

## 2 Intelligence and Ability

This chapter will:

- Provide a simple explanation of what learning is
- Introduce the idea that there are several ways of learning
- Explain why the popular view of intelligence is unhelpful
- Introduce the notion that we are able to think in different ways, according to the demands of a task

When most people think of learning they think of old style learning by rote – what used to be called ‘learning off by heart’. This usually consisted of repeating something – a mathematical table or a few lines of poetry, for example – again and again until it stuck in one’s brain. This is a skill that has diminished in importance, partly because fewer examination or curriculum documents call for it in the way that they used to and partly because advances in research into constructivist approaches to learning have meant that actually this form of learning is now regarded as somewhat superficial and inferior to deep-level learning that is characterized by a change in the learner’s behaviour or understanding. That said, it is still a very important thing to be able to do in certain circumstances. Actors still need this ability to deliver lines on stage and any examination will call for a certain amount of rote learning even if this information needs to be applied to new contexts. The wider interpretation of learning is a more complex process that involves many more types of activities than the colloquial use of the word would suggest.

### The learning process

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Learning implies and involves change. Most typically, this will be a change in behaviour as a result of an experience – in formal settings this could be a study experience. This change could be a new-found skill or simply a new way of thinking about something. There are competing theories about how this happens. There are two ways of understanding the learning process. We can see it as the effects of external stimuli on the mind that produce particular results. The stimuli can either be positive (such as praise and

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rewards) or negative (such as deprivation or punishment). Alternatively, we could see learning as a process of gaining insights through socialization (in college, in conversations) and by application of these ideas to 'real life'. From your point of view it is not necessary to come down on the side of one theory or another, but you may want to bear both in mind when you construct learning activities for yourself and think about those that have been arranged for you. Two major changes have happened in the field of education in the past thirty years or so and both relate directly to you as an adult learner. First, there has been a significant reappraisal of what is regarded as intelligence. Secondly, it has become generally accepted that individuals are able to learn in rather different ways and that people may have strengths or weaknesses in particular areas.

We often, quite wrongly, reduce the learning process into two simple ideas – the subject matter or content of what is learned (the history of eighteenth century portraiture, for example) and the ways that we learn that subject – the processes that are often reductively known as 'study skills'. The latter description rather skims over what is a highly complex process and it is worth our while to spend a little time really considering what it means to think about something and the different ways that we might think about different subjects. Learning happens when we bring experience and new information to bear on a situation or problem and apply the results in the future. Although this is a useful starting point it does not adequately describe all the unprompted thought processes that take up a lot of energy and which sometimes interfere with the problem-solving process and sometimes help enormously. It is a good working definition to use in this highly complex and difficult area.

## How intelligent are you?

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The answer to this question is two-fold: it is very difficult to reach a conclusive answer and it doesn't matter anyway. It used to be thought that we were all born with a fixed amount of intelligence or brain power and that amount was pretty much unalterable. This was known as our intelligence quotient (IQ). As Gardner explains (1999), the French psychologists Binet and Simon were approached by the French Ministry of Education in the early part of the twentieth century with the request that they should design a test that might help government officials to make statistical predictions about the levels of success or failure of the large numbers of children who were migrating with their parents to the French cities. The idea was exported to America, where instead of being restricted to an instrument used to measure patterns of success or failure it was quickly developed into a way of measuring individual strengths or weaknesses. As such the idea of the individualized intelligence quotient was born. This idea still holds a good deal of sway with some psychologists and educationalists and there are tests you can take in order to discover your own intelligence quotient. The average IQ score is said to be about 100. This notion of fixed intelligence lies behind the ethos of organizations such

as MENSA as well as, indirectly, selective education systems such as grammar schools and the notion of 'elite' universities – the so called 'Russell group' universities in Britain and the Ivy League schools in the United States.

The idea is that our IQ is influenced by our genetic inheritance in the same way as hair colour and facial features are inherited from our parents. If one of our parents is talented then, it is argued, we are biologically pre-determined to inherit that intelligence, and the contrary if neither of our parents is academically talented.

Although this theory held a good deal of sway in the middle of the twentieth century and still has influence, there are major problems with it. First, the theory is not as 'scientifically neutral' as it pretends to be but is, in fact, culturally specific. The tests are dominantly based on mathematical and linguistic skills. These things can be taught and it is possible to increase somebody's IQ score with the right teaching, which causes big problems if we regard it as a true test of ability. Secondly, developments in child psychology have shown us that the influences of a child's brain are crucial in the first few weeks and years of life in determining how that brain develops. In other words, it is not the brain that we are born with that counts but how that brain develops in response to our experiences. All of this means that the notion of the IQ as something that is fixed and neutrally measurable is built on rather shaky foundations. The third problem with the notion of IQ is that it is very narrow in terms of what it actually measures. It measures an individual's ability to work with words, numbers and, to a certain extent, spatial concepts, but it ignores all the other types of intelligence that are required to, say, create a beautiful picture or to win a gymnastics competition and this leads me to the next point – the existence of multiple intelligences. The possession of a high IQ score does not in any way guarantee one's ability to think independently or with integrity or to be flexible or appreciate beauty – it simply records one's ability to score well in an IQ test. Tony Buzan (1974) tells us to regard IQ tests as 'games or "markers" of a current stage of mental development in a few specified areas'. In other words, they have their uses but should not be regarded as the ultimate indicators of our intellectual worth.

## Different kinds of intelligence

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Among others, Gardner (1999), the eminent cognitive psychologist, has argued that far from there being just one intelligence, there are perhaps as many as nine types. These include: linguistic; mathematical; spatial; naturalistic (which enables human beings to recognize, categorize and draw on features of the environment); interpersonal (the ability to relate to and empathize with each other); intrapersonal (the ability to recognize and name our emotions and to 'manage' our feelings); musical; and bodily-kinaesthetic. Another possible type of intelligence is loosely known as existential intelligence – this is a concern with the bigger questions about life – and the linked concept of moral intelligence – a contentious concept because we have no fixed definition of what morals

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are. As an older learner you clearly have access to much more access to experiences that allow you to develop the emotional dimensions of intelligence – interpersonal, intra-personal, existential and moral intelligences. This makes the work of Gardner helpful and potentially liberating for adult learners and, for all of the criticisms of his detractors, it is a useful starting point for discussions about how to get the most out of learning situations. He has developed a battery of tests that can help you to understand where your strengths lie. He also argues that not only does it benefit the learner to understand what strengths she has but also that as a society, and especially the educational establishment, we need to reappraise our understanding and categorization of intelligence to incorporate a much wider view. As with all the different categorization methods for learning styles and intelligences, it is very important to remember that they are not genetic blue-prints and that they represent indications rather than prophecies for behaviour in any given learning situation.

## Different ways of learning

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Along with the work in the late twentieth century that went into creating a new understanding of intelligence there has also been a good deal of development in the understanding of the process of learning. Not only do we all have intelligences in differing degrees but they have a big impact on how we learn and we all learn differently.

Linked to the theory that there are multiple intelligences is the idea that we all learn according to our own particular strengths and weaknesses. That is to say, that there are particular differences in the configurations of our minds which mean that we process information differently and that there are ways of working that we prefer over others. There is much debate about whether these differences are innate (we are born with them) or if they are a product of conditioning (we acquire them through experience), but the argument goes that we are all subject to these individual differences and therefore it is beneficial to all of us to understand what our personal learning style preference is and to organize our work accordingly. In the end, it does not really matter what we think about where these preferences 'sit' or about whether or not they are 'real'. The concept is only useful in so far as it makes the learning process more accessible for us, all other discussion of their existence is purely academic. If you take a skill such as learning how to drive a car you can see that an over-reliance on the preferred learning styles and multiple intelligences theories would be of limited value in the long run for the learner driver. Imagine a learner who has discovered that her dominant strengths are linguistic and interpersonal and therefore she aims to adapt all information to herself in this way. As such she might read a book about learning to drive a car and develop effective relationships with other car drivers and her driving instructor. All of this is of limited use to her until she is able to actually get into the car and drive it. So her other sources of information are fine as peripheral, supplementary skills but until she actually has the opportunity to get behind the wheel of the car, they will remain redundant.

## Theories of learning style preference

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The first notable thing about learning style theories is how many of them there are, and it is worth saying at this point that there are many competing ideas about the value and validity of each theory and that none is the 'right' one. The aim for all learners, whatever their style, is to build up a wider repertoire of learning styles so that they can become effective learners. Effective learners generally are able to learn from mistakes and to stick with a study programme even in the most trying circumstances. Here are some the characteristics displayed by effective learners:

- **Able to try out different types of academic tasks**
- **See themselves as the main agent in the learning process**
- **Demonstrate understanding of the prior context and are able to apply that understanding to present learning**
- **Understand that learning involves anxiety and are not daunted by that anxiety but instead use it to enhance the learning**
- **Able to focus on a long-term goal and to incorporate the challenge of the new learning situation into the understanding of the bigger picture**
- **Able to select the specific strategies from a repertoire of methods and techniques**
- **Able to draw on their personal and life experiences to reflect on academic problems and develop independent and self-confident approaches to new situations and subject matter**
- **Resilient and reflective.**

So, these eight points describe what you are aiming for – it is up to you how you go about achieving it. Multiple intelligences and preferred learning styles theories are not ends in themselves – simply routes towards becoming an effective learner.

All of this means that before we go any further you might find it useful to try to gain a good understanding of your particular learning style in order to see how you can use it to your best advantage in your learning. To return to our learner driver, once she has created the opportunity for herself to learn how to drive, she can then employ what she knows about her strengths and weaknesses to break down information given aurally into small chunks and to spend some time working out what the diagrams and pictorial representations in the driver's handbook mean so that she can transcribe them into verbal information. She will only learn effectively,

though, if she can apply this new information to old knowledge and to make sense of her current context.

## Working with your mind

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The brain is an incredible piece of equipment – so powerful that even with all the scientific advances of the twentieth century, there is still much more that we do not know about the brain than what we do know. Given its awesome power and complexity, it is curious that we do not spend any time at all in learning how to use it and work with it. Instead we see ourselves as slaves to our brains, subject to each uncontrolled thought that it throws up and victims to the way it runs wild. In Chapter 1 I explained that not all learning is formal learning and if you pause for a minute to consider all the things that you have learned informally you will be staggered by your brain's capacity to learn. Think about phobias or other irrational anxiety conditions, for example. No explicit teaching has gone into somebody's fear of trains, for example. It probably may have only taken one episode or a single bad experience and even that may have been a vicarious one – hearing a story of how dangerous trains can be from a parent in a sufficiently colourful way would be enough to trigger an extreme response in a vulnerable person and for the phobic person to develop their fear. This shows you how rapidly the brain can process information when it has to and how fearsomely it holds onto that information once it is there. The learned behaviour, if unchecked, can go on to have a profound effect on the way that the person defines himself, thinks and, ultimately, lives his life. Clearly, the development of an irrational fear of trains is not helpful for the commuter and so the challenge is how to turn this tremendous capacity for learning into a helpful experience. There is a very good case to be made for learning to manage our minds and not be managed by them. Try to see your thoughts as products of your mind rather than *being* your mind.

Once you have worked out whether you prefer to learn in a visual or an auditory way then it is very helpful to use this information to structure your revision and study sessions. If you are unsure or unconvinced about the preferred learning styles information then you may want to associate something from each of the three main domains – visual, auditory and kinaesthetic – when you have a very important fact to remember. This model is usually attributed to Colin Rose (1985).

Whatever your preferred way of working, it is worth noting that writing is a very linear way of working and it is quite limiting for the brain to work in that way. You may want to experiment with using a range of visual images in a scrapbook style of presentation in order really to work well with your mind and the subject matter. Try to present the knowledge that you are seeking to understand in imaginative and artistic ways in order to take it in as effectively as possible.

## How do you prefer to take in information?

The following self-assessment exercise is designed to help you understand how you learn best as an adult. It has been adapted from the work on visual, auditory and kinaesthetic ways of learning put forward by Rose (1985) and Dunn and Dunn (1978) among others as well as being influenced by Gardner's aforementioned work on multiple intelligences. Complete the exercise and then look at the answers, which will give you a basic understanding of how you prefer to take in information. We will use the diagnosis as a starting point for finding out how you see learning in general and are able to get the best out of all learning situations.

### How Do You Prefer to Learn?

#### *Answer A, B, C or D to each question*

- 1 You know that you will be making a journey to a wedding in a place that you have never been before. It is important to you to be on time so you need to get directions before you go. How would you prefer the directions to be presented to you?
  - A In the form of a conventional map – perhaps with the route highlighted in coloured pens.
  - B In clearly written bullet points with no map accompanying the directions (for example, 'At the end of the road turn left where you will see a sign pointing to the church ... etc.')
  - C By listening to well-spoken instructions from somebody you trust that you are able to memorize – a real luxury would be to have the instructions on tape or spoken from a computerised GPS system in the car.
  - D You would never rely on luck for such an important event. You would have made a special effort to do a practice run first – you have to know how the journey feels – remembering each twist and turn – before you can commit it to memory.
  
- 2 You are meeting a delegation of guests to your town from a foreign country. They speak a language that you have never learned before but you want at least to show them that you want to learn more about their culture and you ask them to teach you a couple of common courtesies in their language. How do you learn the words most easily?
  - A By seeing a picture of what the word is describing at the same time as it is spoken – for example a picture of shaking hands when the word for 'hello' is uttered.

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*(Continued)*

- B By seeing the word itself written down in the foreign language – with the translation in your own language directly beneath – when the word is spoken.
- C You pick it up quite easily just by listening to how it is spoken and repeating it.
- D You are helped enormously by doing the accompanying action – for example shaking hands as you say the word for ‘hello’ and nodding your head slightly when you say the word for ‘thank you’.
- 3 You need to go shopping but you have come to the shops without the list that you made the previous evening so you have to remember everything that you need. How do you do this?
- A By picturing each of your partially empty cupboards at home and buying what is needed to fill the spaces.
- B By picturing the list itself – or as much as you can remember of it.
- C By saying a couple of the items that you can remember aloud – it jogs the memory for the rest.
- D By thinking about the week ahead and how you will need to buy things to satisfy your hunger etc. and sort out the stain on the carpet – you imagine yourself kneeling down to work on the stain and feeling hungry after doing the late shift on Tuesday evening, for example, and buy your purchases accordingly.
- 4 How would you best like to learn about a historical event?
- A By visiting a photographic or art exhibition about it.
- B By reading a well written article about it.
- C By listening to an inspiring lecturer (on the radio or real life) discuss the events.
- D By visiting a historical place associated with the event (such as a battleship or a stately home) and getting a feel for the place and the events that happened there – smelling and imagining what it must have felt like to be there at the time.
- 5 You are planning to go on holiday or to visit a new area for the first time. You are interested in getting a feel for the place before you go. How would you choose to do this?
- A By studying maps and pictures of the area.
- B By reading guide books and articles about the area.
- C By listening to the music of the area and talking to people who know about it.
- D By getting a feel for the culture – perhaps by sampling the sorts of foods that might be available out there.

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- 6 You have set yourself the challenge of learning how to cook quite a complex meal. How would you prefer to do it?
- A To have a picture of the finished article with staged instructions with diagrams to take you through the process.
  - B Through a traditional recipe book.
  - C By listening to instructions – on the radio or from another person.
  - D After reading some initial instructions using your own common sense to estimate the quantities and relying on tasting the meal at every stage to guide you through the process.
- 7 You have plans to re-decorate your living room in a new colour scheme. How would you go about the process?
- A You love this sort of activity – you will have a good look at source books for ideas and match the colours to give the right appearance and then throw yourself into the process.
  - B The whole process bores you. You like looking at magazine articles about styles and colour schemes but when it comes to doing the job you do your utmost to find somebody else to do it!
  - C Your taste is quite conservative but you find the process very restful – you like nothing more than a couple of days with the radio on as you do the painting.
  - D You are fine as long as you understand what the room is used for and have a feel for what it is going to be like. You may not be the world's most creative interior decorator but you have a very steady hand and you enjoy the physical process of painting.

Count how many answers you have in As, Bs, Cs and Ds.

### **Analysis of Your Answers**

#### **Mostly As**

This preference is for taking in information **pictorially**. If this is your style then you probably work very well with images – maps pose no problems for you and you enjoy looking at photographs and diagrams in order to make sense of a subject. This is a great advantage for you if you are studying subjects that rely on a high concentration on visual information. When you are studying for subjects without this amount of visual stimulation you might consider finding ways of integrating it.

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For example, you might want to draw images of ideas that you want to incorporate into an essay, before using them to construct a plan that might be arranged in different coloured sections to show your thought progressions. It might also be worth your while to find accompanying visual images to help you to process and remember new chunks of information. If you are learning about an abstract concept – such as romanticism in literature and poetry – it will be of enormous help to you to know how the movement manifested itself in painting and by looking at works by Turner you will get a better understanding of the concepts described. The knowledge that you deal with visual images particularly well may also persuade you to incorporate visual presentation of complex information in your own work – try using graphs and diagrams to illustrate your ideas as well as written text, for example. Mind mapping (see the suggestion in the further reading section at the end of this chapter) may be particularly useful for you.

**Mostly Bs**

This preference is for taking in information **textually** – through the written word. This is good news if you are working on a course that involves a good deal of reading and writing. You will thrive on textual work and you may feel that you need to annotate books – or underline key points. You will probably have the feeling that you don't really get to know about a subject until you have written about it. You may find working with maps and graphs quite difficult, by contrast, and you may feel completely lost when you have to take in information purely aurally, without any written prompts. You may have had the experience when working with a second or third language that you need a word repeated several times before you can fully take it in and repeat it. When dealing with a written version of another language you may feel much happier, though. You may want to consider incorporating written work and reading texts into other types of work. Creating your own study diary – to run in parallel alongside the rest of your assignments – may be of great help when you are in study situations that provide scant opportunities for working with the written word. You can also capitalize on your ability to interpret texts by reading supporting materials for any abstract subject. So if you are working on geographical phenomena such as river erosion, for example, and having to deal with a lot of graphical representations (diagrams, cross-sections of river channels and photographs as well as statistical graphs representing erosion rates), then support your understanding of the concept by reading around it – in textual explanations of the phenomenon. Also, you might want to 'pin down' your knowledge as it progresses by 'translating' the visual images into your own words and attaching a statement to each of the images.

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### Mostly Cs

This is a way of working that prefers to process and remember information in **audio** forms – in other words, learning by hearing and talking. You have probably already noticed that you are able to ‘pick up’ points very quickly in lectures. You are also quick off the mark with your responses to what is said to you in conversation. You can recognize tunes and people’s voices rapidly and you may find that you are able to understand foreign languages quite quickly – more quickly than other people if you are all in a new country together. The downside of this way of learning is that you may find staring at stationary, silent images – such as pictures and texts – rather boring and difficult. This is a nuisance if your chosen path of study involves a lot of reading and examination of figures and diagrams. There are many ways that you can capitalize on your strengths. Try to use your own voice to help you to commit ideas and facts to memory – invest in an mp3 player or a tape recorder so that you can record yourself reading from notes or a text and then play it back to yourself like a lecture. You may also find that you are able to make good use of a dictaphone. This useful piece of equipment will enable you to make an audio collage of your early ideas about an assignment – simply speak all your ideas into the dictaphone as they occur to you. Then, as you play it back, try to order them using images or text. So if you have been asked to write an assignment about religious festivals use the dictaphone to record all of your immediate and deeper thoughts about the topic. Don’t rush this – the longer that you spend on it the better it will be. Do not try to censor your ideas at this stage – you can do that later. The point of the exercise is word association so the more links that you can make in your imagination the better. Now you can either play it back or make a plan on a piece of paper or your computer – as described above – or you can listen to it again – just jotting down the most important ideas. Using this *aide-mémoire* you go back to the dictaphone to structure these ideas into a more detailed plan. There is some evidence that the use of music can be beneficial for certain kinds of intellectual endeavour. To this end you might want to experiment with using background music (but not a radio station that has a lot of talking as part of its output because this will distract you) to help you to work when reading and writing.

### Mostly Ds

This learning style is what we shall call the **action-orientated** preference. It means that your mind–body connection is particularly close and that physical experiences help you to learn. You learn best by feeling what it is like to smell, taste and move in the ways that the subject matter dictates. You probably have very good hand to

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eye co-ordination and you are able to remember dance moves reasonably easily. The downside is that you may feel bored and restless when working on more stationary pursuits such as reading and writing and listening to lectures. There are ways that you can use this preference to enhance your learning of even the most bookish of subjects. The main thing is to incorporate movement of some kind (real or imaginary) into your thinking about a topic. So if you are working on writing a response to the poetry of Shakespeare you might walk up and down in the rhythm of the lines of text. The field trip was made for learners like you – try to build in opportunities for yourself to go to places (museums, foreign countries, geological formations, etc.) to actually experience what the knowledge means in situ. If you are writing a discursive essay about a contentious issue – such as the use of fossil fuels – you might want to write your thoughts down on separate cards, rather than one piece of paper. Then, as you develop your ideas about the reasons for and against increase in the use of fossil fuels you can literally move the cards around to demonstrate the opposing points of view. You may feel deprived if you simply restrict your learning to the times when you are sitting on your own in silence at your desk. So try to incorporate your learning into your daily activities – particularly walking.

## Using your learning style preference

The categories above should give you some idea of where your strengths lie. If you read through all of the descriptions you may also have some inklings of where your weaknesses might be. There are two ways of using the information.

- 1 You can do your best to convert as many learning situations as possible to ones that incorporate your learning style. So, for example, you find ways of replacing text with pictures and diagrams if you are a pictorial learner.**
- 2 Alternatively you use the understanding of where your strengths and weaknesses lie to manage your time more effectively. It will be impossible to expect all the information that you need to be presented in your own preferred way. But when you are faced with a situation where you need to work in the opposite way that you would choose to do (say you are a text-based learner who needs to learn in an action-orientated way, in the process of learning to drive, for example) you can use the knowledge of your preference to allow yourself more time and to be**

**kinder to yourself when you find those activities more difficult. Go through the test again and this time indicate the worst way of working for you in each category – this will give you your opposite type and an indication of the situations that you will find the most challenging. In some ways this information is the most valuable.**

It is important to remember in any discussions about learning style preferences that they are just a construct – a way of seeing and categorizing the world that makes it understandable to ourselves. They are not ‘real’ in the sense that we have a gene that makes us, say; a text-based learner and nothing else. Rather it indicates the way that our mind has developed over a number of years and it describes the way that we prefer to work – given a number of options. It does not mean that we cannot work in any of the other ways and indeed it is useful for us to continue to develop these other skills all the time – but it does mean that we probably find the other ways of working quite hard. So this is information that you can use to enhance your studying – it can allow you to make the most efficient use of time and to work in the most productive way.

## **Study plans for the learning style preference**

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### **Preference A: the pictorial learner**

**Do:**

- **Try to find ways of representing information given to you in other forms as pictures, diagrams and graphs**
- **Try to find existing representations of knowledge in these forms**
- **Use mind maps and coloured spidergrams to revise and plan for assignments**
- **Make use of educational films and programmes to enhance your knowledge.**

**Don't:**

- **Involve yourself in prolonged work with pure text and no images**
- **Rely on radio or audio tapes as the main form of learning**
- **Beat yourself up when you become bored or tired when no visual images are to hand.**

## Preference B: the textual learner

Do:

- Make as much use of the library as possible
- Opt for essays and dissertation writing – it is your strength
- Use a learning journal or study diary – even if the tutors have not asked you to do so – it will help you to document your learning.

Don't:

- Rely entirely on visual information
- Listen to a lecture without making notes – even if you never go back to the notes you at least have made new connections by writing the words down
- Do anything without incorporating some text – even with a purely physical task try to make some notes about it.

## Preference C: the audio learner

Do:

- Use tapes and dictaphones to help you to remember knowledge
- Explore the use of classical music to work with
- Make as much use as possible of conversations with other learners.

Don't:

- Chain yourself to the desk and sit in silence while you study
- Miss opportunities to give yourself aural cues to jog your memory.

## Preference D: the action-orientated learner

Do:

- Use movement and dance to help you to remember things
- Get up and move around every so often as you are learning
- Try to visit real sites of knowledge in order to add depth to your learning.

**Don't:**

- **Get into situations where you are working exclusively with text on your own**
- **Get into situations where you have to sit still and listen to somebody speaking in an unsupported way. Build breaks in for your self (even by walking in and out of the room between lectures) to help with this.**

## Further Reading

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- If you are interested in the notion of multiple intelligences and would like to read more about it, Howard Gardner's work is certainly a good place to start because it is written for a wide audience. His self-assessment inventories are fun to do and can provide you with a sharper understanding of your own strengths and weaknesses than the outline given here. His 1993 version of the theory can be found in his book *Frames of Mind: The Theory of Multiple Intelligences* (London: Fontana Press). You might also be interested in the work of Tony Buzan about mind-mapping if you find that this technique works for you. His book *Use your Head* (London: BBC Books, 1974) is worth a look. Buzan is credited with inventing mind mapping, including methods for rapid and effective note taking, thinking and cramming for exams.
- If you are interested in pursuing the idea of learning styles you could look at a range of texts, including Honey, P. and Mumford, A. *The Learning Styles Helper's Guide* (Maidenhead: Peter Honey Publications, 2000) and David A. Kolb's work *Experiential Learning: Experience as the Source of Learning and Development* (Upper Saddle River, NJ: Prentice Hall, 1984). The latter argues that the four main ways of learning are concrete experience, reflective observation, abstract conceptualization and active experimentation.
- John Dewey's arguments about learning as a natural activity for human beings have had a good deal of impact on adult education ideas. His important work *Experience and Education* (New York: Collier Books, 1963; originally published in 1938) is a good place to start. He argues that effective learning connects experience with the subject being learned and that for the adult educator, helping adult learners to recognize the strength of their own previous experiences is quintessential to their progression.
- There are many theoretical approaches to learning but a good, short paper that provides a thoughtful and accessible conceptual overview is Watkins, C., Carnell, E., Lodge, C. and Whalley, C., 1996 *Effective Learning* in the National School Improvement Network's 'Research Matters' series of pamphlets (London: Institute of Education, Summer, 2002). The authors demonstrate that learning is an active process in which learners links new experience to existing meaning and may accommodate and assimilate new ideas as they do so. In the learning process past,

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present and future are connected, although this connection may not be simplistic or linear – people continue to unlearn and re-learn as they go along. They also stress that the intended future use of the learning is essential to the success of what is currently being learned.

- The work on visual, auditory and kinaesthetic approaches in this chapter is a highly simplified adaptation of the work of Dunn, K. and Dunn, R., *Teaching Students through Their Individual Learning Styles* (Englewood Cliffs, NJ: Prentice Hall, 1978). Their Learning Styles Questionnaire is comprised of 104 questions about a range of environmental, emotional and physical factors, of which visual, auditory and kinaesthetic are just one element.