing economy in the 1980s.** Why the demand for critical thinkers grew.

- **Dynamic economies and the need for “higher-order skills”**. The widening gap between what employers want and what schools deliver.

- **Politicians join the debate.** Thatcherism in the 1980s: how the spirit of free enterprise took hold.

- **Privatisation and the entrepreneurial society.** Thatcher looks to individuals, not to the state or communities, for answers.

- **The premium on learning in the modern world.** What young people need to be successful in the global workplace.

- **The “third way” in politics.** How short-term political thinking is stifling innovation in education.

- **Lessons of successful business.** Why initiative, empathy and adaptability have become as important as “basic skills”.

- **Developing an inclusive agenda for learning.** The need for smarter education systems.
Chapter 9: England: a case study of a one-size-fits-all education system

"The power of vested interest is vastly exaggerated compared with the gradual encroachment of ideas."

John Maynard Keynes

In this chapter we focus on education in England over the last 50 years, where increasingly centralised control of schools has led to conformity and an unwillingness to look afresh at the principles behind learning.

• A national system administered locally. How the 1944 Education Act affected school structure in England.

• The tension between traditional England and the emerging welfare state. Confusion over the purpose of schools arises.

• The move to comprehensive education. Why mixed-ability schooling created tensions and controversy.

• When in doubt return to the basics. How a perceived decline in standards led to a renewed emphasis on the teaching of basic skills.

• An opportunity lost. How the Conservative government embarked on radical reorganisation in education without questioning the underlying principles of learning.


• Power resides in the system. How teachers became shelf-stackers “delivering the national curriculum”.

• The 1988 Education Reform Act. How a rushed piece of legislation changed the face of schools.

• The teacher-proof curriculum. Why the introduction of the national curriculum and national testing has its price.
Chapter 10: Making the leap from instruction and schools to learning and community

"Since individualism misrepresents our nature, it follows that communal life is the normal state for human beings. But human life is not organic; a shared existence is a matter of intention, not of fact. Community has to be created and sustained by conscious purpose, and the more successfully this is done the more we fulfil our personal nature."

John Macmurray

In this final chapter we give an overview of how the research and ideas covered in this book can be used to influence and support future models of learning.

- The role of schools in a learning community. How class size, professional development of teachers, and the use of new technology in education can transform the learning environment of our children.

- Providing for intellectual weaning. How to change educational funding and structure to fit the way we learn.

- Which way now? Why schools need to help students take control of their own learning and involve the community.

- Obstacles to reform. How ignorance, self-interest and ideology prevent people in education from risking change.

- Towards dynamic learning communities. A step-by-step guide to how grass-roots awareness of educational issues can make a difference.

- Conclusion.

For good reasons this book is called The Unfinished Revolution. It is a revolution in thinking about learning, human development and com-