

Critical Thinking

2008/09



Welcome!

This booklet contains all the information that you will need for the *Critical Thinking* workshop. As well as the exercises we'll be working on during the session, you will also find guidance that you can keep for future reference, such as advice on active learning, models for critical thinking skills, and questions to help you think critically.

When you are asked to complete an academic assignment, your tutor will be looking for evidence of these three skills:

- Gathering of complex material
- Making sense of that complex material
- Communicating your understanding of that complex material to an informed reader.¹

The 'making sense' stage is the one we often neglect out of fear that we may not have anything of value to contribute. But, as the thinker Edward De Bono puts it: 'Thinking is a skill that can be improved by training, by practice and through learning how to do it better. Thinking is no different from any other skill and we can get better at the skill of thinking if we have the will to do so.'² We hope that this handbook will help you to develop strongly argued pieces of work, and encourage you to build critical thinking into every aspect of your academic life. If you are a mature student or have come to Bristol from overseas, then we hope that this guide will introduce you to the critical thinking techniques required in a UK university.

Be prepared to make some changes to how you already work – if you always do things in the same way, you'll keep getting the same results. Start with some small adjustments to your current habits and see what a difference they can make. Many of the hints and exercises are taken from Stella Cottrell's *The Study Skills Handbook* (Hampshire: Palgrave, 2003), and I recommend it to you as a highly useful resource. Good luck with your work!

Dr Tracy Johnson, Skills Development Officer

¹ Moira Peelo, *Helping Students With Study Problems* (Society for Research into Higher Education: Buckingham, 1994), p. 70.

² Edward De Bono, *Edward De Bono's Thinking Course* (Bath: BBC Books, 2004), p. 11.

Critical Thinking and Analysis

If you have another look at the three main skills being tested when you write an essay, you may notice that the one we tend to neglect is making sense of and thinking about the material that we gather. A typical approach to putting together an essay goes something like this:

- Receive essay question
- Ignore essay question for a while
- Realise there are only a few days left until essay is due in
- Go to the library or search the Internet, taking copious notes
- Sit with blank screen and pile of notes
- Worry/feel a bit sick/panic
- Painstakingly produce your work, sentence by agonising sentence
- Print it out and check for obvious mistakes
- Hand it in and hope for the best

Alternatively, you may have started your research when you received the question, but the last six steps may still be the same. When your essay is returned to you with feedback, one of the most commonly cited comments from tutors is, 'not enough critical analysis'. What makes the difference between a 2:2 and a 2:1? **Analysis and evaluation of other arguments, rather than just the reproduction of them in your work, is what your tutor wants to see.**

Bloom's Taxonomy of Skills

All university syllabuses are produced within the context of six 'cognitive domains', or intellectual skills. From the simplest to the most complex, they look like this:

1. Recall
2. Comprehension
3. Application
4. Analysis
5. Synthesis
6. Evaluation/critical ability³

³ Bryan Greetham, *How to Write Better Essays* (Hampshire: Palgrave, 2001), p.63.

What Do We Want From You?

At school the recall and reproduction of information may well have been what gained you marks. The difference in higher education is that it is your critical skills and not your memory that is being tested. There are no 'right' answers. You are expected to look at both the black and the white, and then to distinguish between the shades of grey.

What you must keep in mind at all times is that simply restating other people's arguments without commenting on them yourself will not gain you the high marks you desire. The ability to bring together information and argument and convincingly provide your own interpretation of them (synthesis and evaluation) is what will push you up the mark scale:

'It is never a question of coming to the 'right' answer (though you can expect a tutor to defend his or her position if it differs from yours) but rather of demonstrating that you understand what the issue is about and that you can produce a well-reasoned, balanced and critical argument concerning it.'⁴

It is very important for the academic rigour of your work that critical evaluation is intrinsic to the entire essay writing process, from interpreting the question to checking the quality of your argument in the final revisions. Adopting a critical attitude throughout means that you are 'rehearsing' and testing your arguments all the time, and this means that your final essay draft will be more polished and intellectually sophisticated by the time your tutor marks it.

You may find the prospect of critically evaluating the arguments of academics daunting, but this is exactly what you are being asked to do. Remember that there is a big difference between being critical in a negative way – not what we want you to do – and being critical in terms of analysing the components of arguments, their strength and their relationships with each other: rather like surveying a house, checking it for cracks and then comparing it with other houses in the same street. You are not being asked to undermine and negate other people's research.

⁴ Eric Eve, *A Guide for Perplexed Students*, 4: *Tutorial Essays* (Oxford: University of Oxford, 2000), pp. 3-4, cited in Greetham, p. 64.

Understanding Critical Analysis

What is 'critical analysis'?

Use these questions to establish your understanding of critical analysis; it is very important to become more conscious of what you actually do when you thinking.

1. What do the words 'analytical' and 'critical' mean in an academic context?
2. What do you need to do to analyse and criticise a text/data/methodology?
3. Do you find that one happens before the other? There is no correct answer here, but try to explain and become more aware of your thinking processes. What do you do when, and why? What results does this produce for you?

Critical or Analytical?

We can sum up 'critical thinking' by stating that it involves looking at an argument in detail, weighing up arguments for and against, evaluating the quality of a piece of evidence and looking at its possible implications: where the viewpoint leads you; the conclusions that could be drawn; does the viewpoint need to be reconsidered? However, analytical thinking involves additional processes that are complementary to adopting a critical approach.

Analysis is:

- Being systematic and thorough in your reading
- Breaking the text down into its component parts
- Internal analysis – how does the argument/data work in itself?
- External analysis – how does it relate to other, similar arguments? Where does it fit in the 'bigger picture'?
- Do you now know it well enough to explain it to someone else?
- A largely objective process – it's not about your interpretation yet
- Always asking questions

Criticism is:

- Offering your interpretation after evaluating, judging and justifying
- Comparing qualitatively with other sources
- Becoming aware of a range of interpretations on the same topic
- A largely subjective process – this is where you establish your perspective
- Always asking questions.

Try to develop a list of questions or a framework to help you get to grips with your academic reading. But don't stop being critical and analytical when your studying is over – ask questions about assumptions implicit in the world around you: in films you watch, or novels and newspapers you read. We'll look more at this later on.

Critical Questions to Ask

One of the most practical and helpful things that you can do to enhance your critical thinking is to devise a list of general questions that you can apply to any piece of reading. This will help you to get started on the thinking process without getting stuck on where you need to start. Good questions generate more questions, and starting with general ones should lead to you formulating more topic-specific ones as you continue to work. Asking questions to help you open up an argument enables you to dig deeper into it and stops you from skimming over the surface and simply noting the key points; that's really not enough to develop your critical analysis of a source.

General Critical Questions

More generally, when working in a critical way you will be asking such questions as:

- Why? How far? How often? How much? To what extent?
- How do we know this to be true?
- How reliable is the source?
- What could be going on beneath the surface?
- What do we *not* know about this?
- What is *not* being said?
- Which argument is preferable?
- For what reasons?⁵
- Who? What? Why? Where? How?
- What is the main argument?
- Do I agree/disagree with this? Why? Why not?
- How relevant is this to my work?
- Do I need to keep reading this?
- How, specifically, will I use this in my assignment?
- Do I have all the information required for a correct citation?
- How does this relate to what I already know about this topic?

Devise your own list that is meaningful to you and your subject area and keep it with you so that you are always ready to start reading, analysing and evaluating.

⁵ List to this point adapted from Cottrell, *Study Skills Handbook*, p. 222.

Intelligence and Learning

It takes confidence to start evaluating the viewpoints and arguments of an academic authority, as well as developing the conviction to defend your own. Many of us believe that we are not really clever enough to be at university, especially if we have had a long break from formal education, and that one day someone will unmask us a fraud. Or, you could be doing really well in your assignments, but you don't understand why you getting good marks or how you can keep improving. To start being critical and analytical, we all need two things: a bit of self-belief and the right environment in which to learn. Many of us have never really been taught 'how to learn' and it is this fundamental skill that underpins your ability to develop your intelligence and quality of thought.

If you were pigeonholed at school as not being 'academic', or if you have moments of self-doubt, remember:

- Intelligence is not a 'fixed' quality – you can keep growing
- There are multiple intelligences, not just academic ones. Are you 'emotionally intelligent' (good at being sensitive to other people's needs), spatially aware (great at parking a car), musical, bodily-kinaesthetic (good at dance or sport), or intrapersonally intelligent (reflective and self aware)?
- Intelligence can depend on life opportunities – easy access to books, time to study quietly, encouragement and validation of your thoughts by others
- Intelligence in one area can be applied to other contexts, giving yourself stepping stones to new learning experiences
- Intelligence is not about how much you know
- IQ tests do not measure creativity, emotional maturity, intuition and other important skills
- Intelligence can be developed through effective study habits and study skills.⁶
- There are many different learning styles. Have a look on the Internet for learning styles questionnaires and see which one is yours, as well as how you can appreciate others.
- You could start with:
<http://www.businessballs.com/vaklearningstylestest.htm>

⁶ List adapted from Cottrell, *Study Skills Handbook*, pp. 45-52.

Critical or Creative?

Can I be critical and creative at the same time?

Says De Bono, “Critical” comes from the Greek word *kritikos* which means judge. While judgement thinking has its place and its value, it lacks generative, productive, creative and design aspects of thinking which are so vital. Six brilliantly trained critical thinkers sitting around a table cannot get going until someone actually puts forward a constructive proposal. This can then be criticised by all.

[...] Critical thinking does have a part to play because if you know your hypothesis is going to be criticised then you seek to make it stronger. But critical destruction of one hypothesis has never produced a better one. It is creativity that produces the better hypothesis.⁷

Why Do I Need to Be A Creative Thinker?

You not only need to be able to critically analyse the ideas of others, but also to produce ideas of *your own*. If you are not thinking creatively around your topic, how can you get the essay process started? Ask yourself:

- What techniques do I use when interpreting essay questions?
- How do I decide what my approach will be?
- How do I ‘brainstorm’ the concepts and ideas that I will pursue through my research?
- How do I develop and extend the ideas that I come across?

If you don’t define the scope of your essay before you start reading, your critical thinking will be hijacked by the arguments of others. Start thinking on your own before you start any research.

⁷ De Bono, p. 15.

Creative Thinking Tools

Mind Mapping

Mind Mapping is an ideas-generating technique popularised by Tony Buzan. Because you are working with diagrams and images, this technique can stimulate both sides of your brain and get you thinking more creatively. It also helps you to see connections between ideas and group them effectively. Mind Mapping has many applications and is becoming increasingly popular in business as a problem-solving tool. For more information see Buzan's books or go to <http://www.mind-map.com> for more information and examples.

PMI

You will find this technique in Edward De Bono's *Thinking Course*. To 'do a PMI' take any idea and list its **Plus** (good) points, its **Minus** (bad) points, and its **Interesting** points. The exercise should only take a few minutes and is a quick way to focus your attention. It also helps you to consider an idea from different perspectives, rather than just from one prejudged angle. If you are interested in more of De Bono's work, then have a look at his *Lateral Thinking* and *Six Thinking Hats* books, too.

You Find What You Are Looking For

Right now, find three round things in the room. Now find three things that are 'open'. You will find that the room is suddenly filled with these things. If you look for new ways of doing things, or for specific answers and evidence, you will find them too when you are engaged in research. We can all usually find evidence to support a viewpoint, once we know what that viewpoint is.

You Are The Professor!

When you can't think of a way of doing a piece of work or can't seem to generate any fresh ideas, imagine that you are the expert in your field. Experts don't find solving problems easy, but they are open to dealing with challenging tasks. Find your 'internal professor' and let them solve your problems. This breaks your usual thinking patterns and encourages your imagination.

Be Curious About What You Don't Know

Creative people are curious people. They want to find out more and relate their new discoveries to what they already know. It is difficult to be creative if you are frightened of the unknown. Be open to the curious child inside you who wants to try everything!

Break Your Routines

When you take a different route, even if it is not the quickest way, you discover new things of interest. Take a few minutes to examine your routines. Ask:

- Why am I doing it this way?
- Have the original reasons now changed?
- How else could I do things?

Remember: if you keep doing things in the same way, then you'll get the same results. If you want to develop, try making some changes and see what happens.

How Would Someone Else Do It?

Ask yourself, how would Pablo Picasso approach this study problem? Mozart? Nelson Mandela? Your favourite actor? Your internal professor? Whose approach would most help and inspire you? It can be very useful to model someone you admire (how they behave, what their reactions might be, how they present themselves), and then use this model to build your own confidence and see problems from a different perspective.⁸

If any of the above exercises seem a bit unusual, or you're not sure how using your imagination can help your studies, then bear in mind that Einstein claims to have come up with his ideas on the relativity of time and space while he was daydreaming that he was riding on a sunbeam.⁹ Inspiration can strike if we think laterally or simply from a different perspective, so give it a try. Being a little more experimental or playful can also help us to relax and not be so tense – this is when ideas can start to flow. We all learn more effectively when we are relaxed.

⁸ Ideas (except PMI and Mind Mapping) taken from Cottrell, *Study Skills Handbook*, pp. 60-61.

⁹ Ibid. p. 51.

Critical Analysis in Action

Rochborough Health

‘Outdoor play has beneficial effects for children in terms of both their health and their levels of social interaction. According to clinical trials carried out by Rochborough’s Health Council Advisory Body in September this year, children who played outside for over fifty days in the year had a 20% higher lung capacity, and 30% lower incidence of asthma and bronchial conditions than children who played indoors. Children who played outdoors also reported having more friends than those who played indoors. A survey of 30 families by Rochborough Social Amenities Committee found that parents were more likely to let their children play outdoors if they had their own gardens or if there were supervised play areas nearby. Mr Arkash of Milton Road said his children did not feel safe playing on the Children’s Meadow on the outskirts of Rochborough, as his son had been frightened by a fox there in the past. His little son looked quite tearful as his father spoke. ‘He often cries because he has nowhere to play,’ said his father. Supervised play areas can be expensive to provide. However, only 18% of homes in Rochborough have gardens. Therefore, to improve the health of all its children, Rochborough needs to provide more supervised outdoor play areas.’

Rochborough Playcouncil Newsletter

Exercise

Read through the passage above and answer the questions below. Try to think of other critical questions that you could ask about the reasoning and quality of argument/information presented in the passage.

- Identify the main line of reasoning – what is the writer’s main point of view?
- What are the propositions that make up the writer’s viewpoint?
- Is there a logical progression of these propositions?
- Are there any false premises or flawed reasoning?
- Evaluate the quality of the evidence and how it is used
- Identify the writer’s conclusions
- Evaluate whether the evidence supports the conclusions.¹⁰

¹⁰ Adapted from Cottrell, *Study Skills Handbook*, 223-229.

Ideology and Influence

What informs the way we read and write?

When we read, whether the purpose is for pleasure or for study, we tend to assume that we are going to learn something about the world, or about the human condition, and probably to discover some kind of 'truth' that we think the writer wants to communicate to us. The problem with this approach is that we can often get stuck in one of those lower cognitive domains where we are seeking knowledge and assume that the authority presenting this knowledge to us is 'right' and should not be questioned.

Particularly when we are reading for pleasure, we often 'switch off' our critical faculties to better enhance our sense of escapism, or to be better entertained. But even the most popular of fictions that we may choose to relax with, such as J.K. Rowling, Alexander McCall Smith or Patricia Cornwell, for example, can all be read critically – they all have something to tell us about the cultural, political and historical conditions in which these texts were produced. We say 'produced' because approaching a piece of writing critically, whether it's fiction, journalism, an academic essay or even a piece of advertising, means accepting it as something artificial: something that has been *purposely constructed* by an individual or a number of individuals working together in order to create specific effects or meanings in the reader.

What may also become apparent to you is that writing is often informed by someone's political standpoint. To put this more generally, writing is frequently informed by a particular point of view or belief system - what we call *ideology*. That doesn't have to be an overtly political or religious mindset: the way in which we were brought up, our personal values, those of our parents, our education, the people we choose as friends all have a bearing on the way in which we use and interpret language. That means that we need to be aware of our own opinions and assumptions when we read and interpret any text because we are never approaching it with our minds open; we always already have a number of 'presuppositions'. As Robert Eaglestone puts it: 'Your interpretation will be affected by the *context* in which you read and

the *expectations* you have of the text.’¹¹ To sum up, then, we must get away from the notion that any text can be appreciated entirely objectively. No interpretation is objective because it will inevitably be informed by your experiences and assumptions.

These points may be more straightforward to grasp if you are a student in the arts and humanities disciplines, but science texts are also involved in the act of interpreting our place in the world. For example, the impact of the work of Charles Darwin had a profound effect on the way we perceived ourselves as human beings; thinking of ourselves as animals deeply challenged the Christian idea of the creation of Adam and Eve, and the creationist vs. evolutionist debate continues to be prominent.

Another example of critical thinking through science is in a book called *Lifelines* (1997) by Steven Rose. ‘Five scientists are having a picnic by a pool when they see a frog jump. They ask themselves why. One says that it is because the frog saw a snake, passed a signal from its brain to its legs and contracted its muscles to jump and escape. The second says that this process must be seen in a wider environmental context: the frog desires to avoid being eaten. The third points out that it can only jump because, as it grew up from a tadpole, it developed the muscles, nerves and so on to enable it to jump. A fourth argues that it jumped because, through evolutionary selection, its species had adapted to escape successfully from snakes. The final biologist takes a chemical view: the frog jumped because of a chemical reaction in its muscles [...]. None of these different interpretations of why the frog jumped – physiological, contextual, developmental, evolutionary, and biochemical – are incorrect. But each depends on different presuppositions in the act of interpreting, as each biologist has a different interest and point of view. An awareness of the different contexts and presuppositions – hermeneutics – is as important for science as it is for literary [or other] study.’¹²

So, the next time you pick up a novel or go to the cinema, think for a few moments beforehand about what you are expecting from that book or film. Afterwards, spend some time reflecting on whether your expectations were confirmed or challenged. How? What effect has this had on your own ideology? Prepare to think differently and to question what you see...

¹¹ Robert Eaglestone, *Doing English* (London: Routledge, 2000), p. 8.

¹² Ibid.

Further Reading & Help

Books

- Buzan, Tony, *How to Mind Map: The Ultimate Thinking Tool That Will Change Your Life* (London: Harpercollins, 2002)
- Cottrell, Stella, *The Study Skills Handbook* (Hampshire: Palgrave, 2003)
- Crème, Phyllis and Mary R. Lea, *Writing At University: A Guide For Students* (Buckingham: Open University Press, 1997)
- De Bono, Edward, *Edward De Bono's Thinking Course* (Bath: BBC Books, 2004)
- Goleman, Daniel, *Emotional Intelligence: Why It Can Matter More Than IQ* (London: Bloomsbury, 1996)
- Greetham, Bryan, *How to Write Better Essays* (Hampshire: Palgrave, 2001)
- <http://www.palgrave.com/skills4study/html/index.asp> An online selection from Palgrave's many student guides.

Online resources and development

Student Skills Directory http://www.bris.ac.uk/studentskills/new_index_html
Find and book onto a range of courses, or try out some useful resources.

ArtsSkills <http://www.bris.ac.uk/arts/skills/>

Useful information on academic and personal skills development that is relevant to many students, and not just those studying Arts disciplines. Look for the self-evaluation pages to assess your skills.

<http://www.palgrave.com/skills4study/html/index.asp> An online selection of academic skills help extracted from Palgrave's many student guides.