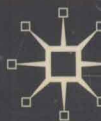


Stella Cottrell

Critical Thinking Skills

Developing Effective Analysis and Argument

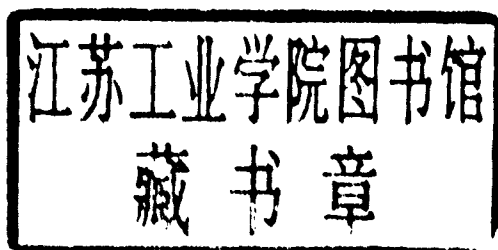
Critical
Thinking
Skills



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Developing Effective Analysis and Argument

Stella Cottrell





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Introduction

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 on 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.

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.

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 argument 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 (1988), *The Logic of Real Arguments*. Rather, its purpose 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 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.

Activities in the 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.

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.

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.

These passages are short to enable you to identify the key points more easily, and to provide many practice examples. In real life, it is likely that you will need to identify arguments and evaluate reasoning in much longer texts. Some chapters provide more extended passages to enable you to work on several aspects of critical thinking simultaneously by working with longer texts.

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.

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 visual. 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, DVD 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 xii.

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 aspects of 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 these skills and then to practise those aspects which need further development.

The third chapter, '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 important aspects of 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 many of 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. It 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 final 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 own potential readers. The chapter looks at ways of setting the scene for the reader. It gives details about how to use language to structure and signpost arguments so that the reader is clear 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 in Chapter 10.

Finally, 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 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 at the end of the chapter.

Reflection on the implications

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. In other cases, it is up to you to identify where you need to stop and consider the relevance of the strategy to your own study or area of 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.

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:

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 any supporting evidence or justification.

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.

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.

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' above.

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. 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 The 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 The 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.

- *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.

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.

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S.C.

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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;
- presenting a point of view in a structured, clear, well-reasoned way that convinces others.

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.

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 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.

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 such 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 develop critical thinking skills?

Benefits of critical thinking skills

Good critical thinking skills bring numerous benefits such as:

- improved attention and observation
- more focused reading
- improved ability to identify the key points in a text or other message rather than becoming distracted by less important material
- improved ability to respond to the appropriate points in a message
- knowledge of how to get your own point across more easily
- skills of analysis that you can choose to apply in a variety of situations.

Benefits in professional and everyday life

Skills in critical thinking bring precision to the way you think and work. You will find that practice in critical thinking helps you to be more accurate and specific in noting what is relevant and what is not. The skills listed above are useful to problem-solving and to project management, bringing greater precision and accuracy to different parts of a task.

Although critical thinking can seem like a slow process because it is precise, once you have acquired good skills, they save you time because you learn to identify the most relevant information more quickly and accurately.

Ancillary skills

Critical thinking involves the development of a range of ancillary skills such as:

- observation
- reasoning
- decision-making
- analysis
- judgement
- persuasion

Realistic self-appraisal

It is likely that you already possess some or all of these skills in order to cope with everyday life, work or previous study. However, the more advanced the level of study or the professional area, the more refined these skills need to be. The better these skills are, the more able you are to take on complex problems and projects with confidence of a successful outcome.

It is likely that many people over-estimate the quality of the critical thinking they bring to activities such as reading, watching television, using the internet, or to work and study. It is not unusual to assume our point of view is well-founded, that we know best, and that we are logical and reasonable. Other people observing us may not share this view. A lack of self-awareness and weak reasoning skills can result in unsatisfactory appraisals at work or poor marks for academic work. Certainly, comments from lecturers indicate that many students are prevented from gaining better marks because their work lacks evidence of rigorous critical thinking.

