

Learning outcomes

This chapter gives you opportunities to:

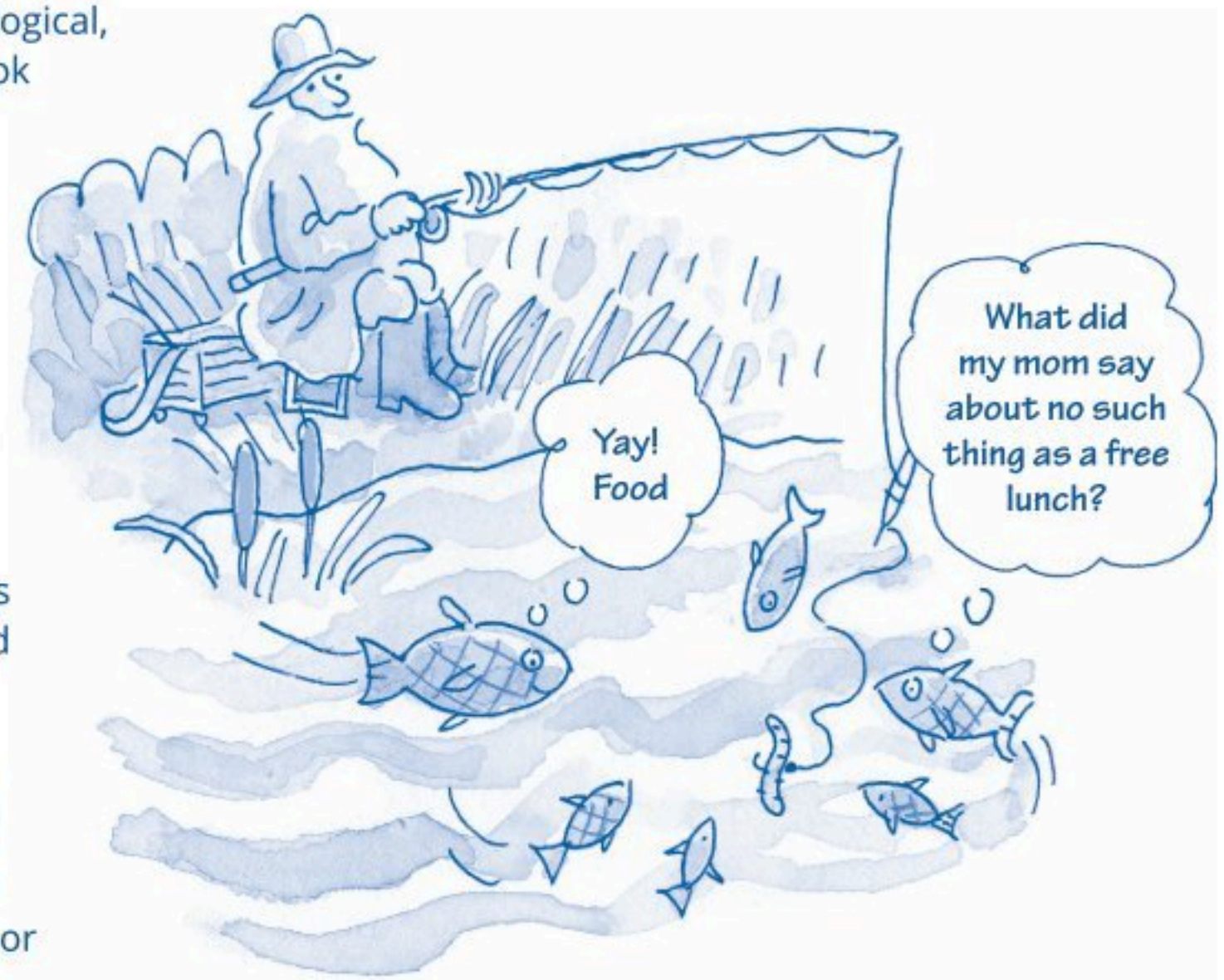
- ✓ understand what critical thinking is
- ✓ find out about the early roots, and later developments, of critical thinking, to better understand its characteristics and use
- ✓ recognise some of the benefits associated with critical thinking skills
- ✓ recognise the personal qualities associated with critical thinking
- ✓ recognise barriers to the development of good critical thinking skills
- ✓ assess your current understanding of critical thinking and identify your priorities for improvement.

Introduction

This chapter provides a general orientation to critical thinking. It examines what is meant by 'critical thinking', the skills associated with it, and the barriers that can hinder effective development of critical approaches. Many people can find it difficult to order their thoughts in a logical, consistent and reasoned way. This book starts from the premise that skills in reasoning can be developed through a better understanding of what critical thinking entails, and by practice.

Critical thinking is a cognitive activity, associated with using the mind. Learning to think in critically analytical and evaluative ways means using mental processes such as attention, categorisation, selection and judgement. However, many people who have the potential to develop more effective critical thinking can be prevented from doing so for a variety of reasons apart from a lack of ability. In particular, personal and emotional, or 'affective', reasons can create barriers.

You are invited to consider, in this chapter, how far such barriers could be affecting your own thinking abilities and how you will manage these.



What is critical thinking?

Critical thinking as a process

Critical thinking is a complex process of deliberation which involves a wide range of skills and attitudes. These include:

- 1 *identifying your own and other people's positions, arguments and conclusions;*
- 2 *evaluating the evidence for alternative points of view;*
- 3 *weighing up opposing arguments and evidence fairly;*
- 4 *selecting judiciously from sources, evidence and examples to support your case;*
- 5 *being able to read between the lines, seeing behind surfaces, and identifying false or unfair assumptions;*
- 6 *recognising techniques used to make certain positions more appealing than others, such as false logic and persuasive devices;*
- 7 *reflecting on issues in a structured way, bringing logic and insight to bear;*
- 8 *drawing conclusions (including decisions, judgements or recommendations) based on logically acceptable reasons and evidence, and valid inference;*
- 9 *synthesising information: drawing together your judgements of the evidence, synthesising these to form your own new position;*
- 10 *presenting a point of view in a structured, clear, well-reasoned way that convinces others.*

Critical thinking is NOT ...

just opinion, nor lists of facts, nor discussion, talking about a topic, 'thoughts on', nor what we want to be true, nor giving just 'any' reason to support a decision.

Scepticism and trust

Ennis (1987) identified a range of dispositions and abilities associated with critical thinking. These focused on:

- the ability to reflect sceptically;
- the ability to think in a reasoned way.

Scepticism in critical thinking means bringing an element of polite doubt. In this context, scepticism doesn't mean you must go through life never believing anything you hear and see. That would not be helpful. It does mean holding open the possibility that what you know at a given time may be only part of the picture.

Critical thinking gives you the tools to use scepticism and doubt constructively so that you can analyse what is before you. It helps you to make better and more informed decisions about whether something is likely to be true, effective or productive. Ultimately, in order to function in the world, we have to accept the probability that at least some things are as they seem. This requires trust. If we can analyse clearly the basis of what we take as true, we are more able to discern when it is reasonable to be trusting and where it is useful to be sceptical.

Method rather than personality trait

Some people seem to be more naturally sceptical whilst others find it easier to be trusting. These differences may be because of past experiences or personality traits. However, critical thinking is not about natural traits or personality; it is about a certain set of methods aimed at exploring evidence in a particular way. Sceptical people can require structured approaches that help them to trust in the probability of an outcome, just as those who are more trusting require methods to help them use doubt constructively.

Critical thinking and argument

The focus of critical thinking is often referred to as the 'argument'. Chapter 3 identifies the features of an argument in critical thinking. The argument can be thought of as the message that is being conveyed, whether through speech, writing, performance or other media. Critical thinking helps you to identify the obvious and the hidden messages more accurately, and to understand the process by which an argument is constructed.

Reasoning

Knowing our own reasons

Critical thinking is associated with *reasoning* or with our capacity for *rational* thought. The word 'rational' means 'using reasons' to solve problems. Reasoning starts with ourselves. It includes:

- having reasons for what we believe and do, and being aware of what these are;
- critically evaluating our own beliefs and actions;
- checking that our reasons are logically acceptable – not simply opinion or what we want to be true or to happen;
- being able to present to others the reasons for our beliefs actions and reasoning.

This may sound easy, as we all assume we know what we believe and why. However, sometimes, when we are challenged on why we believe that something is true, it becomes obvious to us that we haven't really thought through whether what we have seen or heard is the whole story or is just one point of view. There are also likely to be occasions when we find we are not sure what we consider to be the right course of action or a correct interpretation.

It is important to examine the basis of our own beliefs and reasoning, as these will be the main vantage points from which we begin any critical analysis.

Challenging our own assumptions

Our brains like to assume that they are right. Research has shown that we are wired to make quick assumptions – to take the easiest route to jump to the most likely conclusion rather than to slow down and examine our reasoning (Kahneman, 2011). This means we can easily miss essential information and omit relevant considerations.

Focusing on our reasons, and examining the foundations of these systematically, can help us uncover our assumptions. When we are more aware of these, we can test them out, too, in a systematic way.

Critical analysis of other people's reasoning

Critical reasoning usually involves considering other people's reasoning. This requires the skill of grasping an overall argument, but also skills in analysing and evaluating it in detail.

Critical analysis of other people's reasons can involve:

- identifying their reasons and conclusions;
- analysing how they select, combine and order reasons to construct a line of reasoning;
- evaluating whether their reasons support the conclusions they draw;
- evaluating whether their reasons are well founded, based on good evidence;
- identifying flaws in their reasoning.

Constructing and presenting reasons

Reasoning involves analysing evidence and drawing conclusions from it. The evidence may then be presented to support the conclusion. For example, we may consider that it is a cold day. Someone who disagrees may ask why we believe this. We may use evidence such as a thermometer reading and observation of weather conditions. Our reasons may be that the temperature is low and there is ice on the ground.

We use basic examples of reasoning such as this every day. For professional and academic work, we are usually required to present our reasoning using formal structures such as essays, or reports with recommendations. This requires additional skills such as knowing how to:

- select and structure reasons to support a conclusion;
- present an argument in a consistent way;
- use logical order;
- use language effectively to present the line of reasoning.

Critical thinking: Where does it come from?

Early beginnings

Dialectics

Although the term 'Critical Thinking' was not in general use before the twentieth century, its practice has roots in disciplines that date back thousands of years. The historical record for its earliest use is, itself, disputed.

Whatever its origins, critical thinking as used today developed from disciplines such as philosophy, logic and rhetoric. These drew heavily on ancient Greeks' interest in enhancing skills in argumentation, to reach philosophical 'truths' through formal discussion. Plato (c.427–347 BCE) referred to this process as 'dialectics'.

In Plato's work, the philosopher Socrates is presented in discussion with one or more people who present arguments to him, and continually refine these depending on his challenges and comments. The structure of such debates used a question-and-answer format – sometimes now referred to as the 'Socratic' form of teaching.

Argument strategy

In order to help participants to refine their reasoning skills and gain an advantage in dialectical debates, Aristotle (384–322 BCE) outlined systematic methods of planning an argument and using an argument strategy. He also detailed 22 kinds of false argument, or fallacy, used as persuasive strategies to 'win' arguments, but which did not follow the rules of clear, irrefutable reasoning. These are pertinent to analysing arguments today. See Chapter 7.

Skills of argument

Two skills regarded as essential to studying argumentation were:

- 1 Formulating an argument that can withstand challenge, *and*
- 2 Judging whether an argument is valid.

Obviously, skills in the second help with the first, giving a person tools to evaluate and refine their own arguments before proposing them to others.

Modern developments

Over time, there have been many new ways of looking at the skills involved in reasoning, and at the relative importance of formal logic and rhetoric. Increasingly, all students have been expected to develop their critical thinking skills, especially argument, analysis and, to some extent, synthesis, though few are now expected to study formal logic and rhetoric. Below are some key developments.

Hegelian dialectics

Hegel (1770–1831) advocated a structure similar to Plato's dialectics in order to advance philosophical arguments. Where Plato used a back-and-forth conversation between characters, Hegel set up contradictory sets of logical claims: reasoning challenging reasoning. A synthesis of the original idea and its contradictions brought one closer to truth. Hegel did not use the terms 'thesis' or antithesis. A much simplified variation of his dialectics, positing a first position, identifying contradictions and looking for synthesis, is often expected as a structure for argument in student arguments. The synthesis can become the basis of a new argument, when contradictions are raised against it. See p. 186.

Personal responsibility

At the turn of the twentieth century, the educationalist, Dewey (1859–1952), was concerned that in both education and society, there is a tendency for people simply to pass on 'ready-made' ideas in a passive way without taking personal responsibility for checking their validity. Dewey advocated training students in clearer thinking as a means of increasing personal engagement and responsible democracy. He argued that students should be able to follow a process that enabled them to work out for themselves whether opinions and arguments were reasonable, rather than just reciting what they heard or read.

During the twentieth century, there was an increased emphasis on clear thinking, reasoning, or 'critical thinking' as an outcome of education. This drew on the traditions outlined above.

Attitude, knowledge, skill

Edward Glaser (1929–2020) was influential in arguing that formal analysis could be applied to any context, and that logic was central to good thinking. He also added to developments in the field by arguing that critical thinking involved a combination of attitude, knowledge and skill:

- (1) an attitude of being disposed to consider in a thoughtful way the problems and subjects that come within the range of one's experience, (2)
- knowledge of the methods of logical inquiry and reasoning, and (3) some skill in applying those methods.

'Attitude' is often omitted from the teaching of critical thinking, although it could be considered an essential first step. See pages 7–18.

Context, goals, sub-categories

Robert Ennis has worked to clarify thinking about critical thinking itself. He emphasises the importance of context, goal, precision, authority, reliable observation and both deductive and inductive reasoning. He isolated three sub-categories of critical thinking:

- 1 the 'logical': being able to identify the relationships between propositions
- 2 the 'criterial': being able to evaluate claims
- 3 the 'pragmatic': being able to defend one's beliefs, and judge how precise or concise one needs to be, depending on the context and purpose or goal of the argument.

These are important concepts to critical thinking as addressed in this book.

Everyday reasoning

The application of formal logic can seem rather rigid or confusing for those not studying logic or philosophy. In the 1970s, educators and thinkers looked at ways of teaching critical thinking in ways that helped students consider problems relevant to modern life, such as pollution, poverty and the arms race. Kahane, for example, advocated a return to focusing on analysing fallacies (see Aristotle above, and Chapter 7). He applied this to analyses of persuasion within the media and advertisements.

Others such as Thomas (1973) promoted practice in mapping the structure of complex arguments, making

use of everyday language rather than that of formal logic; argument mapping is considered in Chapter 11. Johnson and Blair (1994) contended that an argument should be accepted as logically good if it met just the general criteria of acceptability, relevance and sufficiency. That is, acceptable reasons (relevant to the conclusion and likely to be true), can be considered sufficient for constituting a good argument.

These extensions in informal logic helped to make critical analysis of argument more accessible to students and employees from diverse fields. The critical thinking processes expected of most students today, and as outlined in this book, are in this relatively informal tradition – even if they appear rather exacting when first introduced.

Criticality and social justice

bell hooks (1952–2021) argued that critical thinking is important for everyone, and especially in enabling those who are less privileged in terms of power and material wealth to examine their situation and question taken-for-granted inequalities. hooks asks us to question whose voices are heard or silenced, and how narratives are constructed, such as when Hollywood films marginalise people for their class, sex or colour.

Critical race theory (CRT), a term coined by Kimberlé Crenshaw, highlights how racial inequalities are underpinned by legal systems, institutions and policies. Such social justice approaches use critical theory to argue for greater equalities. In effect, CRT challenges us to examine the premises on which many arguments, and the 'status quo', are based (Delgado and Stefancic, 2001). See also page 105.

Want to know more?



For background on Plato and Hegelian dialectics, see:

<https://plato.stanford.edu/entries/hegel-dialectics/>

For a short, illustrated video introduction:

<https://www.youtube.com/watch?v=BaRUZ81K8bk>

For Critical race theory generally, see Masiga, J. (2022).

<https://www.weforum.org/agenda/2022/02/what-is-critical-race-theory/>

Benefits of critical thinking skills

Sharpening our minds

As we have seen, we often assume that we have the full story, the right answer, or the best solution when that is not the case. It is easy to slip into simply repeating something we have heard, or describing what we have read, without much thought. We may consider that we are using critical skills when we are merely stating what we believe to be self-obviously true.

Such thinking leads to mistakes, weak understandings, unconscious bias, unfairness, and errors of judgement. Most of these won't be significant, but some could have serious consequences. Critical awareness sharpens our minds so that we are better able to identify where we need to slow down and apply more systematic critiques of our thinking processes and actions.

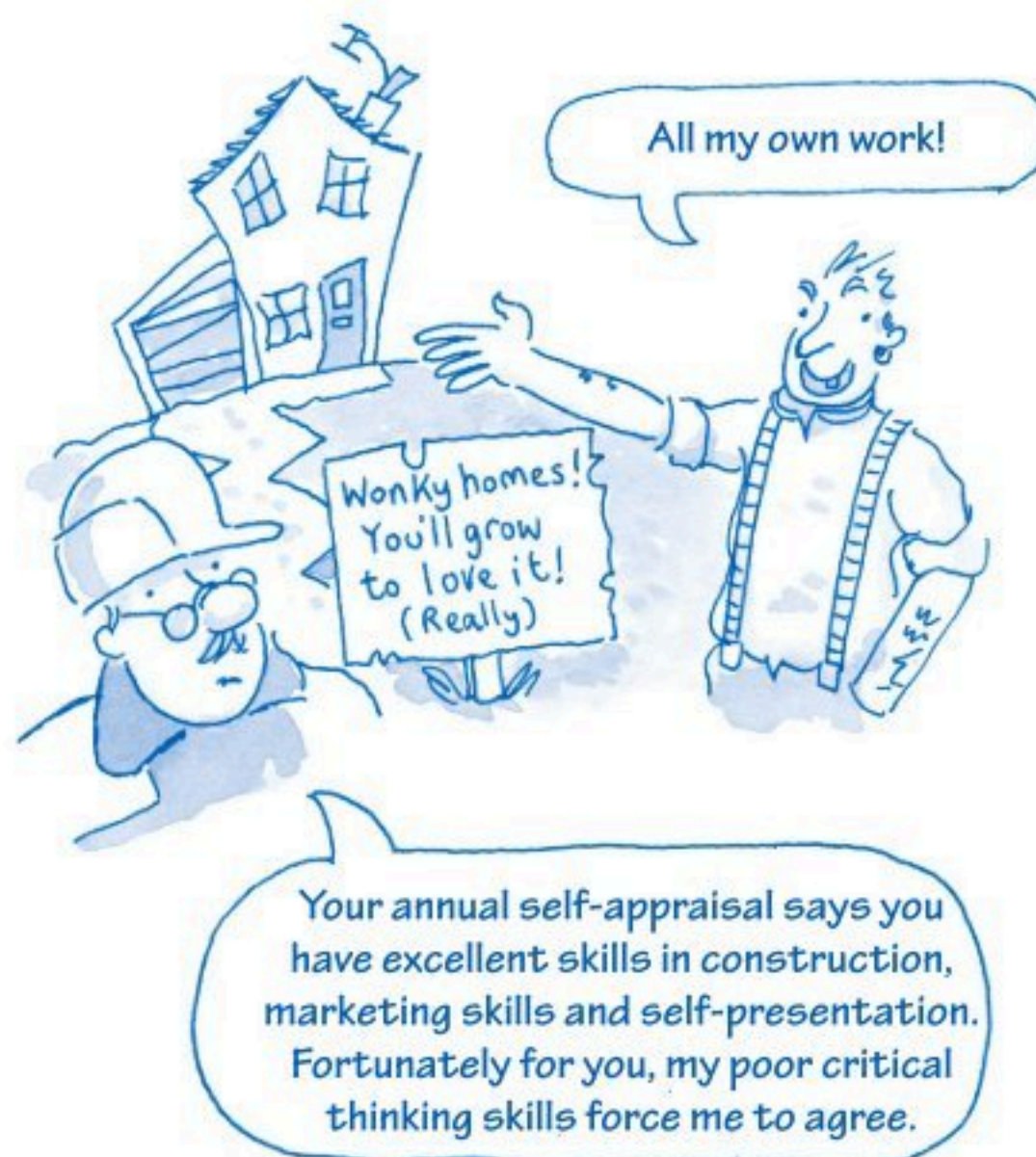
For academic and professional life

Advances in knowledge and professional practice are made through recognising where improvements can be made to what has gone before. This involves being able to break down existing understandings and practice into their component parts, such as what are assumed to be facts, or good evidence, or sound methods, or the assumptions made about how different pieces of information are connected.

Academic study and research-based enquiry require us to slow down our processing of information. The methodologies used for conducting research, and the feedback received from peers, help in identifying flaws in the way we arrive at conclusions. That has an impact on the speed, accuracy, efficiency, and fairness of our thoughts and actions.

Realistic self-appraisal

Good critical thinking skills, if applied well, can help us to make much more realistic and accurate appraisals of our own abilities, interests and thinking processes. This is useful in helping us to make decisions about where to focus our energies when looking for work, pursuing further training, or making life choices.



Benefits of good critical abilities

- 1 Ability to spot your own and other people's assumptions.
- 2 Ability to spot inconsistencies and potential errors that merit further investigation.
- 3 Ability to make fair, sound decisions.
- 4 Less likelihood of being misled or cheated.
- 5 Ability to notice what is relevant and significant – so saving time and effort.
- 6 Ability to bring greater accuracy and precision to different parts of a task.
- 7 Clearer thinking and communication.
- 8 Better problem-solving skills, such as in identifying where improvements could be made and evaluating potential solutions.
- 9 Ability to take a systematic approach, to ensure essentials are not overlooked.
- 10 Greater speed and accuracy in analysing complex information.
- 11 Confidence in taking on more complex problems and challenges.
- 12 Possibility of seeing the world through different eyes – with sharper awareness.

Underlying skills and attitudes

Critical thinking rarely takes place in a vacuum. Higher-level critical thinking skills usually require some or all of the skills and attitudes listed below.

Underlying thinking skills

Critical thinking assumes abilities in a range of skills such as categorising, selection and differentiation, comparing and contrasting. These skills are examined in Chapter 2.

Knowledge and research

Good critical thinkers can often detect a poor argument without a good knowledge of the subject. However, critical thinking usually benefits from background research. Finding out more about a subject helps you to make a more informed judgement about whether relevant facts, alternative explanations and options have been covered sufficiently.

Emotional self-management

Critical thinking sounds like a dispassionate process but it can engage emotions and even passionate responses. This should not surprise us when we consider that reasoning requires us to decide between opposing points of view. In particular, we may not like evidence that contradicts our own opinions or beliefs. If the evidence points in a direction that is unexpected and challenging, that can rouse unexpected feelings of anger, frustration or anxiety.

The academic world traditionally likes to consider itself as logical and immune to emotions, so if feelings do emerge, this can be especially difficult. Being able to manage your emotions under such circumstances is a useful skill. If you can remain calm, and present your reasons logically, you will be better able to argue your point of view in a convincing way.

Perseverance, accuracy and precision

Critical thinking involves accuracy and precision and this can require dedication to finding the right answer. It includes the following:

- *Attention to detail*: taking the time to note small clues that throw greater light on the overall issue.
- *Identifying trends and patterns*: this may be through careful mapping of information, analysis of data, or identifying repetition and similarity.
- *Repetition*: going back over the same ground several times to check that nothing has been missed.
- *Taking different perspectives*: looking at the same information from several points of view.
- *Objectivity*: putting your own likes, beliefs and interests to one side with the aim of gaining the most accurate outcome or a deeper understanding.
- *Considering implications and distant consequences*: what appears to be a good idea in the short term, for example, might have long-term effects that are less desirable.

Reflection



Emotional self-management

- Consider which emotions arise for you when others disagree with you strongly – especially if you might lose the argument or be unable to prove your point.
- How do you deal with those emotions? Do you need to develop a different emotional response?

For guidance and tips on emotional self-management, see Stella Cottrell, *Skills for Success* (2021).

Self-awareness for accurate judgement

Influences on our thinking

Good critical thinking involves making accurate judgements. We noted above that our thinking might not be accurate if we are not fully aware of the influences that affect it. These can include such things as our own assumptions, preconceptions, bias, dislikes, beliefs, things we take for granted as normal and acceptable, and all those things about our selves and our world that we have never questioned.

People who are outstanding at critical thinking tend to be particularly self-aware. They reflect upon and evaluate their personal motivations, interests, prejudices, expertise and gaps in their knowledge. They question their own point of view and check the evidence used to support it.

For each of us, those influences will be different. Our views will be affected by all we have experienced and all those with whom we have come into contact. Some of those influences will be more significant for us, either in general terms or in specific contexts or for particular issues. Early influences, the opinions of parents and carers, teachers, employers, people we respect, peer groups, recurrent images, popular media, what we read – all these influence us. These can be helpful. They also shape what we notice, how we interpret things, how we react, and so on.

Reflection

Influences on my thinking

Note down your thoughts on the following.

For me, the influences on my own thinking that I need to be most aware of so they don't prejudice my thinking are:

I will deal with these by:

Taking on the challenge

Becoming more self-aware takes courage. It can be unsettling to find out things about ourselves we didn't know, as most of us like to think we know ourselves very well. It is also challenging to question our belief systems. We think of these as part of our identity and it can be unsettling if we feel our identity is called into question.

Furthermore, the result of your critical thinking might place you in a minority amongst your friends, family or colleagues. Nobody else might interpret the evidence in the same way as you. It takes courage to argue an alternative point of view, especially when it is possible that you might be wrong.

The reward for this is that we are better able to make sound judgements. This can benefit assignments and grades. It helps in everyday discussions or disputes. It is of value when choosing a political party, career or future that suits us best, rather than simply following a trend, doing what others do, or relying on others' opinions.

Reflection

Challenging others' opinions

Note down your thoughts on the following.

For me, the things I find most difficult about challenging the opinions of other people are:

I deal with these by:

Want to know more?

For a more in-depth consideration of your self-awareness, whether for study, your career or for working with others, see Stella Cottrell, *Skills for Success* (2021).

Personal strategies for critical thinking

Below, three lecturers describe how they view critical thinking.

Lecturer 1

- I may make a quick first reading to get the overall picture and check my initial response. I see whether it rings true or contradicts what I believe to be true.
- I compare what I read with what I already know about the topic and with my experience.
- I summarise as I go along, and hold the overall argument in my head to make sense of what comes next.
- I look for the author's position or point of view, asking 'What are they trying to "sell me"?'
- As I read, I check each section and ask myself if I know what it means. If not, I check again – sometimes it is clearer when I read the second time. If it is still unclear, I remind myself to come back to it later as the rest of the passage may make it clearer.
- I then read more carefully, seeing what reasons the writers present and checking whether I am persuaded by these.
- If I am persuaded, I consider why. Is it because they make use of experts in the field? Is there research evidence that looks thorough and convincing?
- If I am not persuaded, then why not? I check whether this is a 'gut level' thing or whether I have good reasons for not being convinced. If I have relied on a gut response, I check for hard evidence such as whether I have read other material that contradicts it.
- I then create my own position, and check that my own point of view is convincing. Could I support it if I was challenged?

Here the lecturer is describing an overall strategy for reading and analysing the text in a critically analytical way. The final point refers to 'creating' a personal position by synthesising the available material – and then submitting this to critical analysis too.

This second example indicates that, as well as the words on the page or material being critiqued, there are wider contextual and other considerations to be taken into account.

Lecturer 2

I put my energy into looking for the heart of the issue: what is really being said, and why? The answers may not be on the page; they may be in the wider history of a debate, a cultural clash, or conflicting bids for project money. It is surprising how often the wider context, popular debates, even a desire to be seen to be saying what is currently in fashion, have a bearing on what a given passage is really saying.

The third lecturer wouldn't disagree with what has gone before, but adds another dimension. Analysis encourages a focus on the detail, and on considering many different angles. This can generate a large body of evidence or a long list of points for consideration. An important aspect of your critical analysis is to sift through this wealth of information, and make good judgements about what is the most significant.

Lecturer 3

The trick is being able to see the wood for the trees; identifying what is relevant amongst a mass of less relevant information. It isn't enough just to understand; you have to be constantly evaluating whether something is accurate, whether it gets to the heart of the issue, whether it is the most important aspect on which to focus, whether it is the best example to use – and whether what you are saying about it is a fair representation of it.

All three examples illustrate different aspects of the critical thinking process:

- an analytical strategy for the material;
- understanding of the wider context;
- an evaluative and selective approach;
- being self-critical about your own understanding, interpretation and evaluation.

Critical thinking in academic contexts

Development of understanding

Students are expected to develop critical thinking skills so that they can dig deeper below the surface of the subject they are studying and engage in critical dialogue with its main theories and arguments. This is usually through engaging in critical debate in seminars, presentations or writing produced for assessment or publication.

One of the best ways of arriving at a point where we really understand something is by doing, or replicating, the underlying research for ourselves. However, as undergraduates, and indeed in everyday life, there simply isn't time to research everything we encounter. The depth of understanding that comes through direct experience, practice and experimentation has to be replaced, at times, by critical analysis of the work of other people.

Students need to develop the ability to evaluate critically the work of others. Whilst some find this easy, others tend to accept or apply the results of other people's research too readily, without analysing it sufficiently to check that the evidence and the reasoning really support the main points being made. Bodner (1988), for example, describes chemistry students as being unable to 'apply their knowledge outside the narrow domain in which it was learnt. They "know" without understanding.' Bodner suggests that, instead of focusing primarily on standard chemical calculations in books, students should be looking for answers to questions such as 'How do we know ...?' and 'Why do we believe ...?'

Bodner's description is likely to be just as true of students in other subjects. It is not unusual for students, and for people generally, to rely unquestioningly on research that is based on a small sample of the population, or that is based on faulty reasoning, or that is now out of date. Evidence from small or isolated projects is often treated as if it were irrefutable proof of a general principle, and is sometimes quoted year after year as if it were an absolute truth. Chapter 8 looks further at critically examining and evaluating evidence.

Reflection



'Knowing without understanding?'

Do you recognise anything of yourself in Bodner's description of students? What effect would the approach he suggests have on your learning and understanding?

Both positives and negatives

In academic contexts, 'criticism' refers to an analysis of positive features as well as negative ones. It is important to identify strengths and satisfactory aspects rather than just weaknesses, to evaluate what works as well as what does not. Good critical analysis accounts for *why* something is good or poor, why it works or fails. It is not enough merely to list good and bad points.

Observation



Positives and weaknesses

Over a period of about a week, take notice of whether you tend to focus more on positives or negatives when making a critique (such as when judging what someone else has said or done, or when considering an event you have attended). Repeat this observation from time to time.

Use your insight to guide you in developing a more even-handed approach, so that your judgements are fair and balanced.

Comprehensive: Nothing is excluded

For most academic programmes, students are expected to take a well-reasoned, evidence-based, critical approach to what they hear, see, read, and learn. That is the case even when considering the work of respected academics.

Normally, any theory, perspective, data, area of research or approach to a discipline could be subjected to critical analysis. Some colleges, such as religious foundations, may consider certain subjects to be out of bounds, but this is not typical.

The idea or the action, not the person

A distinction is usually drawn between the idea, work, text, theory or behaviour, on the one hand and, on the other, the person associated with these. This is also true when making critical analyses of other students' work, if this is a requirement of your course. Even so, it is worth remembering that people identify closely with their work and may take criticism of it personally. Tact and a constructive approach are needed. Giving difficult messages in a way other people can accept is an important aspect of critical evaluation.



Non-dualistic

In our day-to-day lives, we can slip into thinking everything is right or wrong, black or white. In the academic world, answers may occur at a point on a continuum of possibilities. One of the purposes of higher-level thinking is to address questions which

are more complicated and sophisticated, and which do not lend themselves to straightforward responses. You may have noticed yourself that the more you know about a subject, the more difficult it becomes to give simple answers.

Dealing with ambiguity and doubt

With the internet at our fingertips, we are used to obtaining answers within minutes of formulating a question. However, in the academic world, questions are raised in new areas and answers may not be found for years, or even lifetimes. This can feel uncomfortable if you are used to ready answers.

This does not mean, though, that vague answers are acceptable. If you look at articles in academic journals, you will see that they are very closely argued, often focusing on a minute aspect of the subject in great detail, and with precision. Students, too, are expected to develop skills in using evidence, even if drawn from other people's research, to support a detailed line of reasoning.

It is worth remembering that in academic work, including professional research for business and industry, researchers often need to pursue lines of enquiry knowing that:

- no clear answers may emerge;
- it may take decades to gain an answer;
- they may contribute only a very small part to a much larger picture.

Critical thinking as a student means:

- finding out where the best evidence lies for the subject you are discussing;
- evaluating the strength of the evidence to support different arguments;
- coming to an interim conclusion about where the available evidence appears to lead;
- constructing a line of reasoning to guide your audience through the evidence and lead them towards your conclusion;
- selecting the best examples;
- providing evidence to illustrate your argument.

Barriers to critical thinking (1)

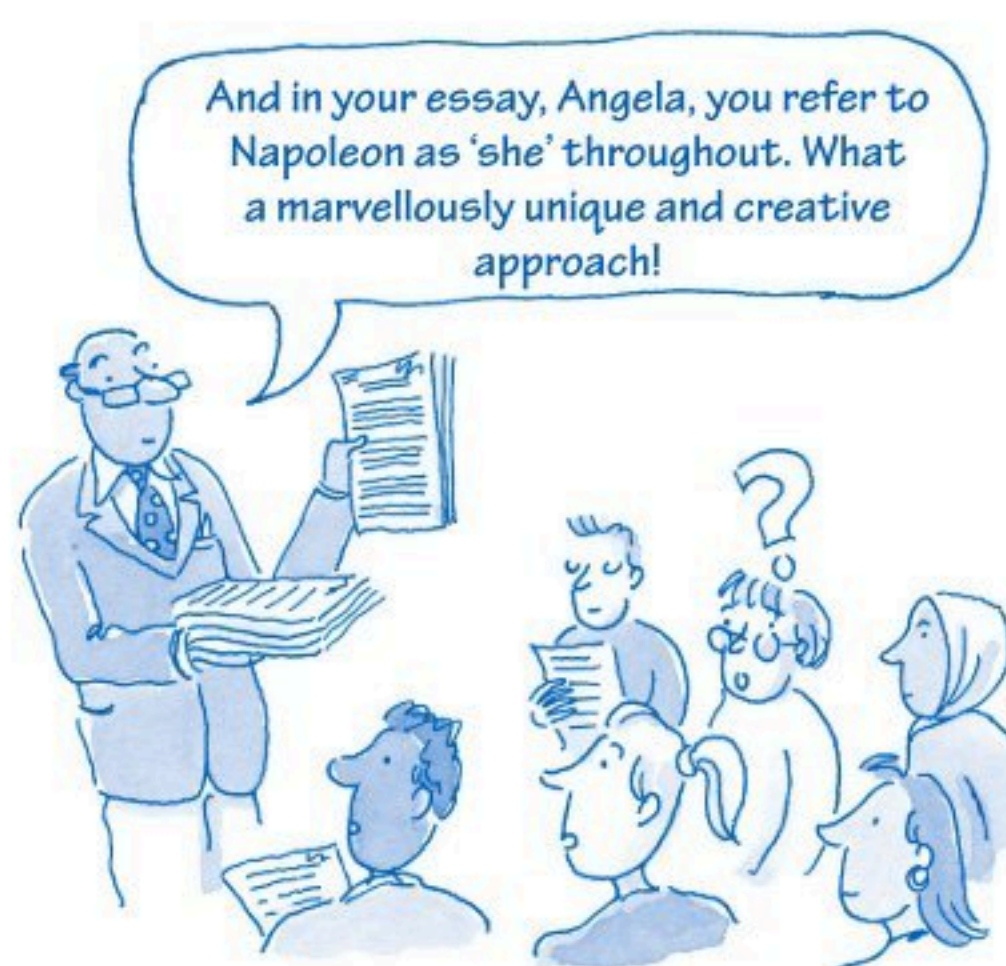
Critical thinking does not come easily to everyone. Barriers vary from person to person, but can usually be overcome. Consider whether the barriers described below (pages 12–14) are having an impact on you.

Misunderstanding what is meant by criticism

Some people assume that 'criticism' means making negative comments. As a result, they refer only to negative aspects when making an analysis. This is a misunderstanding of the term. As we saw above, critical evaluation means identifying positive as well as negative aspects, what works as well as what does not.



Others feel that it is not good to engage in criticism because it is an intrinsically negative activity. Some worry that they will be regarded as an unpleasant sort of person if they are good at criticism. As a result, they avoid making any comments they feel are negative and make only positive comments. They may not provide feedback on what can be improved. This is often an unhelpful approach, as constructive criticism can clarify a situation and help people to excel.



Over-estimating our own reasoning abilities

Most of us like to think of ourselves as rational beings. We tend to believe our own belief systems are the best (otherwise we wouldn't hold those beliefs) and that we have good reasons for what we do and think.

Although this is true of most of us for some of the time, it isn't an accurate picture of how humans behave. Most of the time our thinking runs on automatic. This makes us more efficient in our everyday lives: we don't have to doubt the safety of a tooth-brush every time we brush our teeth.

However, it is easy to fall into poor thinking habits. People who get their own way, or simply get by, with poor reasoning, may believe their reasoning must be good as nobody has said it isn't. Those who are good at winning arguments can mistake this for good reasoning ability. Winning an argument does not necessarily mean that you have the best case. It may simply mean that your opponents didn't recognise a poor argument, or chose to yield the point for their own reasons, such as to avoid conflict. Imprecise, inaccurate and illogical thinking does not help to develop the mental abilities required for higher-level academic and professional work.

Barriers to critical thinking (2)

Lack of methods, strategies or practice

Although willing to be more critical, some people don't know which steps to take next in order to improve their critical thinking skills. Others are unaware that strategies used for study at school and in everyday situations are not sufficiently rigorous for higher-level academic thinking and professional work. With practice, most people can develop their skills in critical thinking.

Reluctance to critique experts

There can be a natural anxiety about critically analysing texts or other works by people that you respect. It can seem strange for students who know little about their subject, to be asked to critique works by those who are clearly more experienced. Some students can find it alien, rude or nonsensical to offer criticism of practitioners they know to be more expert than themselves.

If this is true of you, it may help to bear in mind that this is part of the way teaching works in most universities. Critical analysis is a typical and expected activity. Researchers and lecturers expect students to question and challenge even published material. It can take time to adapt to this way of thinking.

If you are confident about critical thinking, bear in mind that there are others who find this difficult. In many parts of the world, students are expected to demonstrate respect for known experts by behaviours such as learning text off by heart, repeating the exact words used by an expert, copying images precisely, or imitating movements as closely as possible. Students of martial arts such as tai chi or karate may be familiar with this approach to teaching and learning.

Affective reasons

We saw above that emotional self-management can play an important part in critical thinking. To be able to critique means being able to acknowledge

that there is more than one way of looking at an issue. In academic contexts, the implications of a theory can challenge deeply held beliefs and long-held assumptions. This can be difficult to accept, irrespective of how intelligent a student might be.



This is especially so if 'common sense' or 'normality' appear to be challenged by other intelligent people or by academic research. It can be hard to hear deeply held religious, political and ideological beliefs challenged in any way at all. Other sensitive issues include views on bringing up children, criminal justice, genetic modification, and sexuality.

When we are distressed by what we are learning, the emotional response may help to focus our thinking, but very often it can inhibit our capacity to think clearly. Emotional content can add power to an argument, but it can also undermine it, especially if emotions seem to take the place of the reasoning and evidence that could convince others.

Critical thinking does not mean that you must abandon beliefs that are important to you. It may mean giving more consideration to the evidence that supports the arguments based on those beliefs, so that you do justice to your point of view.

Barriers to critical thinking (3)

Mistaking information for understanding

Learning is a process that develops understanding and insight. Many lecturers set activities to develop expertise in methods used within the discipline. However, students can misunderstand the purpose of such teaching methods, preferring facts and answers rather than learning the skills that help them to make well-founded judgements for themselves.

Cowell, Keeley, Shemberg and Zinnbauer (1995) write about 'students' natural resistance to learning to think critically', which can mean acquiring new learning behaviours. Cowell et al. outline the problem through the following dialogue:

Student: *'I want you (the expert) to give me answers to the questions; I want to know the right answer.'*

Teachers: *'I want you to become critical thinkers, which means I want you to challenge experts' answers and pursue your own answers through active questioning. This means lots of hard work.'*

If you feel that critical thinking is hard work at times, then you are right. There are lecturers who would agree with you. However, if it wasn't difficult, you would not be developing your thinking skills into new areas. In effect, you are developing your 'mental muscle' when you improve your critical thinking skills.

Insufficient focus and attention to detail

Critical thinking involves precision and accuracy, and this, in turn, requires good attention to detail. Poor criticism can result from making judgements based on too general an overview of the subject matter. Critical thinking activities require focus on the exact task in hand, rather than becoming distracted by other interesting tangents.

When critically evaluating arguments, it is important to remember that you can find an argument to be good or effective even if you don't agree with it.

Which barriers have an effect upon you?



On the table below, tick (✓) all those barriers that you consider might be affecting your critical thinking abilities.

- | | |
|--------------------------|---|
| ☐ | Misunderstanding what is meant by criticism (page 12) |
| ☐ | Over-estimating my reasoning abilities (page 12) |
| ☐ | Lack of methods and strategies (page 13) |
| ☐ | Lack of practice (page 13) |
| ☐ | Reluctance to criticise those with more expertise (page 13) |
| ☐ | Affective reasons (page 13) |
| ☐ | Mistaking information for understanding (page 14) |
| ☐ | Insufficient focus and attention to detail (page 14) |

List any other barriers you have identified that affect your own critical thinking.

Reflection



Managing barriers

Consider what you could do to manage these barriers in the next few months.

Critical thinking: Knowledge, skills and attitudes

Self-evaluation



For each of the following statements, rate your responses as outlined below.
Note that 'strongly disagree' carries no score.

4 = 'strongly agree' 3 = 'agree' 2 = 'sort of agree' 1 = 'disagree' 0 = 'strongly disagree'

Rating 4-0

1	I feel comfortable pointing out potential weaknesses in the work of experts.	
2	I can remain focused on the exact requirements of an activity.	
3	I know the different meanings of the word 'argument' in critical thinking.	
4	I can analyse the structure of an argument.	
5	I can offer criticism without feeling this makes me a bad person.	
6	I know what is meant by a line of reasoning.	
7	I am aware of how my current beliefs might prejudice fair consideration of an issue.	
8	I am patient in identifying the line of reasoning in an argument.	
9	I am good at recognising the signals used to indicate stages in an argument.	
10	I find it easy to separate key points from other material.	
11	I am very patient in going over the facts in order to reach an accurate view.	
12	I am good at identifying unfair techniques used to persuade readers.	
13	I am good at reading between the lines.	
14	I find it easy to evaluate the evidence to support a point of view.	
15	I usually pay attention to small details.	
16	I find it easy to weigh up different points of view fairly.	
17	If I am not sure about something, I will investigate to find out more.	
18	I can present my own arguments clearly.	
19	I understand how to structure an argument.	
20	I can tell descriptive writing from analytical writing.	
21	I can spot inconsistencies in an argument easily.	
22	I am good at identifying patterns.	
23	I am aware of how my own up-bringing might prejudice fair consideration of an issue.	
24	I know how to evaluate source materials.	
25	I understand why ambiguous language is often used in research papers.	
Score out of 100		

Interpreting your score

Going through the questionnaire may have raised some questions about what you know or don't know about critical thinking. The lower the score, the more likely you are to need to develop your critical thinking skills. A score over 75 suggests you are very confident about your critical thinking ability. It is worth checking this against objective feedback from your tutors or colleagues. For example, if your score is less than 100, there is still room for improvement! If your score is under 45 and remains so after completing the book, you may find it helpful to speak to an academic counsellor, your tutor or a supervisor to root out the difficulty.

Priorities: Developing critical thinking abilities

- In column A, identify which aspects of critical thinking you want to know more about. Give a rating between 5 and 0, giving 5 for 'very important' and 0 for 'not important at all'.
- In column B, consider how essential it is that you develop this aspect soon. Give a rating between 5 and 0, where 5 is 'very essential' and 0 is 'not essential at all'.
- Add the scores in columns A and B to gain an idea of where your priorities are likely to lie.
- Column D directs you where to look for more information on that point.
- Use your findings to set your priorities (page 18).



Aspects I want to develop further	A Want to know more? Rate from 0 to 5 5 = 'very important'	B How essential to develop it now? Rate from 0 to 5 5 = 'essential'	C Priority score Add scores for columns A and B	D See Chapter
I want to:				
1 understand the benefits of critical thinking				1
2 remain focused on the exact requirements of an activity				2
3 pay better attention to small details				2
4 know what is meant by a 'line of reasoning'				3
5 identify the component parts of an argument for critical thinking				3
6 recognise the words used to signal stages in an argument				3, 10
7 distinguish argument from disagreement				4
8 distinguish argument from summaries, descriptions and explanations				4
9 pick out the key points from background information				4
10 be able to analyse the structure of an argument				5, 10, 11
11 evaluate whether arguments are internally consistent				5
12 understand what is meant by an intermediate conclusion				5
13 be able to structure an argument				5, 10, 11
14 be better at reading between the lines				6

Aspects I want to develop further	A Want to know more? Rate from 0 to 5 5 = 'very important'	B How essential to develop it now? Rate from 0 to 5 5 = 'essential'	C Priority score Add scores for columns A and B	D See Chapter
I want to:				
15 recognise underlying assumptions				6
16 recognise when an argument is based on false premises				6
17 recognise implicit arguments				6
18 understand what is meant by denoted and connoted meanings				6
19 be aware of how cause, effect, correlation and coincidence can be confused				7
20 be able to check for 'necessary and sufficient conditions'				7
21 identify unfair techniques used to persuade readers				6, 7
22 recognise tautology				7
23 recognise flawed reasoning				6, 7
24 be able to evaluate source materials				1, 8
25 understand what is meant by authenticity, validity, and reliability				8
26 evaluate when samples are representative				8
27 understand what is meant by 'triangulation'				8
28 check for levels of probability				8
29 apply critical thinking when making notes				9, 10
30 use language more effectively to structure argument				3, 10, 11
31 present my own arguments clearly in writing/for essays				10, 11
32 apply critical reflection to my study/ assignments				12
33 apply reflection in my professional life				12, 13
34 apply critical thinking to career/life planning				12, 13

Priorities for action



- Look back over the priorities table. Identify the three aspects to which you gave the highest scores. If more than three have the highest score, select three to start with.
- Write the three priorities here as actions starting with 'I will ...', using words that are meaningful to you – e.g. 'I will find out what tautology means.'

1. I will

2. I will

3. I will

Summary: What is critical thinking?

- 1 Critical thinking is a complex process.** It involves many sub-skills and calls for an attitude of mind. It requires an open mind, system, perseverance, accuracy and precision.
- 2 Critical thinking is about 'reasoning'.** It involves being able to construct and analyse arguments, based on reason and evidence. That requires decision-making and judgement.
- 3 Critical thinking helps us to challenge hidden assumptions.** That includes our own assumptions and biases, as well as those of other people and the sources we use.
- 4 Developing critical ability confers many benefits.** These include better problem-solving, less likelihood of being cheated or misled, greater confidence, speed and accuracy in analysing complex information.
- 5 It involves emotional self-management and courage:** It can be challenging to question ourselves and others.
- 6 Self-awareness supports critical ability.** It is not always easy to detect our own bias, so it is important to be alert to influences on our thinking and decision-making.
- 7 Academic study requires criticality.** Students need to be able to critique the work of others, including source materials, experts and peers, in a systematic, even-handed way.
- 8 Critical abilities can be obstructed unnecessarily** by barriers such as insufficient focus, strategy or attention to detail, as well as misunderstandings. These can all be tackled.
- 9 Identify your strengths and priorities.** Use these to develop your critical abilities.