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**THIRD
EDITION**

**CRITICAL
THINKING
SKILLS**

DEVELOPING EFFECTIVE ARGUMENT AND ANALYSIS

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MILLION COPY BESTSELLING AUTHOR

Critical Thinking Skills

Effective analysis, argument and reflection

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Critical Thinking Skills

Effective analysis, argument and reflection

Third edition

Stella Cottrell



palgrave

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Introduction

Building our 'critical muscle'

Nobody is an absolute beginner when it comes to critical thinking. Our most everyday activities require us to make use of some of the basic skills involved in critical thinking, such as:

- working out whether we believe what we see or hear;
- taking steps to find out whether something is likely to be true;
- arguing our own case if someone doesn't believe us.

However, just because we can think critically, this doesn't mean we always do, or that we do it well. This is to be expected, as we don't need to employ the same level of critical thinking for everything we do.

For everyday activities, we take a certain amount on trust, and this saves us from having

to recheck every detail. We have to decide how much information is really required and what level of doubt is acceptable for each new circumstance. The levels and types of knowledge we need vary depending on the task, such as whether we are simply switching on a light, inventing a new form of electrical circuit or treating someone for electrocution. Similarly, critical thinking involves:

- identifying correctly when we need to gain more information;
- selecting effectively the right type and level of information for the purpose;
- the appropriate level of critical analysis to use in the specific circumstances.

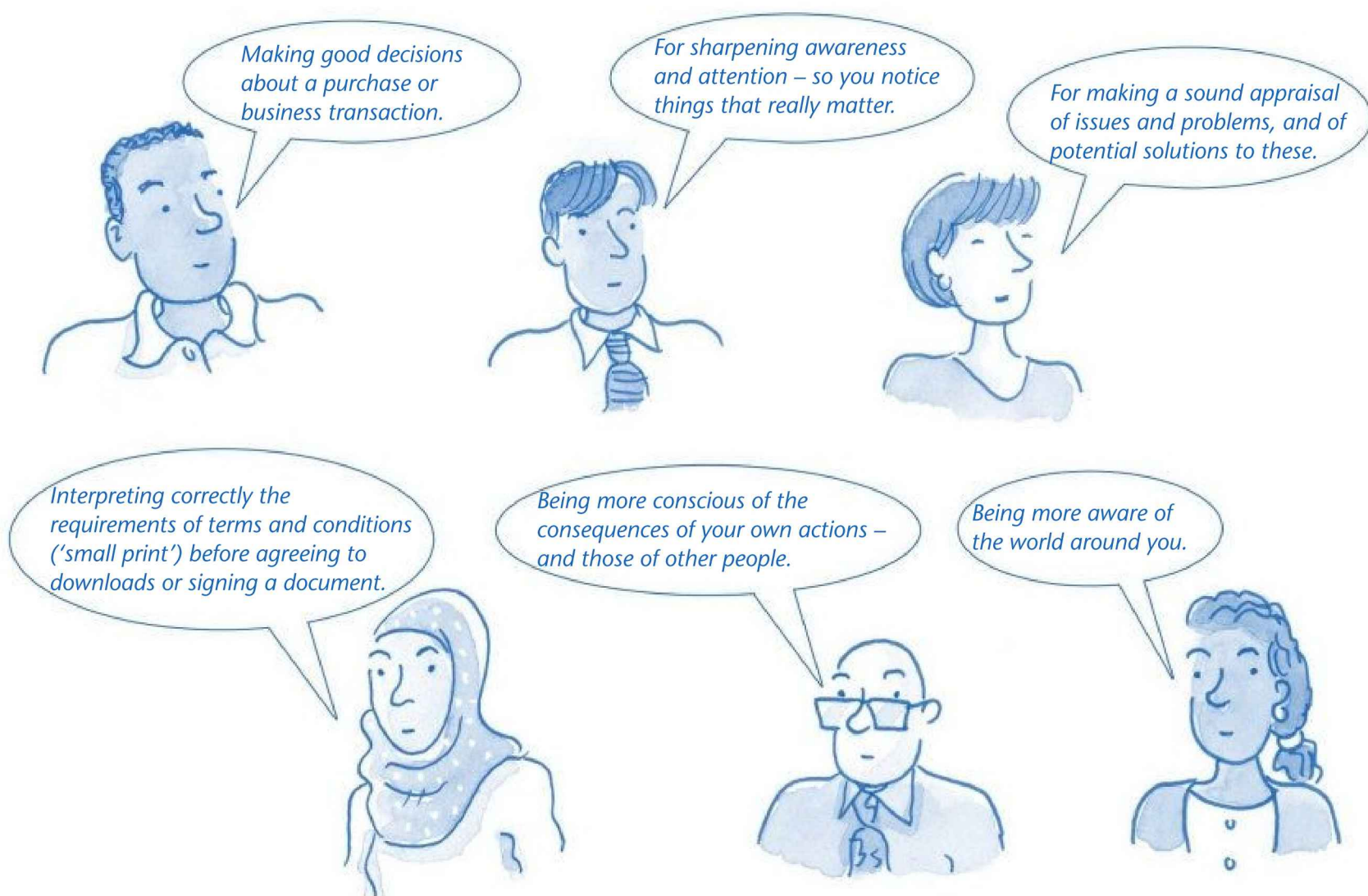
This book helps you to build on your existing skills, to develop your 'critical muscle'.



Do critical thinking skills matter?

The value of critical thinking skills

Critical thinking abilities are essential – at every age, for everyone, in all contexts, in every aspect of life. Applying critical thinking skills even in everyday situations reaps all kinds of benefits.



It is rewarding to refine your thinking skills – and the benefits can be unexpected. For example, you may find you are:

- absorbing more when watching videos or reading;
- better at telling when other people are being inconsistent or jumping to conclusions;
- quicker at spotting alternative interpretations to issues, stories and case histories;
- faster and clearer in forming an opinion on issues.

Success in most professions requires good critical thinking skills. Academic study also requires increasingly sophisticated levels of critical analysis at every level of study. Whether for work or for study, you may be expected to apply critical thinking to:

- what you hear, see, and do;
- the material you read;
- how you interpret new situations and events;
- what you write, say or present to other people;
- your own learning and professional practice.

About this book

Aims of this book

This book aims to help readers develop an understanding of what is meant by critical thinking and to develop their own reasoning skills. These skills are essential to those progressing to higher levels of academic study, whether at advanced or degree level. However, the underlying concepts are useful to anyone who wishes to:

- understand the concepts used in critical thinking;
- develop clearer thinking;
- interpret and produce arguments more effectively;
- be more observant of what they see and hear.

This book focuses mainly on aspects of critical thinking that can be applied to work and study, and which help individuals to think about how they think. It is not intended to be an advanced study of abstract reasoning or logic. For these, the reader is referred to works such as A. Garnham and J. Oakhill (1994), *Thinking and Reasoning*, and A. Fisher (2004), *The Logic of Real Arguments*. Rather, the purpose of this book is to focus on the basics of clear thinking.

For those new to critical thinking

The book will assist you in practical ways such as helping you to:

- recognise and understand the technical terms in critical thinking so you know what other people are referring to when they mention these, and so you can apply them yourself as relevant;
- build confidence in your own ability to apply critical thinking techniques;
- examine closely the opinions, views and arguments presented by other people;
- challenge other people's views from an informed perspective when this is appropriate.

For students

Students will find the book particularly useful in developing the ability to:

- recognise the arguments of specialist authors;
- locate arguments in key texts with greater speed;
- engage in dialogue with the arguments used by both experts and their peers;
- produce better critical, analytical writing of their own for marked assignments;
- recognise the difference between critical analysis and other kinds of writing, such as description.

Using activities in this book

Critical thinking is an activity. It isn't sufficient to read about it: it has to be practised. The book offers activities to apply the concepts it introduces and to practise new skills. It may be that, after completing one or two of the activities that accompany a new concept, you find that aspect very easy. If so, move on to the next aspect. However, many people find some or all aspects of critical thinking to be difficult at first. If this is true of you, be reassured that this way of thinking becomes easier with practice.

The answers pages do not simply provide a correct answer: they also explain the reasons behind the answers so as to develop further the concept that has been practised. Reading through these should help you to clarify your understanding about that aspect of critical thinking.

How to use this eBook

There are a number of interactive exercises throughout this eBook, which will allow you to test your learning and deepen your understanding of key critical thinking skills. Look out for the icon to see which sections are interactive.

Audio clips replace certain passages of text to help you to develop your listening skills. Where you can see the audio icon, click on the image in the passage box to play the clip.

You can also write in the reflection boxes, add text to tables and tick off checklists.

A wide range of topics is used as examples and as practice material. You do not need any

background knowledge of the subjects covered in these. It is possible to do all the activities no matter what your subject discipline or area of interest. The activities require you only to apply critical thinking to the material provided.

Companion website materials

A companion website has been created to assist your use of the material in this book. This includes templates of some of the questionnaires, and longer texts which support activities. Look for the icon to see which material is available online. You might also like to browse the site to see what is available for you there at www.palgravehighered.com/cts3e.

Passages used in the book

All of the passages in the book have been specially designed to illustrate the key points of each chapter and to provide appropriate practice material. They draw on a range of different academic disciplines but are written in such a way that you do not need to be an expert in the subject to understand the material.

None of the passages in this book is reproduced from any other text. However, some draw on the writing of others for background information. Where this is the case, details of the original source are given at the end of the chapter to enable you to follow up subjects that interest you.

Purpose of short and longer passages

For the main body of the book, especially the early chapters, the passages are short in order to introduce new learning points and to give you the opportunity for quick practice in applying these. Usually, at least three examples of each learning point are provided, as that is regarded as the minimum number of practice tries required in order to anchor new learning into memory.

In articles, books and other source material, the learning points will not always be as apparent as in the short passages provided here in the early chapters. It is important to develop the ability to apply critical awareness when reading longer texts. For these, you will need to balance different perspectives and weigh up material from a range of sources, synthesising the material to form your own judgements.

Longer practice passages are provided in Chapters 4 and 11, and in the practice section towards the end of the book. These enable you to work on several aspects of critical thinking simultaneously, and are also available on the companion website, at www.palgravehighered.com/cts3e.

Terminology: Author and audience

The different aspects of critical thinking covered in this book can be applied to material in varied media, whether written, audio or televisual. However, in order to simplify the text, the terms 'author' and 'audience' are used throughout, irrespective of the type of media.

Author

This refers to the person who creates the message, whether this is written, spoken or delivered through another medium. It doesn't necessarily mean the 'author' of a book.

Audience

This refers to whoever receives the message, whether through conversation, books, television, video downloads and/or podcasts, or other medium. The audience, in this respect, may be a viewer, a reader, a listener, or an observer.

Glossary

A glossary of technical terms used in critical thinking is provided on page xiv.

Contents of the chapters

The book is organised to help you build your skills in critical thinking, starting from a basic understanding of what critical thinking is, through to applying techniques and strategies when reading and producing your own critical writing.

Chapter 1 introduces critical thinking, looking at the range of underlying skills and attitudes associated with critical thinking, and why it is beneficial to develop critical thinking skills. It emphasises the importance of self-awareness as an aspect of making accurate judgements and bringing suitable objectivity to critical reasoning.

Many people find critical thinking to be a challenging activity when they first begin. The chapter looks at the barriers that might prevent you from developing critical thinking skills and ways of overcoming these. You are invited to evaluate your

current skills in order to focus on those aspects of the book that are the most useful for you.

Chapter 2 looks at important sub-skills of critical thinking skills such as focusing your attention, identifying similarities and differences, sequencing, categorising, and close reading. These are skills that underlie more advanced critical thinking as well as personal management skills, so improving these can benefit many aspects of academic work and personal and working life. The chapter provides an opportunity for you to evaluate your skills and then to practise those aspects which need further development.

Chapter 3 ‘What’s their point?’, introduces argument as a central aspect of critical reading. It identifies the main features and components of arguments within critical thinking, and provides practice in identifying these different elements. This is useful in helping you to find the most significant passages in your specialist texts, and to do so more quickly.

Chapter 4 builds on the previous chapter, looking at the differences between critical arguments and other types of writing that may appear to be arguments, such as disagreements. It also looks at how, when reading, to distinguish critical argument from summaries, explanations and descriptions. As arguments can become lost within other details, this chapter gives practice in identifying more easily the material relevant to the main argument. Such skills are also useful for improving reading speed and accuracy and in helping you to identify whether your own writing has a sufficiently critical focus.

Chapter 5 focuses on the quality of reasoning. It gives you practice in evaluating how well authors present their arguments in terms of structure, logical order, internal consistency, the way in which reasons are used to support each other, and the use of interim conclusions. Understanding the structure of an argument is beneficial both in making reading faster and more effective, and in structuring your own arguments.

Chapters 6 and 7 develop skills in analysing the details of an argument. These skills help you to read texts and interpret arguments at a deeper rather than a superficial level. This is especially

important for evaluating academic arguments or, for example, checking that you understand the implications of contracts in the workplace or the nuances of political arguments used at election time. As you develop these skills, you will be better able to engage in debating the issues raised by experts or by specialist authors, checking whether they are consistent in what they are saying and whether their arguments contain flaws that are not immediately obvious.

Chapter 6 focuses on ‘reading between the lines’, identifying aspects of the author’s position and argument that are not directly stated. These include underlying assumptions and ‘implicit arguments’. The chapter also looks at what is meant by the ‘premises’ on which arguments are predicated and at identifying ‘false premises’. Finally, it examines what is meant by denoted and connoted meanings, and the importance of identifying hidden connotations within an argument.

Chapter 7 provides a different perspective on evaluating an argument, this time focusing on flaws within the reasoning. It looks at confusions that are made between cause and effect, and introduces the concept of ‘meeting necessary and sufficient conditions’. It also introduces the most common types of flawed argument, such as false analogies, unfair use of emotive language, tautology, and misrepresentation.

Chapter 8 focuses on finding and evaluating sources of evidence to support an argument. It examines the difference between primary and secondary sources, looks at how to conduct a literature search, and provides criteria for evaluating and selecting different kinds of evidence. Concepts such as authenticity, validity, currency and reliability are introduced. The chapter also looks at a range of methods used to ensure the evidence is robust, such as checking for representative sample sizes and levels of probability, and triangulating evidence.

Chapter 9 looks at specific ways of applying critical thinking to reading and note-making, such as orientating to the task of critical reading, making accurate interpretations, and categorising and selecting material in order to make the process of reading and note-making more effective. It

examines the relationship of theory to argument, and looks at ways of categorising theories in order to ease comparison between different arguments. The chapter also emphasises the importance of noting the sources of evidence, as an essential aspect of critical note-making.

The next two chapters focus on the application of critical thinking to the act of writing.

Chapter 10 looks at characteristics of critical writing, and especially the importance of maintaining a focus on your potential readers, setting the scene for them. It gives details about how to use language to structure and signpost arguments so that the reader is clear about which stage of the argument is being presented and the direction of your argument. Critical writing uses tentative language to express conclusions and this is also examined. The chapter looks specifically at how students can apply what they have learnt about critical thinking to each stage of writing their own essays.

Chapter 11 provides an opportunity to evaluate two critical essays. The emphasis in this chapter is not on identifying and evaluating arguments, but rather on evaluating longer texts as pieces of critical writing. The two essays differ in how effective they are at applying the conventions required for critical, analytical writing. Checklists and commentaries are provided to help you approach the task and to evaluate your responses. A further checklist is provided as an optional tool for you to use, or adapt, to evaluate your own critical writing. Additional practice activities are provided on the companion website at www.palgravehighered.com/cts3e.

Chapter 12 looks at critical thinking from a different perspective. Critical reflection is used, increasingly, within professional practice and for student assignments. The chapter provides practical means of addressing this challenging form of critical activity, taking you through the steps of planning your reflection, relating personal experience to theory and practice in a critical way, and presenting these skilfully for assessment.

Chapter 13 is about applying critical thinking skills when looking for work and applying for jobs. It looks at the different ways that critical thinking

is relevant to your career path, from the way you consider your options, through to making a critical evaluation of your own job applications so that these give you the best chance of success. The chapter looks at employers' need for employees who can apply critical abilities, and at where job applicants go wrong in failing to demonstrate such skills.

Critical reflection

As with all academic work and professional good practice, you will benefit from reflecting upon the points raised in each chapter and, in particular, your own current ways of approaching these. Some chapters provide prompts to assist such reflection.

You are likely to gain more from using the book if, as you work through a section, you pause to consider from time to time how that aspect of critical awareness would benefit your own study, writing or professional work.

It is well worth taking such time to pause and consider the implications of the key points in order to help you see the significance and relevance of the materials and critical strategies to your own work or study.



Using critical reflection

At various points in the text, you are encouraged to pause and reflect on a particular point. You may find it is beneficial to jot down your thoughts as this can help you to formulate and clarify your thinking. It is useful to have a light notebook for your reflective activity, or to set up a folder or a notes page for this purpose on your device. You can also type directly into the reflection boxes in this eBook.

Glossary

When we discuss arguments, a number of specific terms are sometimes employed. Some that are useful to know in the initial stages of learning about critical thinking are listed below.

Argument Using reasons to support a point of view, so that known or unknown audiences may be persuaded to agree. An argument may include disagreement, but is more than simply disagreement if it is based on reasons.

Argument – the overall argument The overall argument presents the author's position. It is composed of contributing arguments, or reasons. The term 'line of reasoning' is used to refer to a set of reasons, or contributing arguments, structured to support the overall argument.

Arguments – contributing arguments Individual reasons are referred to as arguments or 'contributing arguments'.

Assertions Statements which are made without providing any supporting evidence or justification. These may turn out to be true or untrue.

Conclusion Reasoning should lead towards an end point, which is the conclusion. The conclusion should normally relate closely to the author's main position. In critical thinking, a conclusion is usually a deduction drawn from the reasons, or evidence. The final section of an essay is also referred to as the conclusion. This is examined in detail on page 166.

Conclusion – intermediate conclusions The author may draw interim conclusions during the course of an argument, before arriving at final conclusions. Each interim conclusion is based on only some of the evidence or a particular set of reasons. These intermediate conclusions may be used to provide evidence, or to serve as reasons, in the next stage of the argument.

Consistency – internal consistency An argument is *internally consistent* when all parts of the line of reasoning contribute to the conclusion.

Nothing then contradicts or undermines the main message. An argument may be internally consistent but still be inconsistent in other respects, such as not being consistent with the evidence or with the opinions of experts in the field.

Consistency – logical consistency An argument is logically consistent when the reasons are provided in a logical manner – that is, in the best order, with each linked to previous or following arguments so as to build up a case. A logically consistent argument will be internally consistent. In a logically consistent argument, the reasons support the conclusion.

Discursive Discursive writing develops and elaborates an argument, moving successively from one point to the next in a given direction, towards conclusions. It does this in a thoughtful way that engages critically with the evidence base and the theories and arguments of others, drawing out implications and significance.

Line of reasoning The line of reasoning is established through the order in which reasons and evidence are presented. This order should make it clear to the reader how the argument is to be interpreted and what the structure of the argument is. The line of reasoning should lead forwards with a clear direction, with one piece of reasoning leading in an obvious way to the next, rather than hopping from one point to another in a random way, or leading the audience round in circles.

Logical order Good arguments present reasons and evidence in a structured way, so that information builds on what has already been said. See 'line of reasoning'.

Position A point of view, supported by reasoning.

Predicate The foundation of the argument; the aims of the argument; an underlying point of

view; the assumption that underlies the argument. For example: *the argument was predicated on a Marxist interpretation of wealth; the programme was predicated on the assumption that the prisoner was innocent.*

Premises Propositions believed to be true and used as the bases for the argument; the basic building blocks for the argument – that is, the reasons for believing that the conclusion is true. Premises that are not well founded are referred to as *false premises*.

Propositions Statements believed to be true and presented as arguments or reasons for consideration by the audience. A proposition may turn out to be true or false.

Reasons Contributing arguments put forward to support the overall argument or line of reasoning.

Reasons – independent reasons The author may use several reasons to support the conclusion, each of which may be valid in its own right but may have nothing to do with the other reasons given.

Reasons – joint reasons Reasons provided to support an argument when they are connected in some way and mutually reinforce each other.

Salience ‘Salient’ simply means ‘relevant to the argument’.

Substantive point The central point that is being made, or the core of the argument. This expression is used to focus attention on the main point, especially if an argument has been diverted towards more minor issues and when the key message is becoming obscured.

Tautology Unnecessary repetition, when the author makes the same point but in different words. For example, in poor arguments, a tautology may be used to make it appear as if there are two reasons to support a conclusion, when the first reason has merely been reproduced in a different way.

Example of key terms used together

- *Proposition 1:* One of the expedition team is suspected of having pneumonia.
- *Proposition 2:* A serious storm has been predicted in the area.
- *Proposition 3:* The mountainside can be dangerous during some storms.
- *Proposition 4:* Some members of the team are not familiar with the area or with mountaineering.
- *Conclusion:* It isn't a good moment to launch an expedition into the mountains.

Premises

It is not a good time for the expedition to go into the mountains as a storm is expected and some of the team may not have the health or experience to cope with this.

False premises

The argument against launching the expedition sounds convincing. However, it could be based on false premises: a storm may not be due, the dangers might be exaggerated, or the team may be more experienced than described, or the team member may have only a minor cold. In that case, the argument against launching the expedition would be based on false premises.

Predicate

The argument against the expedition is predicated on an assumption that the safety of the team should take priority over the requirements of the expedition.

Salience

The question of safety is salient to the debate about whether to launch the expedition. Other things may not be salient to that argument. For example, the facts that a team member was good at sports at school 20 years ago, or had hiccups yesterday, are probably not salient to the discussion.

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Secondly, I am grateful to all those lecturers and teachers who took the trouble to point out to their students that they needed to improve their critical and analytical abilities and pointed them in the direction of help.

Thirdly, I thank the readers of the first two editions and early drafts of each edition for their excellent suggestions. Any remaining weaknesses and errors are my own.

I have drawn in general terms on the research from a wide range of disciplines in developing

examples that have relevance to readers from different backgrounds. Where this has been used as background reading, it is acknowledged in the end of the relevant chapter or in the bibliography.

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Chapter 1

What is critical thinking?

Learning outcomes

This chapter gives you opportunities to:

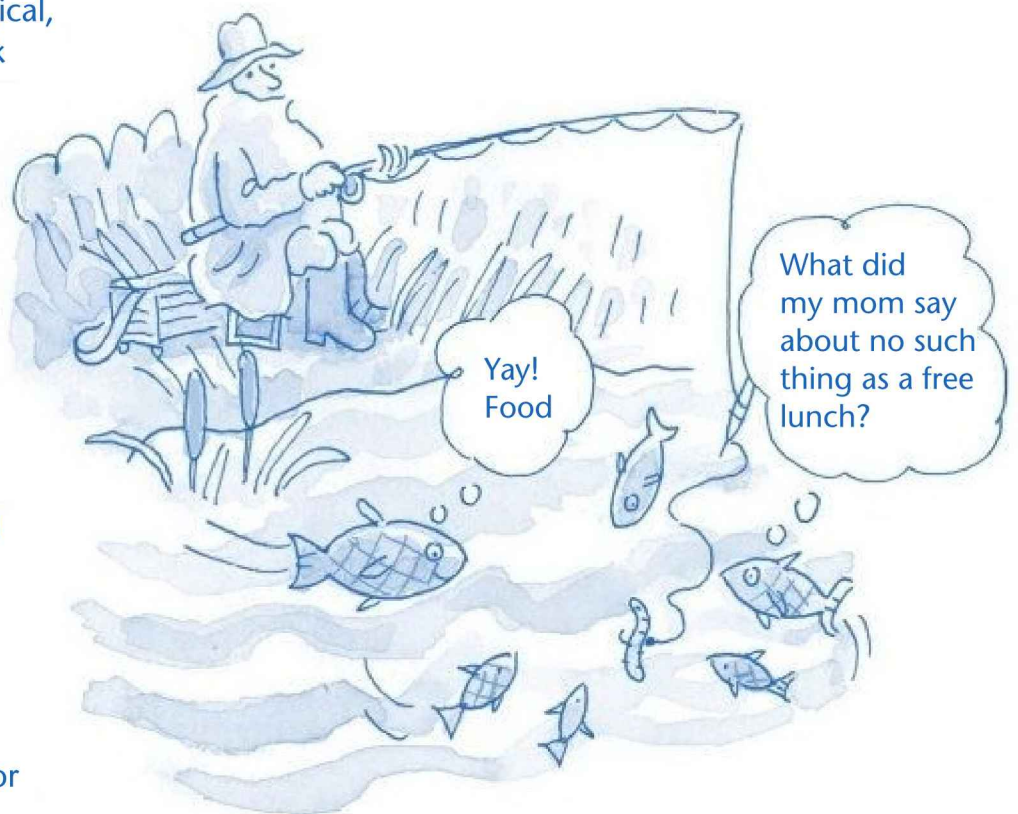
- understand what critical thinking is
- recognise some of the benefits associated with critical thinking skills
- recognise the personal qualities associated with critical thinking
- recognise barriers to the development of good critical thinking skills
- assess your current understanding of critical 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. It includes:

- *identifying other people's positions*, arguments and conclusions;
- *evaluating the evidence* for alternative points of view;
- *weighing up opposing arguments* and evidence fairly;
- *being able to read between the lines*, seeing behind surfaces, and identifying false or unfair assumptions;
- *recognising techniques* used to make certain positions more appealing than others, such as false logic and persuasive devices;
- *reflecting on issues* in a structured way, bringing logic and insight to bear;
- *drawing conclusions* about whether arguments are valid and justifiable, based on good evidence and sensible assumptions;
- *synthesising information*: drawing together your judgements of the evidence, synthesising these to form your own new position;
- *presenting a point of view* in a structured, clear, well-reasoned way that convinces others.

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;
- being able to present to others the reasons for our beliefs and actions.

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.

Why do critical thinking skills matter?

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.

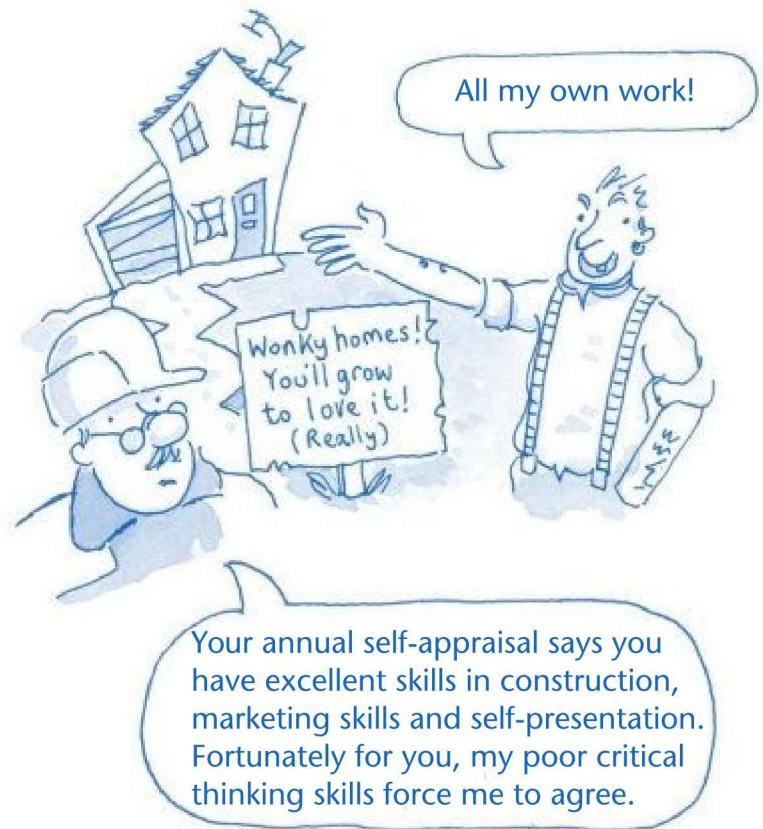
For academic and professional life

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:

- *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

For me, the emotions that are most difficult to manage when others disagree with me are:

I deal with these by:



Self-awareness for accurate judgement

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.

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.



Reflection: Influences on my thinking



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:



Reflection: Challenging opinions



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

I deal with these by:

Personal strategies for critical thinking

Below, three lecturers describe how they view critical thinking.

Example 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.

Example 2 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.

Example 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.

Example 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

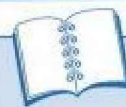
Development of understanding

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.

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.



Irma wasn't famed for her tact.

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. This section looks at some key barriers to critical thinking and encourages you to consider whether these might be 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' appears 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 an argument, 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.

Barrier	Has an effect?
Misunderstanding what is meant by criticism (page 10)	<input type="checkbox"/>
Over-estimating my reasoning abilities (page 10)	<input type="checkbox"/>
Lack of methods and strategies (page 11)	<input type="checkbox"/>
Lack of practice (page 11)	<input type="checkbox"/>
Reluctance to criticise those with more expertise (page 11)	<input type="checkbox"/>
Affective reasons (page 11)	<input type="checkbox"/>
Mistaking information for understanding (page 12)	<input type="checkbox"/>
Insufficient focus and attention to detail (page 12)	<input type="checkbox"/>

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.	0	▼
2	I can remain focused on the exact requirements of an activity.	0	▼
3	I know the different meanings of the word 'argument' in critical thinking.	0	▼
4	I can analyse the structure of an argument.	0	▼
5	I can offer criticism without feeling this makes me a bad person.	0	▼
6	I know what is meant by a line of reasoning.	0	▼
7	I am aware of how my current beliefs might prejudice fair consideration of an issue.	0	▼
8	I am patient in identifying the line of reasoning in an argument.	0	▼
9	I am good at recognising the signals used to indicate stages in an argument.	0	▼
10	I find it easy to separate key points from other material.	0	▼
11	I am very patient in going over the facts in order to reach an accurate view.	0	▼
12	I am good at identifying unfair techniques used to persuade readers.	0	▼
13	I am good at reading between the lines.	0	▼
14	I find it easy to evaluate the evidence to support a point of view.	0	▼
15	I usually pay attention to small details.	0	▼
16	I find it easy to weigh up different points of view fairly.	0	▼
17	If I am not sure about something, I will investigate to find out more.	0	▼
18	I can present my own arguments clearly.	0	▼
19	I understand how to structure an argument.	0	▼
20	I can tell descriptive writing from analytical writing.	0	▼
21	I can spot inconsistencies in an argument easily.	0	▼
22	I am good at identifying patterns.	0	▼
23	I am aware of how my own up-bringing might prejudice fair consideration of an issue.	0	▼
24	I know how to evaluate source materials.	0	▼
25	I understand why ambiguous language is often used in research papers.	0	▼
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.