CHAPTER 1

Learning and development

This chapter begins to answer these questions:

- What is theory?
- What can we know and use?
- What are the issues in learning and development?
- Nativism or Empiricism?
- Continuous or discontinuous?
- Stability or change?

In thinking about some answers we will meet cavemen, a Greek philosopher, the birth of psychology, and today's theories. We begin to consider the impact of psychology and other knowledge on teaching and learning.

Theory, what's that?

What do you think of these statements?

- 'I always take an umbrella with me, it stops it raining.'
- 'You wait ages for the bus; then, three come at once.'
- 'Children born on a Sunday always have a sunny nature.'

These are the sorts of informal theories that many of us have about day-to-day events. In the first statement the umbrella is like a lucky charm. If I take one with me, perhaps it won't rain; however, it is actually quite unlikely that having the umbrella with me stops the rain from falling. Likewise it is unlikely that the

length of the wait and the number of buses that arrive have anything to do with each other. And, whilst some Sunday-born children have a sunny nature, not all of them have.

We all hold informal theories about how children learn and how they develop. Sometimes our intuitive, common sense theories are absolutely correct; what feels right exactly matches a particular moment. Tom is struggling to read 'winning'. To keep your attention he sounds out '/w//i//n/' and says 'win'. At this point you are wondering whether to help, but something holds you back. He gazes hard into your face and says, with a finger on the word, 'is that bit *ing*'? You nod, he smiles and says 'win … ing', 'it's winning'. It is common sense to give beginner readers of any age some space to work things out for themselves. In this case it is good theory too.

Task 1.1 Informal theories

My own deeply held theory is that I will always find a parking place exactly where I want one to be. Over time I have convinced my passengers about this theory. They too are convinced that if they come with me there will be a convenient parking place. But, is it true? I decided that I had better find out. For 150 consecutive journeys I kept a tally. On 64 out of 150 journeys I was able to park exactly where I wanted to. Is that good enough proof? As less than half the journeys resulted in a convenient parking place, clearly my theory is in fact not reliable or valid.

Think about one of your informal theories. One, that many of us hold, is that you only have to sit down to eat for the phone to ring. What would you do to test your theory? Perhaps you'd keep a count of the number of times this happened. How long would you keep your experiment going? What level of proof would you accept as good enough to accept or reject the theory?

Now think of a theory that you use with children and young people. Perhaps when you are giving instructions you always say them twice. Perhaps you always wait for 30 seconds before repeating the instruction. You do this because it seems to work for you. But does it? Again, think of ways you might test your theory. What level of proof would you accept as good enough to keep it in your repertoire of strategies?

Often our actions based on common sense are correct and we can use them without causing harm. Sometimes, though, our observations mislead us into making an error by choosing to act in a way that is not going to help. You hear the noise of books and kit being tipped all over the floor, and without looking you call out, 'Sam, what have you done?' Sam is, after all, the usual culprit. Nine times out of ten it would have been her fooling about. But, on this occasion, it was not Sam; it was another student and it was a genuine accident. Sam now has reason to resent what you did and you have to spend time rebuilding a relationship with her.

When working with learners we need theories that will provide a good reason for choosing one course of action over another. When choosing one teaching strategy over another the research that supports it should help to inform our choices. We are looking for theories that are robust, that are more often right than wrong. The theories and research that we choose to use in our teaching will not fit every learner or every context but, often, they will provide a powerful explanation.

We want theories to be reliable. Suppose you wanted a settee to fit into a particular space and the only thing you could find to measure with was a length of elastic. You might stretch it just the same in the shop and at home. If you do this the settee would fit perfectly. But that is quite unlikely; as a tape measure, a piece of elastic is pretty unreliable. The formal theories used to explore how children and young people learn and develop have to be reliable for them to be useful, they have to work more often than not.

As well as being reliable, theories have to be true. The three statements that begin this section are not always true, and those that we thought about in Task 1.1 are only sometimes true. To be useful, theories have to be valid. Using a piece of elastic to measure is not likely to give us a true measurement, we want measurements that we trust. That is why we use a tape measure which gives, providing we take care, a true reading every time. On the whole, we know that the relationship between carrying an umbrella and the likelihood of it raining is down to chance. The explanation about bus frequency is unlikely to have anything to do with the length of time we wait; usually it has much to do with traffic or staff or breakdown problems.

It is worth noting that as we are dealing with human beings, theories will only be valid and reliable up to a point. Sometimes a trusted teaching strategy goes wrong and does not work. The class which does not settle, which ignores our normal signals for 'pay attention' means that we need to revisit our repertoire

and find a different strategy for managing this aspect of discipline.

If theories are to be useful then the way that they are tested is important to us. We want to know that consideration has been given to being fair both in the way that the test is conducted and to the people taking part, that the ethics used are acceptable. To test whether children born on a Sunday have sunny natures we might have chosen to ask the parents and carers of all the children born in Sheffield on a particular Sunday. Suppose that most of the parents and carers agreed, 'my Sunday-born child has a sunny nature'. We might conclude that being born on a Sunday does result in having a sunny nature. But the way the result is arrived at has all sorts of flaws. We are not told how many children are involved. We do not know when, how or what was asked about the children. We might get a different result if we choose to ask about Sheffield children born on a different Sunday. We have no idea whether the Sunday-born Sheffield children are similar to Sunday-born children in our own area. Whilst it seems to be ethically acceptable and it probably involved little or no risk to the people taking part, we would not trust a result gathered in this way. We would rightly conclude that the result was not valid or reliable, and we would not take any actions based on such a dubious result.

Learning theories and development theories are tested and built in different ways. One way might be that a single question becomes the focus of research. The researcher becomes very interested in a particular aspect of learning or development. From observation he or she thinks that there is a question that could provide an answer that is worth having. He or she will think about ways to investigate the question, investing time in deciding which of many approaches to research seems most appropriate for the task. The research study will be run, the data collected and then analysed in some way. In working on the answer to the original question, other ideas will then seem to be important and these lead to more research. This cycle of question, test for an answer, leading to another question, then another answer, can often be a lifetime's work. The theory that results will be based on many pieces of research each of which adds to the explanation.

Sometimes this will lead to great big theories that try to give a complete explanation for something that happens in a child's life. This is painstaking work and not all research is on this monumental scale. Sometimes we are offered a single piece of research that hints at an explanation for a tiny aspect of a child's development or the way in which learning happens. At other times the theory is based on thinking about and putting together evidence from many sources,

using the work of many researchers, once again offering an explanation that seems to fit. What the best theorists do is to try to think about aspects of learning and development systematically; to provide an analysis that is robust. When this is successful it provides us with help in understanding the children and young people who we work with.

Theory and practice

When thinking about how the results of research apply to our work there are four points to make. The first point is that the context of the research is always something to consider, this includes understanding the underlying beliefs about the world that investigators have. The context and the values we hold colour what we do with children and young people. When working with whole classes we tend to be quite formal; when working one to one we may be much more relaxed. Investigations try to be objective and research is set up to search for truthful answers. Researchers and theorists are people with beliefs and values and they work in contexts which influence how they think about the world. It is worth remembering this when we try to evaluate the usefulness of results. If the researcher's views are a long way from our own, then that research finding may be less effective for our work. Ideas about the usefulness or otherwise of a particular approach to teaching will colour our use of particular strategies. In teaching reading, there are strong opinions about the ways that readers learn the sound symbol relationships, and how much phonics are needed to crack the alphabetic principles of English. Similarly there are different ideas about aspects of teaching maths and science and other school subjects.

Point two is simple: what is regarded as good theory today may be not so sound tomorrow. Knowledge is not fixed, as new evidence and new ways of investigating learning and development become available, theories once thought to offer a perfectly good explanation fall out of use. Up to the late twentieth century the rule was 'spare the rod and spoil the child'. Now even giving a child an occasional smack as a punishment is not thought to be good practice, and in school settings in many countries it is not a legal punishment so must not be used.

The third point is that very often the researcher's work does not match our needs. Not all research is immediately useful to those of us who work or live with babies, children and adolescents. The researchers have their questions, we have ours; our interests and those of the researcher are different, often very different.

What we need to do is to use the 'by-products' of the primary research to help us out in our work. We can use spin-offs from the research that do seem to answer our needs.

The final point is that there will always be exceptions to the theories we use. We all tend to think in dichotomies – up/down, rich/poor, happy/sad – and this is also a feature of academic disciplines. It is a way of thinking about issues and finding questions that may lead to conclusions that can apply widely: seven year olds can throw and catch, teenagers argue, happy parents have happy children. The problem is that whilst many seven-year-olds can throw and catch, some cannot. We try in teaching and related work, to recognise each individual as unique. We use knowledge about groups to make judgements about what someone ought to be able to do, and we compare what the individual can do with what we know the others can do. But if we are wise, we do not expect everyone to learn in the same way or at the same pace; we use what we know about each learner to make plans to assist learning for that particular person. Most respond well to praise, this motivates them to work hard and behave in ways that suit classroom settings. But there will always be one or two individuals in the class who do not respond to praise; they may need a different teaching strategy.

Even the best theory is only a guide to our actions. These are good reasons for keeping up to date, making sure that the theories we use to support the actions we take are current.

The big themes

Where did it all start? Our curiosity about ourselves is ancient. We cannot be sure that this was debated in the flickering light of the stone age fire, but it seems likely that it was. Perhaps, like us they asked this question:

- Is what you are born with fixed or does everything you experience make a difference?

I like to think of Mum and Grandma talking about the youngest boy. They look at him fondly as they sit in the firelight, something in his way of sitting having caught their attention. 'He's just like his dad,' one says to the other. 'Yes, isn't he', says the other. Fantasy, of course, but there is something about these themes that recurs for each generation. Certainly, the debate about what we are born with and what we learn has been there from the start in the written record. Per-

haps the oldest and most central theoretical concerns for thinkers, this dichotomy is referred to as nativism versus empiricism.

Task 1.2 What's inherited and what's not?

My little finger is smaller than average. My father's little finger is smaller than average, so was his father's. Clearly this is a genetic characteristic. In some families the children don't look much like either parent. Usually though, there is something which lets onlookers spot a family resemblance.

Think about your own family. Is there something which is distinctive, that seems to be a genetic characteristic? Sometimes it's things like having ear lobes that are similar; often it is the shape of nose, or the whole head.

It is easy to accept that there will be some sort of physical resemblance that can be accounted for by genetics. What about other characteristics? Are these inherited or do they come from the environment? When her daughter was a toddler, a colleague used to say that she 'could argue for England', adding, 'she doesn't get that from me, it's got to be from her father'. The daughter, now an adult, still is very determined.

What do you think? What are we born with? What do we learn?

In the cave did their debate include the other big question?

- Is learning and development messy: does it stop and start, or is it smooth, with one thing following neatly after another?

This is referred to as the continuous or discontinuous question. Wrapped up in this argument are ideas about stages in learning and development.

Added to this are questions about stability and change.

- Does everyone change over time, or are we fixed at some stage and unchanging?

Values and beliefs

The ideas we will meet in this book have to be understood against the central questions of the times. Ideas about human nature continue to influence the questions that psychologists ask. In the seventeenth century these were about

sin and redemption: philosophers asked the question, 'is man essentially good or irredeemably evil?' In some religious codes, like Christianity, babies are born as sinners and have to be baptised to be reborn to gain the help of the Holy Spirit to live the good life. In some philosophies, one of which is humanism, people, including children, are seen as good and as seekers of experiences that make them grow and flourish. Even today these questions seem to be important in understanding the theories that we meet.

This is true for teaching teams too. The values and beliefs that we hold have a great influence on our teaching. Teaching teams are usually invited to contribute to the philosophy statements that schools make. If these are a true reflection of their views then the several thousand that I have read are optimistic about human potential. They suggest that most people can learn, and this is reflected in the teaching strategies chosen, the amount of time and effort that is spent with learners who 'don't get it' and the positive attitude that is held about school. Often it is only when it is very hard going, that negativity slips into the thinking and comments are made in the privacy of the staffroom, 'thank goodness class x is about to leave, they're a nightmare to work with!' Even then, when challenged, the person making such a remark will usually find something positive to say about the individuals in the class.

Nativism versus empiricism?

In the ancient world the philosopher and teacher Plato believed that some knowledge was inborn. Because of his fame and influence this idea at least in western thinking, tended to be uncontroversial right through to the seventeenth century. At this point the debate seems to have been revived. The central theme that the French philosopher Descartes and the English philosopher Locke used in this debate is about human nature. Descartes (1595–1650) took the Christian view, whilst Locke (1632–1704) is much nearer to humanist ideas. Descartes' ideas about knowledge, like Plato's, follow the nativist argument. John Locke, by contrast, challenged Descartes' argument; he assumed that, at birth, the mind is like a blank piece of paper, a *tabula rasa*, and that everything that the baby becomes is shaped by experience.

Early in the nineteenth century, ideas about learning and development were worked out by many of the pioneer researchers. These researchers were the inventors of the new science of psychology. One of them, G. Stanley Hall, used Darwin's theory of evolution to inform his views about child development. He

thought that there is an inborn development plan, enabling us to identify the average age or norm at which the aspects of development occur. His observations lead to expectations that by a certain age babies would hold their heads up unsupported, that they would crawl then stand and so on. Clearly this is the nativist side of the debate.

Empiricists took a different view. John Watson was one of them and he invented a new term, behaviourism, for his theory. He defined this as developmental changes that occur because of the environment. Watson saw psychology as a totally objective science. He looked at animals and people in exactly the same way, carefully observing what happened when learning took place (Watson, 1913). He even claimed that he could train a child to become good at any job, 'regardless of his talents, abilities, vocations and race' (Watson, 1930: 104). He suggested this would be done by carefully designing the experiences the child would meet, making sure that success was rewarded; simple building blocks to build complex behaviour patterns.

These two researchers, Stanley Hall and Watson, represent opposing views. Although at the time their thinking was entirely modern, the latest thing, these days neither view would be supported. Today ideas and research focus on what we are born with and how this is worked on by our experience; how our nature, or heredity is changed by all the things that happen to us. The dichotomies are still used but the question to be addressed is not: 'is it nature or nurture?', but 'how, exactly, does one act on the other?' Research that addresses the nativism/empiricism dichotomy often asks questions about the interaction of heredity with experience.

Box 1.1 Finding ways to study development: nativism versus empiricism

Is it what we are born with or the things that happen to us and that we do that make us who we are?

Because psychology is the study of humankind, psychologists have to be ingenious in the methods they use. Sometimes you will read a research study where the methods used seem cruel. In the 'Little Albert' study, John Watson deliberately set out and succeeded in making a small child frightened of furry animals and men with beards. These days this kind of study would be ➤

considered unacceptable but in its day, the early twentieth century, the research was acceptable. The outcome of the study, the theory of classical conditioning, was thought to be worth the distress caused to Albert. For Watson, it was one study in a series that helped to confirm his view that the context of learning is all important. Because of his belief in empiricism he was able to suggest that any child could be trained to become what the trainer wanted. (Watson and Raynor, 1920).

Albert Gesell, working at almost the same time, adopted a quite different approach and came to a different conclusion about human development. Gesell pioneered the use of film in observational studies. He had a complete commitment to naturalistic observations. Drawing his conclusions from many hours studying children's growth, he thought that many aspects of development were the result of time; babies crawling before walking is an example of what he termed 'age evolution'. His was a nativist explanation, and his approach to research seems much more benign (Gesell, et al., 1949: 44).

Nowadays we would think of both these theories as being too simplistic to explain the links between what we are born with and the influence of the environments in which we grow up. Amongst the most interesting research into this relationship are studies of twins. If we think about it, the perfect people for a research study into questions about 'is it nature or nurture?' are identical twins. Identical twins share the same genetic patterns because they develop from the same fertilised egg. In effect they are the same person, and if they are raised apart then developmental psychologists have a splendid opportunity to measure aspects of development. These studies, as you can imagine, are quite difficult to arrange as the researchers have to find sets of twins who for some reason are brought up separately. There are a few though such as two American studies which show that what intelligence quotient (IQ) tests measure is mainly genetic (Scarr et al., 1993; Loehlin et al., 1994). Both studies used IQ tests on each twin and the mothers. One child in each pair had been adopted and brought up separately from the other twin. These are two more pieces of evidence that may show that the context in which children develop has an effect, but what you are born with is also important.

It should be added that there is another whole debate about what IQ tests actually measure. Generally, they are paper and pencil (or these days, screen and mouse) tests that measure aspects of one child's performance against other children of the same age. Most tests try to capture candidates' ability to reason abstractly. This is only one aspect of intelligence; others include the ability to learn from experience and to learn from the environment or setting.

Continuous or discontinuous?

Do we change gradually over time or does development stop and start? In the first model growth and learning is thought of as continuous. One thing leads smoothly to the next, learning and development is orderly, neat and tidy. In the other view it is discontinuous. Things stop and start, development seems untidy, jerky, fast at one point, slow at another. In the discontinuous view of development the idea of stage is central. Piaget (1952) was interested in how thinking develops. He suggested that children move from one distinct stage of development to another and that these are age related. Between the ages of 7 and 11 children think concretely, needing to use artefacts to understand. In adolescence thinking becomes more abstract.

Box 1.2 Jean Piaget: the child as problem solver

Jean Piaget, a Swiss biologist, suggested a theory of development that has been and remains highly influential. Piaget (1952) describes the baby who learns to reach for something, perhaps a ball, as having learned to co-ordinate a variety of skills, for example staying in an upright position, moving the arm, seeing where the arm has to go in order to grasp the object. Piaget calls this the grasping the object scheme. A variety of previous acquired skills work together to enable the baby to seize the ball. The new skill, grasping the ball, is integrated with what is already known. What if instead of a ball, baby wants to pick up a slice of apple? The scheme for picking up the ball has to be differentiated. The baby's grasp for the ball has to be refined and changed in subtle ways to create the pick up a slice of apple scheme. This is the child as problem solver, a central idea when thinking about learning and development. We will meet Piaget in Chapter 5 Big Theory 2 Piaget and the constructivists.

Reflecting the question of continuity and change in learnin, Siegler (1998) suggests that these two ideas come from the ways in which development is studied. If we look at the development of the ability to understand something, plotting actual changes carefully over time, it may look continuous. He suggests that this is because the changes may be very gradual. In the classroom where we see the same children and young people everyday, the changes are sometimes imper-

ceptible. It takes a break for us to notice that they are getting bigger and more skilful. Suddenly after the Easter break, there seems to be much less space in the classroom because, without us noticing, they have got bigger. Or we notice that some students who had sought help with tasks no longer need this.

At the same time, if we look at development at a given age, it may look discontinuous. Individuals in the same class can differ widely in what each of them can and cannot do. We expect that as learners get older they will know and be able to do more in the subjects that are taught. This means that when we look for individual development in literacy and numeracy at 7, 11 and then at 14, we expect to see differences.

Perhaps both aspects of development are happening at the same time. Some aspects are smooth whilst others occur in jumps. Certainly many young adults, but not all, seem to grow in spurts. All at once, it seems, clothes that were a good fit the week before are now too small. Some children at 12 seem just that, still children, others at the same age are young men and women. You may have noticed this when children are learning to read as well. One week Shamir is struggling to recall sight words, the next it seems she knows many more. Learners sorted in sets to match their learning needs at the beginning of term have remarkably different achievements after five weeks. If we are interested in particular aspects of learning these are what we will notice and what will influence what we do. It is what we choose to pay attention to that influences what we see. This is why in the moment by moment assessment that goes on in teaching, the more careful our assessment the more likely it is that our teaching will match the needs of learners.

Stability or change?

If you are friendly, are you friendly in the same way throughout your life? Or are you more friendly at some times and less friendly at others? If the answer to the first question is 'yes', then some aspects of development are stable. If the answer is 'no', then some change is clearly part of development. Freud and Erikson, in different theories, suggest that the warmth of the relationship between parents and children has a long lasting effect on some aspects of personality. Early experience, they both suggest, is the key – popularly you will hear a mother saying about a daughter, 'I was just like that'. Even so, just because it is observable and seems to be common sense does not really make it into a sound theory.

In most classes quiet, middle achieving learners are least memorable. Ask

Task 1.3 What is development? Evidence from pictures

A picture can be worth a thousand words. For this task you need to collect pictures of one person, perhaps you or someone you are close to, taken over the years. Assemble them in date order. Your first sort through may be guess work! See if you can put the baby pictures together. Is there a picture of the person as a toddler? If you've been lucky, there is often a picture for every year the person was at school. Are there pictures with different settings? Are there holiday pictures?

Now look at the sequence carefully. What do you notice? If the person is you, you'll have lots of additional information as well. You'll know what it felt like to be you in at least some of the pictures. If it is someone you know well you can ask him or her about the pictures. What memories are triggered? Use the sequence to think about growth and development. Think about a statement that you can make about physical growth from the picture evidence. Are there other statements you can make? Using our own stories is a useful starting place for thinking further about some of the questions about development.

It is interesting to think about how childhood is understood through the use of pictures. Our own experience of childhood is not the same as those of earlier generations. If you go to the National Portrait Gallery (www.npg.org.uk) you can search through 700 pictures of children by going to and using the 'search the collection' link to children. Here you'll see how previous generations viewed childhood. You will notice that until quite recently children were seen as miniature adults.

A final source for this task is TV images. These give us some ideas about childhood in other cultures. Bart Simpson gives us ideas about childhood in the US. News pictures give us ideas about childhood in a variety of countries, not always in the happiest of circumstances. If you watch out for pictures of childhood you'll begin to see them everywhere.

anyone who teaches whose names they learn first and it will almost always be the individuals who draw attention to themselves. Often it will be the noisiest, the learners with the most difficulties and the cleverest whose names are recalled. This view of these learners can persist throughout their school days. If the learner is thought of as 'noisy', is it because he or she really is? Or is it because we think of him or her as noisy? And if thought of as noisy, does the learner act up to our expectations? Perhaps if we start to think of the learner in a different way then there will be subtle changes in our attitudes and expectations towards them. Or has the learner changed? Or because our idea about the learner has changed do they respond to the slight differences in our way of treating them? These ideas about stability are remarkably complex once we start to think about them.

Box 1.3 Stability and change

Challenges to 'common sense' theory come from sources such as research into the dreadful experiences and disrupted lives of orphaned Romanian children (Rutter et al., 1998). The children studied were re-homed with British families. Many of the children in the study were identified as having many problems. One aspect of the study looked at physical growth. The Romanian children were considerably behind the milestones in growth of a group of British children of the same age. What the study revealed was remarkable and rather unexpected. The re-homed children caught up with the British children with whom they were compared. They became physically similar very quickly. However, it is not yet possible to know what effect the early deprivations the Romanian children suffered will have long term.

How is theory developed?

The recurring themes that developmental psychologists ask are about empiricism and nativism, continuity and discontinuity, and stability and change. These days they seek to study the interplay between apparently conflicting ideas. They find answers to questions through a variety of methods. A good theory will be both valid and reliable, and the research that arises from this theory will stand up to close scrutiny. It will be the subject of debate, as the exploration and

scrutiny of ideas is a central academic discipline. One researcher will challenge another's work. Another researcher will build on the original research to gain even more understanding about what is being studied. This work is made available through academic journals, which can often these days be read on the internet. Later come definitive books in which the theorists explains the research that supports their ideas. And even later still textbooks are written which introduce a wider audience to some of these ideas. When teaching teams (teachers and teaching assistants) meet the ideas from research they may start to think about what they do with learners, how the research supports or challenges the things we do with children and young people.

How is theory used?

In school and other settings the ideas, the pictures that spring to mind when we think about growth and development, are influenced by our own experience. You will hear comments like:

- 'He's big for his age.'
- 'He behaves like a much younger child.'
- 'Typical teenager, can't stop being loud.'

How accurate are these remarks? If we think about it, some may be, indeed are, suspect. We might want to question whether all teenagers are loud all the time. Nevertheless, we do go on making judgements in our daily dealings with children and young people. This is part of our role, we have to make these assessments in order to make decisions about how to teach. When we seek to make careful objective observations and then try to match these against the development milestones we are using, we are being empirical. Then we can make normative statements, 'he is big for his age', because there is evidence to support the comment. We know that young children may scream to get attention but, as they get older, we would expect that this behaviour will be replaced by requests for help.

We have expectations about appropriate behaviour and learning. These expectations are related to both how old the learner is, their gender and how bright he or she appears to be. We have ideas about how to group learners, by gender, by age, by ability. As well as this, our underpinning theoretical knowledge about what can be done in school subjects supports us in the daily round of teaching and learning. The teaching cycle uses information based on research about learn-

ers and our reflections about what they can do and should be able to do, to inform the choice of learning strategy.

Summary

Theories are important to each one of us. They influence what parents do with their children, regimes in hospitals, what to do with orphans, how to let play happen and how to teach children in schools, nurseries and the clubs and societies we run. This may not have been the theorist's intention. It may be one of the spin-offs from a theory that has given ideas about how children should be reared. Nor is this process of moving from theory to action straightforward. Knowledge that comes from theory changes over time, what was accepted practice at one time would now be thought of as barbaric. What we do today may not be what we will do in a few years time, as it too may then seem outdated and strange. Empiricism and nativism, continuity and discontinuity, stability and change are central themes in the study of psychology. These are examined and re-examined by theorists and researchers in the search for a better understanding about development and learning. We use this information in implementing the cycle of teaching.

Further reading

The themes addressed in this chapter are central ideas in developmental psychology. This means that all the textbooks have chapters about these themes. Here are four examples.

Bee, H. and Boyd, D. (2004) *The Developing Child* (10th edition). Boston: Allyn and Bacon/Pearson.
This is a standard textbook for students in America on teacher training courses. It is accessible and useful. (A new edition of this book (11th ed) is due in 2007)

Coleman, J.C. and Hendry, L.B. (1999) *The Nature of Adolescence* (3rd edition). London: Routledge.
An excellent textbook for anyone interested in teenagers.

Keenan, T. (2002) *An Introduction to Child Development.* London: Sage
A textbook for psychology students. Chapters 1 and 3 expand on the material presented in this chapter.

Hewstone, M., Finchman, F.D. and Foster, J. (eds) (2005) *Psychology*. Oxford: Blackwell.
This is the introductory textbook prepared for the British Psychological Society for students studying psychology at university. Chapters 1 and 2 provide a comprehensive introduction to the science of psychology and its methodologies.