The Essential Guide to Using the Web for Research

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THREE

Clarifying what is required of you

WHY YOU NEED TO KNOW THIS

- You need to be able to analyse exactly what is expected of you to give yourself the best chance of delivering it. This chapter explores these issues, and how to plan and get started on a particular assignment.
- Each coursework assignment you are asked to complete will be unique in terms of the specific question that it asks you to address. But at another level, it is possible to identify broad types of question, and to identify the qualities you are expected to display, by those who will be marking your work, in your response to them.
- Your learning task may be to respond to an essay question set by your lecturer, or it may entail coming up with a research question of your own for a project or dissertation.
- In the case of an essay, it is important to interpret the question correctly in terms of exactly what is required. In the case of devising your own research question, you need to be able to generate a question which is both 'researchable' and of sufficient scope to allow you to demonstrate the qualities needed to gain a good mark.
- Having understood fully your essay or research question, you then need to answer it effectively. This will entail establishing *claims*, and building them into *arguments*. This chapter explores how to do this in such a way as to ensure that you produce an integrated, as opposed to fragmented, answer to your question.
- The chapter goes on to discuss how people with different learning styles can go about this process in very different, but equally valid, ways.

Clarifying the nature of your assignment

Different types of essay or project

As you read this, you may be about to start a particular essay or project. One way in which essays and projects may vary is in terms of the characteristics shown in Figure 3.1. For example, you may be working to a topic that has been *provided for you* by your lecturer – for example, you may have had to choose from a list of pre-set essay titles. Alternatively, you may have been asked to come up with a topic *of your own*. Also,

your coursework may or may not entail the collecting and analysing of *data* on your part – for example, from a questionnaire or interviews (as opposed to finding information in books, journals, etc.).

Information will be a vital ingredient in all of these cases. In each one, however, the role of information may be slightly different. The four boxes in the figure refer to brief overviews of the role of information relating to these different cases, which immediately follow the figure.

	Topic *provided for you (by your lecturer)*	Topic *decided by you*
It does *not* entail collecting and analysing *data*	See section **A** below	See section **B** below
It *does* entail collecting and analysing *data*	See section **C** below	See section **D** below

Figure 3.1 Characteristics of different types of essay and project

A. You have *been provided with a list* of essays/topics from which to choose (rather than having to think of one yourself), and the work will be *based on your reading* (i.e. it will not entail collecting data such as from questionnaires or interviews).

Essays and projects that fit this category are very common in higher education. As your studies become more advanced, you will often be able – indeed expected – to exercise more freedom in coming up with a topic to study (see box B). Typically in later undergraduate years, and at Master's level, you will also engage in more work that entails collecting and analysing your own data (boxes C and D).

But from the very start of your studies, even when working on essays provided for you by your lecturers, you are expected to engage in independent research. That is, you are expected to search for and find information for yourself. This is not just a case of collecting a load of information about the topic and shovelling it into your essay or report. You have to use information as fuel to generate an evidence-based response to your essay question. You therefore need to really think about what it is that you are being asked to do, and what you have to deliver. We'll be looking a little later on in this chapter at precisely what 'evidence-based' actually means.

B. You have to *think of an essay/project topic yourself* (rather than choosing from a list), and the work will be *based on your reading* (i.e. it will not entail collecting your own data such as from questionnaires or interviews).

Typically as your studies become more advanced (at second and third year undergraduate and Master's levels) you will be expected to exercise more autonomy in coming up with your own essay or project topic – as well as searching for and using information independently. When you are choosing your essay or research project topic, it is a good idea to formulate a specific *question*. You should think of the essay or project at this level as providing an *answer* to some specific research *question*, rather then just choosing some broad theme and 'writing all you can about it'.

Exploring the literature (books, journals and other sources) can be extremely useful in helping you come up with a good topic and related question. You will also be expected autonomously to find information relevant to answering your question. Information will be used as fuel to build an evidence-based answer. We'll be exploring precisely what 'evidence-based' actually means later in this chapter.

At some universities more than others at present, and on some courses more than others, you may be expected to engage in 'inquiry-based' and 'problem-based' learning quite early in your studies. This may entail working with increasing levels of autonomy relating to your choice of topic, as well as to searching out and using information.

C. You have been *provided with a list* of project topics from which to choose (rather than having to think of one yourself), and the project will involve *collecting and analysing data* (e.g. from questionnaires or interviews).

In later undergraduate years and at Master's level, you will usually also engage in more work which entails collecting and analysing your own data. This may be small scale, as in a piece of work as part of an undergraduate module, and where the topic (the research question or problem) is set for you.

You will need skills in research design, data collection and data analysis, which are *not* taught in this book. However, you will *also* need to be skilled at what is a key theme of this book – using the web to find and utilise information from books, journals and other sources. This will be essential to fuel your literature review, where you set your own work in the context of what is known already about your topic. You will also need to refer to the literature when you are discussing your own findings – to assess how they relate to (maybe confirm or maybe conflict with) findings that exist in the literature.

D. You have to *think of a topic or title yourself* (rather than choosing from a list), and the project will involve *collecting and analysing data* (e.g. from questionnaires or interviews).

Box C above related to small-scale exercises entailing data collection and analysis where the research question or problem is set for you. This box (D) relates to larger-scale

research such as a full undergraduate project, or Master's dissertation. You will need skills in research design, data collection and data analysis, which are *not* taught in this book.

However, you will *also* need to search the literature to help you formulate a good research question. To come up with a meaningful research question, you will need to produce a literature review which will enable you to know what has been done already in the field – not least to avoid conducting research that duplicates what has already been done. You will also need to refer to the literature when you are discussing your own findings – to assess how they relate to (maybe confirm or maybe conflict with) findings that exist in the literature.

Interpreting/decoding essay questions

Let us first consider essays topics that have been set for you by your lecturers. These are usually very carefully worded. What this means is that you should take a little time and trouble to decode them very carefully, and to work out exactly what you are being asked to do.

Essay topics often use words such as *discuss*, *compare*, *contrast*, *explain*, *critically analyse* or *assess*. Table 3.1 lists some of these commonly used words – along with an explanation of what they entail.

Table 3.1 Frequently used essay topic terms

Term	*Definition*
analyse	identify the key aspects/components of...
apply	show an idea, principle or technique at work using a practical example
assess	weigh up the extent/importance of...
compare	identify similarities shared by...
contrast	identify differences between...
critically	*[analyse or evaluate]* with particular attention to any weaknesses or limitations, alternative interpretations and counter-evidence
define	say exactly what is meant by...
describe	give a detailed account of...
differentiate	explain the difference(s) between...
discuss	analyse the key issues involved in... and assess/evaluate them
evaluate	weigh up the strengths and weaknesses (the relative merits) of...
explain	give details of, including (where appropriate) how and/or why...
illustrate	use an example to show...
outline	describe the main features of...
relate	show the connections between...
review	summarise and evaluate...
synthesise	bring together into a unified/coherent form...
summarise	describe the main points/elements of...

Responding correctly to these different words requires you to engage in different types of intellectual process. It is important to avoid responding with an inappropriate type of process. A common example, resulting in poor marks, is being too *descriptive* when *analytic* or *evaluative* processing is required. It is also very important to avoid 'under-analysing' the task requirements, and sliding into a 'write all I can find out about...' mode of responding to the assignment. Bear in mind that the person marking your work will check *whether you have responded appropriately to the requirements of the task.*

THINK

Try placing each of the following terms on the figure below, roughly where you think they belong. Don't look at Figure 3.2 until you have done this.

analyse apply assess compare contrast define describe differentiate discuss evaluate explain illustrate outline relate review synthesise summarise

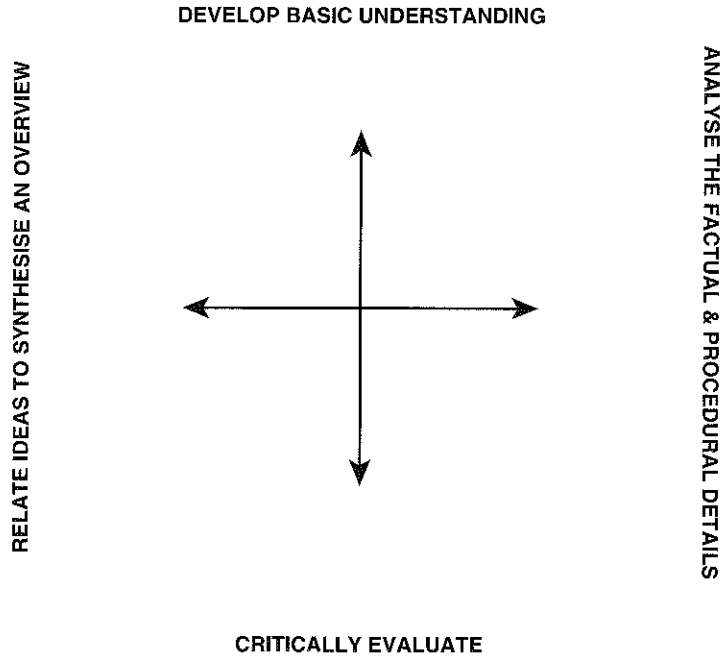

Figure 3.2 shows my own placing of these words. Don't worry if there are slight differences between your placements and mine. It is quite possible that different people will place some of these words slightly differently, depending on their interpretation

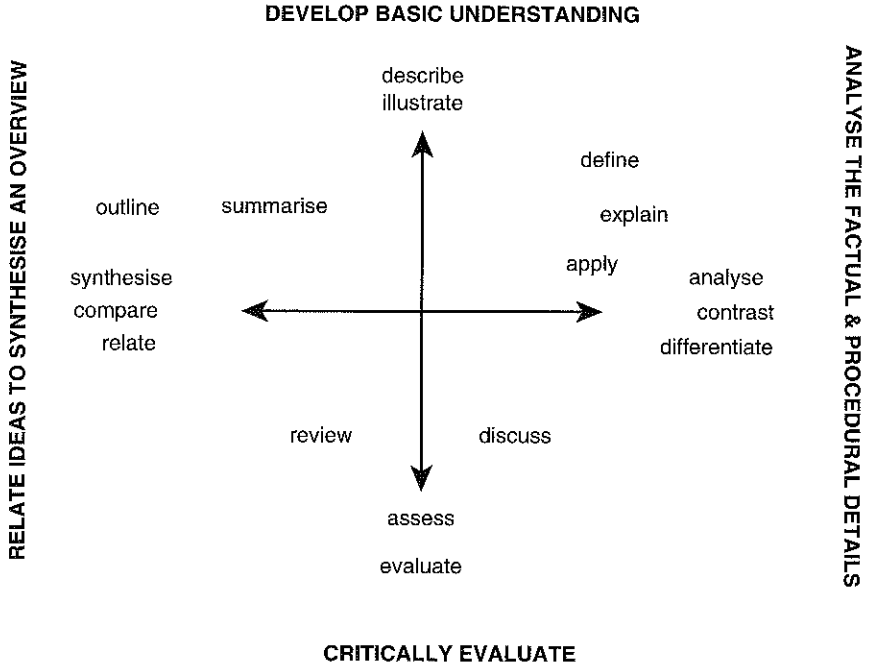

Figure 3.2 Mapping intellectual processes on to the dimensions of learning

of their precise meaning. For example, some people may use 'discuss' or 'review' to imply a little less evaluation than is indicated in Figure 3.2.

What's important is that you are clear as to what your tutor expects of you in terms of the broad dimensions of the figure – particularly the vertical dimension. It is particularly important to avoid being overly descriptive when a more active approach is required. Generally speaking, the more analysis, synthesis and critical evaluation you include in your work, the higher the marks you are likely to receive.

Throughout this book, an essay topic or title is referred to as an essay *question*, and the essay that you write in response to it is considered to be an evidence-based *answer* to this question. Clearly, however, essay topics – especially those incorporating the terms we have been exploring here, like *discuss, evaluate, compare* and *contrast* – are often not expressed as questions.

The terms are used here partly as shorthand – it is more economical to speak of 'an answer to an essay question' than 'an appropriate response to the requirements of an essay topic'. However, they are also used in order to help you focus on what you need to *find out* in order to respond appropriately to your essay topic. Table 3.1 emphasised *what you need to do* in response to a range of commonly used essay topic terms. Table 3.2 converts these terms into questions – the answers to which you need to find out in order to produce your essay.

Table 3.2 Essay topic terms rephrased as quesions

Term	*Definition*
analyse	what are the key aspects/components of...?
apply	how does an idea, principle or technique work (using a practical example)?
assess	what is the extent/importance of...?
compare	what similarities are shared by...?
contrast	what differences are there between...?
critically	*[analyse or evaluate]* with particular attention to any weaknesses or limitations, alternative interpretations and counter-evidence
define	what exactly is meant by...?
describe	what is ... like?
differentiate	what is the difference(s) between...?
discuss	what are the key issues involved in...? What is their extent/importance? What are their strengths and weaknesses (their relative merits)?
evaluate	what are their strengths and weaknesses (their relative merits)?
explain	how and/or why...?
illustrate	what is a good example of...?
outline	what are the main features of...?
relate	what are the connections between...?
review	what are the main points/elements of...? What are their strengths and weaknesses (their relative merits)?
synthesise	what do ... share and how are they related?
summarise	what are the main points/elements of...?

Posing your own researchable research questions

Master's and undergraduate dissertation topics may sometimes be suggested by your lecturers. Very often, however – although subject to final approval by them – you will be expected to devise a topic of your own.

Generally, it is a good idea to come up with a research *question*. Obvious as this may seem, this should be an actual question – i.e. a proposition with a question mark at the end. I never fail to be surprised at the number of students who put forward as research questions what are essentially general descriptions of research topics – such as: 'This research seeks to investigate knowledge management in universities' or 'This research will explore university students' use of *Facebook*'.

Preferable research questions would be for example: 'What are the benefits and disadvantages of adopting an explicit knowledge management policy, as perceived by university managers?' or 'To what extent do undergraduate and postgraduate university students display different patterns of use of *Facebook*?'

If you start with an explicit question, it is also easier to make explicit the ways in which your research will *answer* it. It will also be easier to judge, and to explain to those reading your work, how effectively you have done so. Formulating a topic as a

viable research *question* will enable you to build in at the end of your report an assessment of the extent to which you have answered your question.

Ideas for research questions can derive from a number of sources. An idea may be sparked by something you have read in relation to some other part of your course. Or you may start by identifying a broad topic area that reflects a particular interest you have developed on the basis of your own experience or observations, rather than from your course-related reading. For example, you may be on a communications, education or information science course, and become aware of the increasing use amongst your fellow students of mobile phones. You could decide that you would like to do some research broadly in this area – somehow relating mobile devices with learning and communication.

You could then explore the literature to check whether there has been any previous research (or theoretical writings) relating to the use of mobile phones in these contexts. You may find a combination of empirical research (research in which data has been collected and analysed) and conceptual writings (discussing current thinking) relating to the use of mobile phones in education and/or communication. This reading may enable you to 'home in' on a specific research question.

Or maybe a piece of previous research looked at student use of mobile phones in a particular context – or for a particular purpose – and you would like to study their use in a different context or for a different purpose. Or maybe either the conceptual or the empirical paper suggested questions requiring further research. Many research papers conclude by suggesting new research questions or topics that have arisen from the research reported in the paper.

You should bear in mind that, whether or not it was initially sparked by your reading, your research question should link to existing theory and/or other research reported in the literature. 'Link' in this context means that there should be some existing literature relating to the context in which your research is set. This context will be broader than your specific question. So, for example, literature relevant to students' use of *Facebook* could include any previous studies of patterns of use of *Facebook* more generally (not restricted to students), and students' use of other social networking and sharing sites. It will be advantageous if your research question reflects a gap in existing knowledge, as identified in your literature review.

The advantages of rooting your research question in existing literature (theory and research) is that this will enable you to:

- Justify the value of your research question in that it seeks to fill a knowledge gap in an area important enough to have attracted previous researchers.
- Develop a strong literature review section in your work.
- Develop strong *discussion* and *conclusions* sections to your work. You will be better able to interpret your results in the light of previous research findings, comparing and contrasting them with our existing knowledge in the area. Your findings may thus support, illuminate, extend, modify or refute existing knowledge (other people's findings, models and theories).

- Sustain possible negative findings. For the sake of argument, imagine that someone adopts a crazy, 'off the wall' research question such as: 'Do red haired people search the web more effectively than brown haired people?' This question has no foundation in or links to any existing theory. Thus, if they were to fail to find links between hair colour and web searching, they would not be in a position to generate a discussion comparing their results with those of previous researchers, or seek to explain their findings with reference to existing theory. Nor would their work contribute to knowledge in terms of modifying or refuting existing models or theory. An observer may well think: 'You didn't find any link between hair colour and web searching. *So what*? There was never any reason to expect one.' They would be left high and dry, and this would be reflected in their marks.

If you discover existing research that maps closely on to your own research question, this does not necessarily mean that it should be abandoned for a new one. Obviously you should avoid researching a question that has already been specifically answered, but you may be able to take a different slant on the issue. You would need to discuss this with your lecturer.

You want to choose a topic that has the capacity to enable you to excel and get a good mark. You will need to devise a research question that will allow you scope for analysis, synthesis and critical evaluation. These elements will generally lead to higher marks than more descriptive elements.

But don't be over-ambitious. This is a common error. You need to scope your research question so that the research is doable within the time limit you have. If your original research question is over-ambitious, this may be pointed out to you by your lecturer. Or it may become apparent once you start elaborating it – translating your research question into specific objectives which, if fulfilled, will answer your question. You may need to subdivide a broad research question into sub-questions. Again, this is a good stage at which to consider whether you have bitten off more than you can chew.

Look at previous student work submitted for the same level of course (undergraduate project or Master's dissertation). Some university departments make past dissertations available for viewing. This will enable you to obtain a feel for what constitutes a 'researchable research question' in terms of appropriate levels of breadth and depth.

Planning your assignment

Once you have established your goal – the answer to your essay or project question – you can set about devising a plan for how to get there. Whereas Figure 2.5 showed the main *components* of your understanding of a topic or subject in general terms, Figure 3.3 shows more specifically the *processes* entailed in putting together your essay or project.

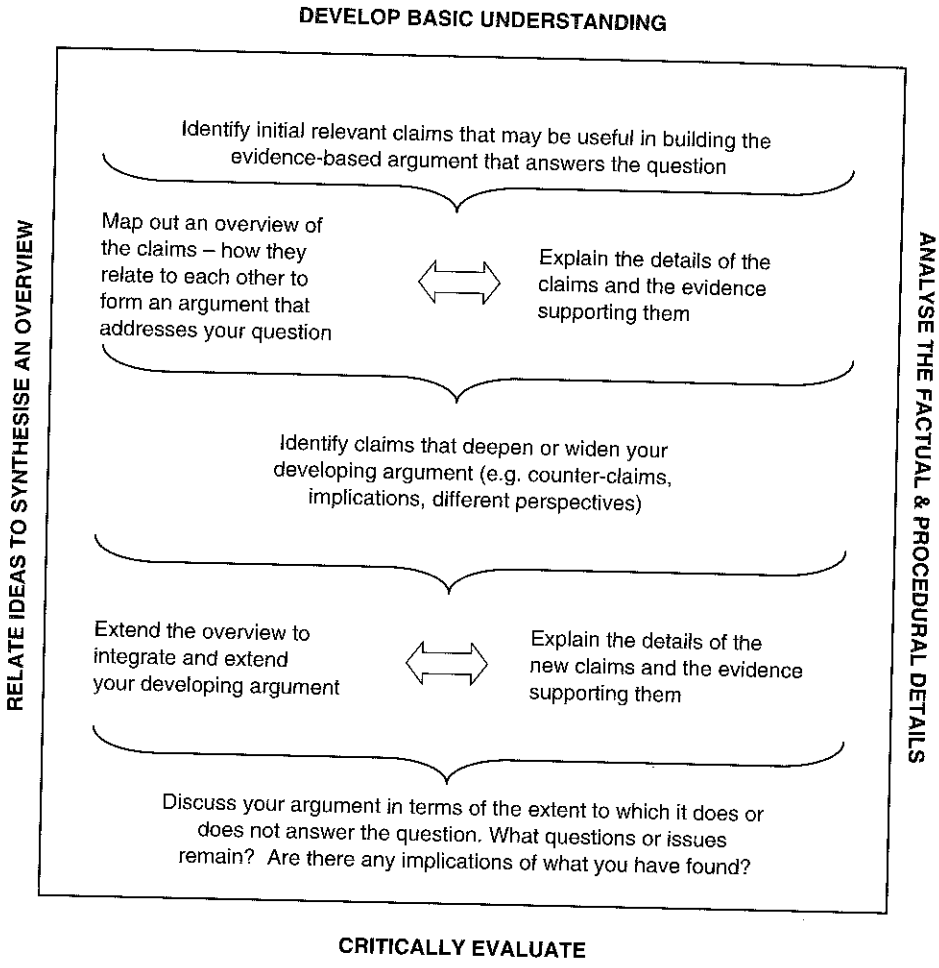

Figure 3.3 'Developing understanding' processes

In answering the essay or project question you are generating an evidence-based argument. Recall that the term *argument* is used here to refer to *a series of connected claims*. Figure 3.4 on the next page presents a simplified example of how claims and arguments could be developed in response to an essay topic.

Figure 3.4 reduces the essay to its essence, to show the basic structure of claims and arguments.

It is important to note that an argument is very different from a series of relatively *unconnected* claims. In fact, lack of connectedness is a frequent cause of low marks in essays and reports. Recall from Chapter 2 our discussion of learning styles. Presenting a series of relatively unconnected ideas is characteristic of learners who fail to complement their procedure building with sufficient levels of description building. The result is that they end up 'not seeing the wood for the trees'.

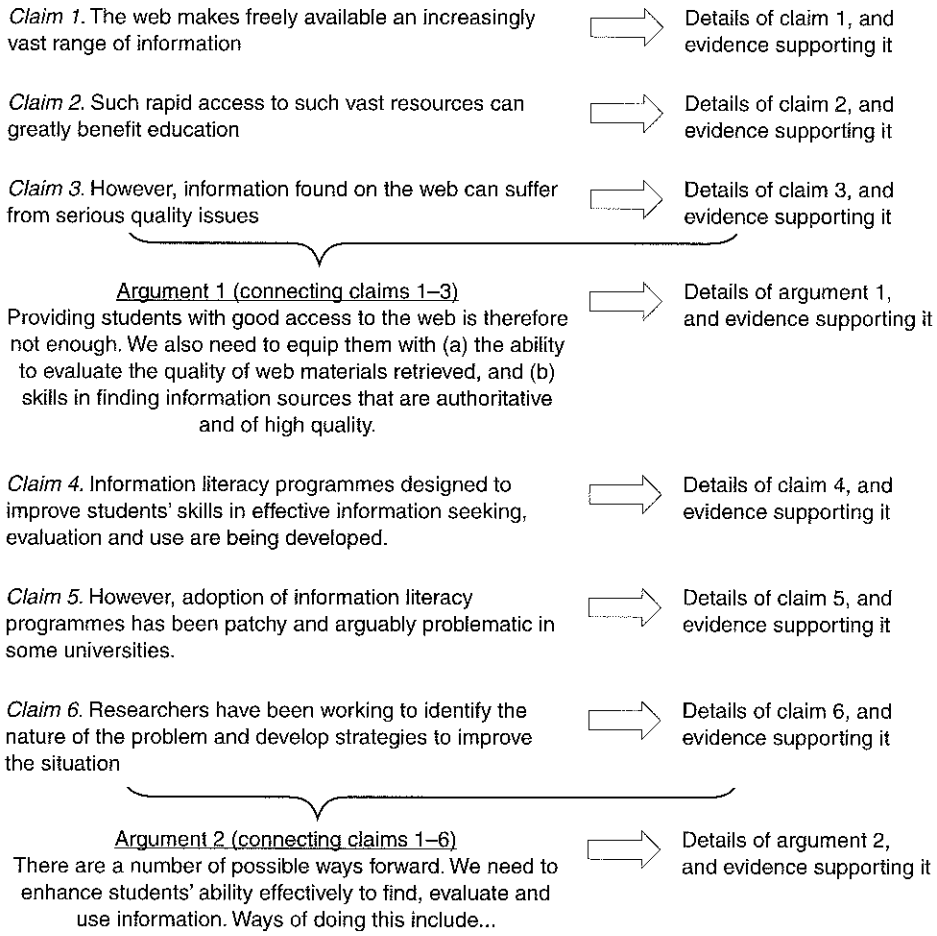

Figure 3.4 A simplified example of claims and arguments in action, in response to the essay topic *'Assess the impact of the web on access to information by higher education students, and discuss implications for information literacy training'.*

The extent to which individual claims are integrated to form a coherent overall argument is also central to the SOLO taxonomy.[6,7] SOLO stands for 'Structure of Observed Learning Outcomes', and the taxonomy is a model developed by Biggs and Collis to assess different levels of students' understanding. The five levels are shown in Table 3.3.

[6]Biggs, J. and Collis, K. (1982). *Evaluating the quality of learning: The SOLO taxonomy*. New York: Academic Press.

[7]Biggs, J. and Tang, C. (2007). *Teaching for quality learning at university* (3rd edn). Buckingham: SRHE and Open University Press.

Details of claim 1, and evidence supporting it

Details of claim 2, and evidence supporting it

Details of claim 3, and evidence supporting it

Details of argument 1, and evidence supporting it

Details of claim 4, and evidence supporting it

Details of claim 5, and evidence supporting it

Details of claim 6, and evidence supporting it

Details of argument 2, and evidence supporting it

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Table 3.3 The SOLO taxonomy of learning outcomes

Level	*Description*
Pre-structural	Pieces of information are presented in isolation without any unifying structure connecting them. The student has largely missed the point.
Uni-structural	The student has made some simple and obvious connections – but these relate to only one aspect of the topic.
Multi-structural	The student has grasped a number of aspects of the topic, but these are presented separately and are not integrated into an overall coherent argument.
Relational	The student has integrated all the parts into a coherent whole.
Extended abstract	The student has made connections beyond the immediate topic – e.g. generalising the ideas to another context. This entails making connections at a higher level of abstraction.

Recall that in Chapter 2 we likened the building up of understanding to the design of a building. Atherton uses a similar analogy to illustrate the different SOLO levels.[8] Figure 3.5 overleaf is loosely based on his illustration.

The extent to which students succeed in connecting ideas and integrating them into a coherent whole will be a key criterion of quality used by your lecturers when marking your work – whether or not they use the SOLO taxonomy explicitly.

The precise way in which you go about the activities shown in Figure 3.3 may vary from individual to individual. For example, you may already have some familiarity with the subject matter, and your first response to the question may be: 'I already know what I think about this'. In this case, the first stage 'identify initial relevant claims that may be useful in building the evidence-based argument that answers the question' may entail seeking authoritative evidence to support the conclusion that you feel you already have. However, it is important to keep an open mind since, as you delve deeper and begin to build support for your conclusions, you may find that the detailed evidence does not support your initial view, or causes you to modify or qualify it in some way.

On the other hand, you may not feel that you immediately know what you think about the question. In this case, you will need to explore the evidence and see where it leads you in terms of suggesting an answer to the question. The first stage in Figure 3.3 will entail searching for sources that help you decide what lines of argument might be productive.

As previously discussed, the balance of emphasis and sequence between activity towards the left and right of Figure 3.3 may vary according to your preferred learning style. The pronounced *procedure builder* will focus, relatively early in the learning process, on the right of the figure – seeking to build up detailed understanding of individual components before fully integrating them to form the bigger picture. Compared to their description building counterparts, typical procedure builders will prefer to

[8]Atherton, J.S. (2010). Learning and teaching: SOLO taxonomy. Retrieved from http://www.learningandteaching.info/learning/solo.htm

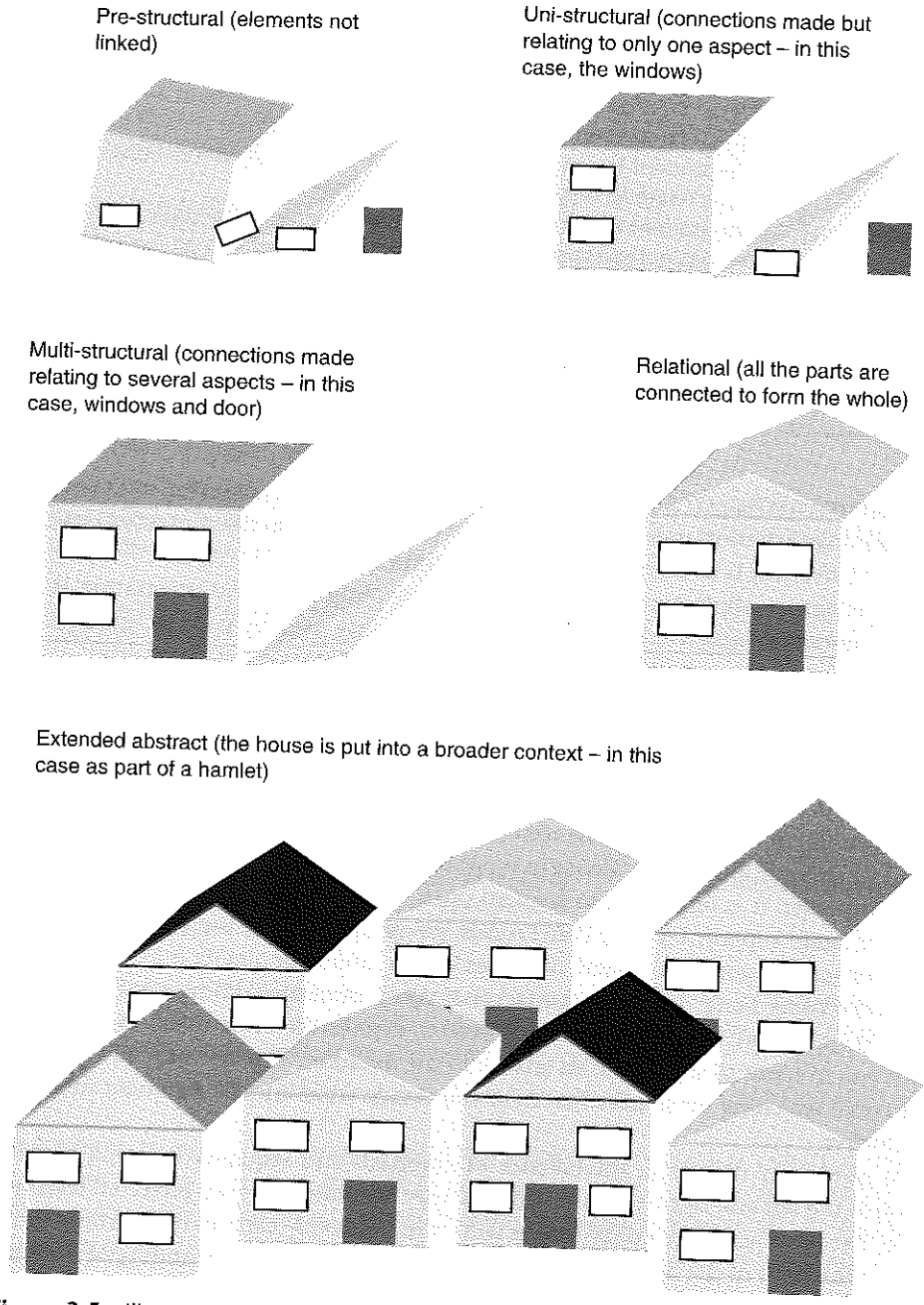

Figure 3.5 Illustration of the SOLO taxonomy (after Atherton)

proceed, from the start, on a much narrower but less tentative and exploratory basis. They tend to prefer a 'one thing at a time' approach, attempting to master one aspect of the topic before moving on to the next. This 'brick-by-brick' approach means that

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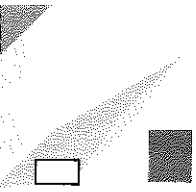

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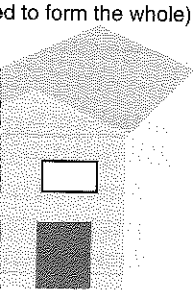

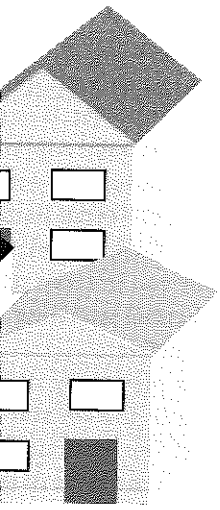

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a solid level of detail is established relating to certain aspects of the topic – but the 'big picture' fitting them all together emerges relatively late in the learning process.

The pronounced *description builder* will focus first on getting a feel for the bigger picture – to establish a clear conceptual overview before focusing more narrowly on the details of the individual components. Typical description builders will prefer to start by engaging in broad, relatively tentative exploration – mapping out the territory in broad terms before committing themselves to a more narrowly focused examination of the details. They tend to want to establish a good conceptual overview first, then fit in the more detailed bits into this overall framework. They like to adopt a holistic, 'many things at once' strategy, exploring a number of different aspects of the topic at the same time (rather than concentrating on one aspect, mastering it before moving on to the next). They obtain the 'big picture' early in the learning process, and the details are fitted into this relatively late in the learning process.

However, although these are differences that have been widely observed amongst learners, this does not mean that everyone necessarily has a strong tendency to one or the other. It may be that you find it more productive to switch between broad exploration and detailed study more flexibly than is suggested by the descriptions of the styles above. As discussed in Chapter 2, both description building (overview) and procedure building (details) are necessary to achieve full understanding. The stylistic differences relate to the predominance you give to one relative to the other at different stages of learning about a new topic.

Figure 3.6 overleaf summarises the differences between procedure building and description building learning styles.

These different stylistic approaches will entail different sequences of information seeking. The type of information you need in the initial stages of reading your way into a new topic will be different if you are adopting a broad exploratory approach compared to the information you need if you are adopting a narrower, more focused approach. The implications, for seeking and using information, of building evidence-based arguments and of the different stylistic approaches to doing so described here will be explored in detail in Chapter 7.

Summary

Coursework may vary in the extent to which you are expected to devise your own essay or research question, and the extent to which you are expected to gather and analyse your own original data. We saw how finding appropriate information is central in all cases, but the way in which it is used may differ according to the nature of the assignment.

We went on to explore in detail how to decode the wording of essay questions to ensure that you know exactly how best to answer them. Lecturers use a wide variety of terms to describe what they would like you to do, which differ subtly in their meaning – for example: *discuss, explain, compare, assess,* etc. This chapter defined what terms commonly found in essay titles actually require you to do in terms of the type of intellectual processing involved.

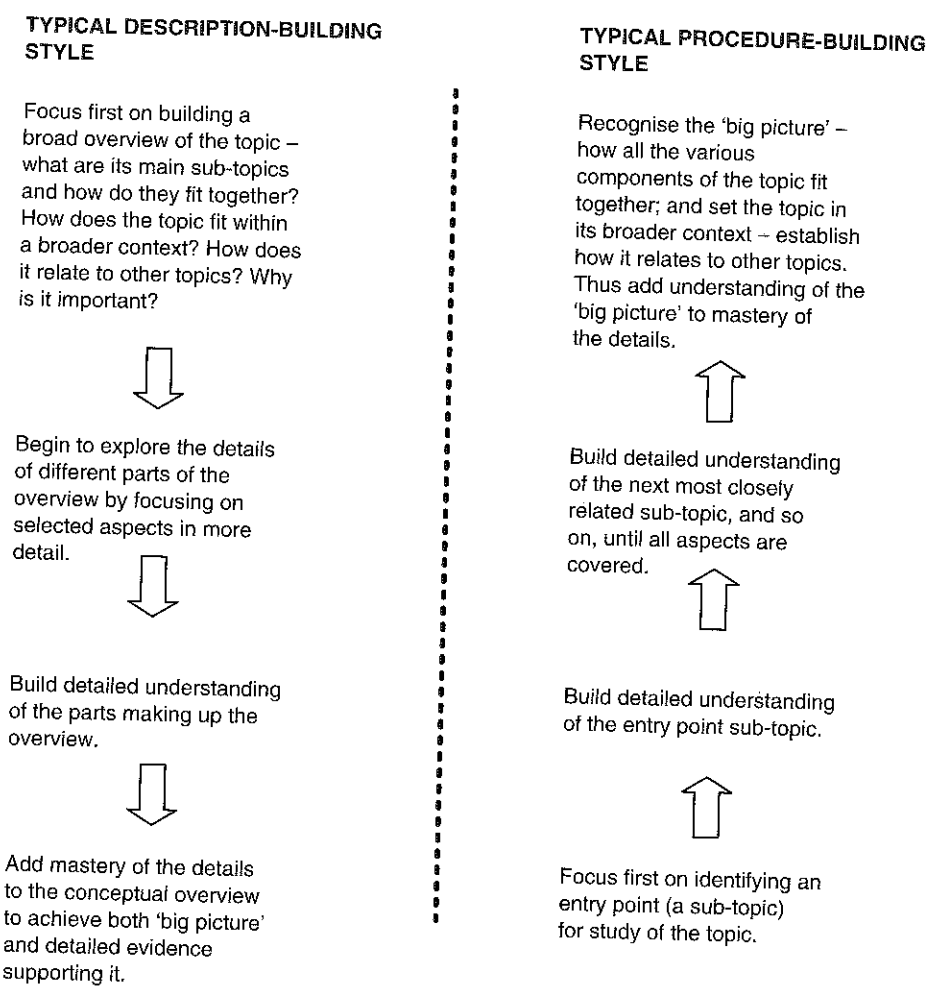

Figure 3.6 Characteristic approaches of procedure builders and description builders

The chapter also provided guidelines to help you devise your own essay or project question. As you progress through university, you will be required to do this more and more, and it is essential to know how to choose a question that will enable you to excel and produce high-quality work.

Finally, we looked in detail at how to build an *evidence-based answer* to your essay or research question, and at how important it is to deliver an integrated, as opposed to fragmented, argument. People with different learning styles may approach this in characteristically different but equally valid ways.

In the next chapter, we will turn to the problems associated with finding the information you need to build such an evidence-based answer, and the tools and techniques available to help you do so.