



الجامعة العربية المفتوحة

Arab Open University

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Suplimentary material

Learning online: Computing with Confidence

Revised on behalf of the course authors to suite the AOU-LMS presentations

TU170

Preparatory Activities

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Introduction

The activities in this booklet are an optional part of TU170 and need not be done by all students. They are designed to bring all students up to a common – although very basic – level of computing skills and study skills.

If you are a computer beginner or if you haven't studied for a long time you will probably need to do these activities, otherwise you will be struggling when the course starts.

The activities

- The Quick Quiz – helps you to decide which of the activities you need to do.
- The Working with Windows materials – are vital for complete beginners to computing.
- The Web exercise – a first look at a web 'browser' and at the TU170 website.
- The AOU-LMS exercise – your first experience in using the learning management system in the AOU.
- The Introduction to study skills – for people who haven't done any serious studying for a while.
- The Clear Thinking exercise – provides basic learning skills which will be used in the TU170 assignments.

Quick quiz

The aim of this quiz is to help you decide which, if any, of the preparatory activities you should do before the course starts.

Working with Windows

The following questions relate to using Windows. If you do not understand the terminology in any of them, or if you answer 'No' or 'Not sure' to any of them, you should do the Working with Windows exercise as described below. If you answer 'Yes' to all of them, you probably don't need to do it.

1. Do you know what the Taskbar is?
2. Can you minimize and maximize different windows?
3. Can you find a file or program on your hard disk?
4. Can you open and close programs easily?
5. Do you know what a directory or folder is?
6. Can you create new directories or folders?

Web exercise

If you answer 'No' or 'Not sure' to any of the following three questions, you should do the Web exercise. If you answer 'Yes' to all of them, you probably don't need to do the Web exercise.

7. Do you know what the address or location bar on a web browser displays?
8. Can you connect to a page on the World Wide Web, given its address?
9. Can you follow links from one web page to another?

AOU-LMS exercise

If you answer 'No' to either of these questions you should do the AOU-LMS exercise.

10. Do you know what is AOU-LMS and how to get to it?
11. Do you know what you need to access the AOU-LMS?
12. Do you have an idea on what services are available on the AOU-LMS?

Introduction to study skills

If you answer 'No' to either of these questions you should do the Introduction to study skills activity.

13. Do you have recent experience of fitting an extra activity of six or more hours per week into your life?
14. Are you familiar with the basic study skills of organizing your time, your study place, taking notes, and of recognizing the difference between memorizing and understanding?

The Clear Thinking exercise

This short activity is recommended for all TU170 students.

Working with Windows

Note: This material is relevant to Windows operating system. There are some small differences between Windows versions, but these are not significant here.

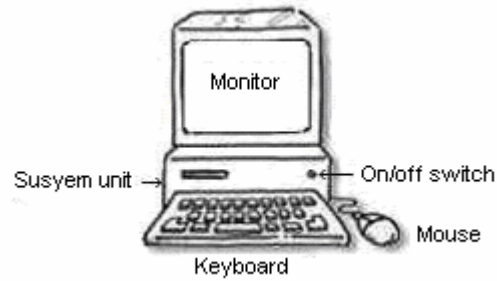
Introduction

This section has been developed to provide the AOU students with an introduction to the use of a computer running Microsoft Windows. It does not assume any prior experience of using computers, and it will give you a good start along the road to becoming a confident user of a modern computer running Windows. We recommend that you study this carefully; it may take you about eight hours.

It is worth noting that even very experienced users have said that they have learnt things about Windows for the first time by looking at these materials. If you are an experienced user, you should read through the section summaries, and make sure that you are familiar with all the features of Windows referred to there. Studying more fully any features that you are unsure about will help to make you a more effective Windows user.

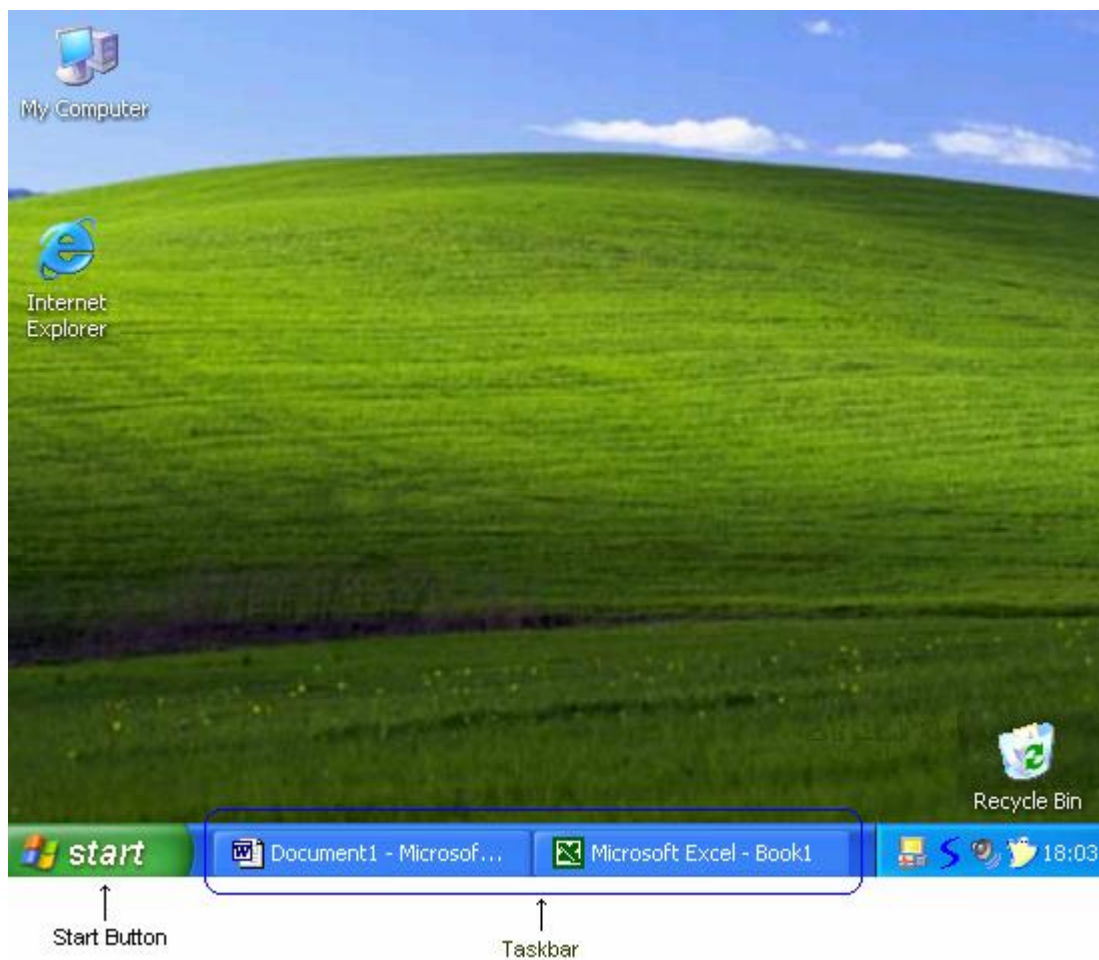
The Windows operation systems starts once you switch the computer on. The on/off switch exists on the system unit. See the figure below which explains the major parts in the computer.

Sometimes the system might ask you for a username and a password to log into the system. This you should know if you have a computer at home since it will be given to you by the company which sold you the computer. If you are using an AOU computer then ask the lab supervisor for the password.

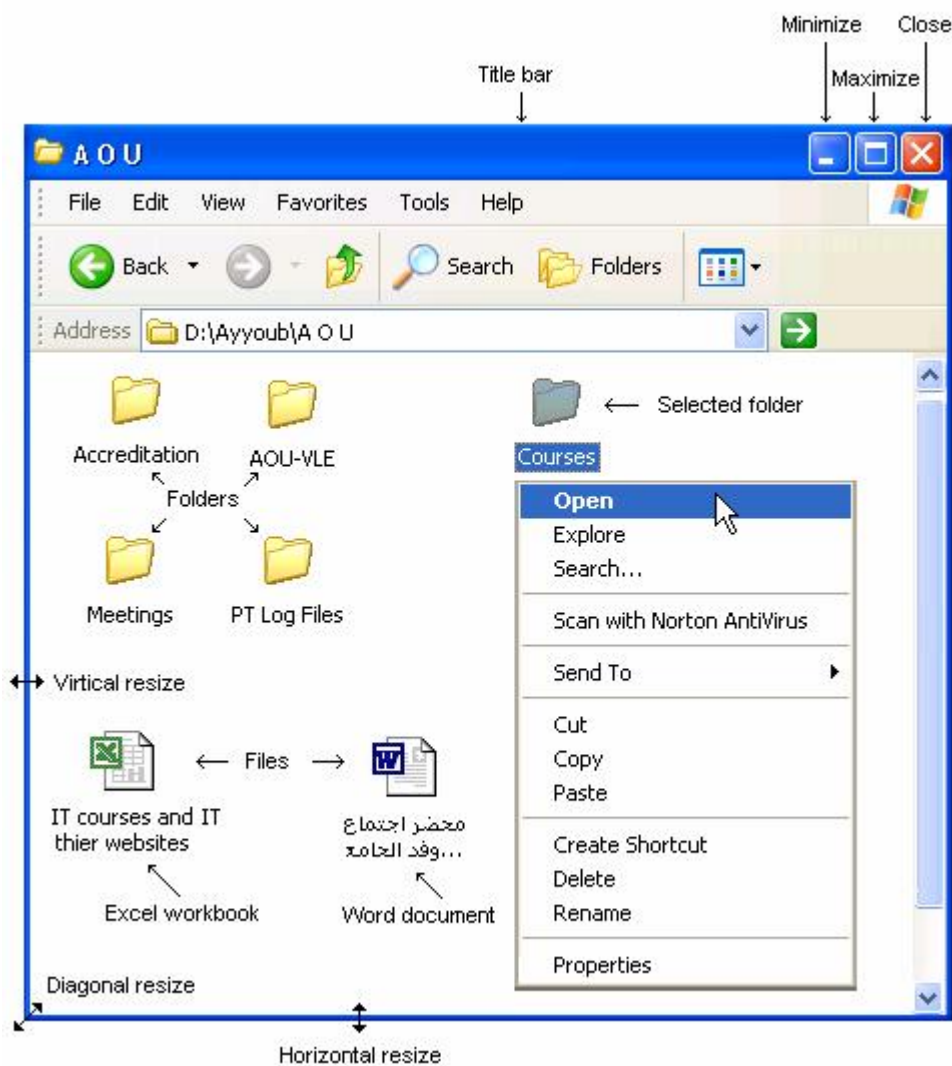


Desktop

After windows has completed the start up, it displays the *desktop* of the user (the first screen you see on the computer monitor). The desktop looks like the figure below, yet each user can customize the look and feel of his/her desktop.



The *Taskbar* shows the currently open programs. In the example above two programs are currently open, these are Word and Excel which you will learn in Section 3 of this course. When opening any program it will start in a separate *window*. The set of open windows are those shown in the taskbar. To switch between open windows just click on it using the mouse left button. The active window will be shown on the top. You may change the size of the windows using drag-and-drop (point the mouse on one of the window edges, click using the left button, then move the mouse in the desired direction).



The *Start* button is the place which has links to all programs in the computer. Any program in Windows should have a shortcut in the start menu which in can be reached and run from. To run a program click on the Start button and select its name from the start menu. The computer can also be shutdown from the start menu. The proper why to shutdown your computer is to select the *shutdown* command from the Start menu.

Files and Folders

Windows stores data in files of various types and these *files* are usually located in *folders*. In the figure above you will see two files (Excel and Word files) and five folders. Files and folders names tell what they contain (or at least you should select names that best describe the content).

To open a file or a folder double-left-click on it (point the mouse on top of the file or the folder and then clicks two times using the left button). Files and folder can also be opened by pointing the mouse on top of the file and then right clicking on it. A side menu will show up from which you will select the command *Open*.

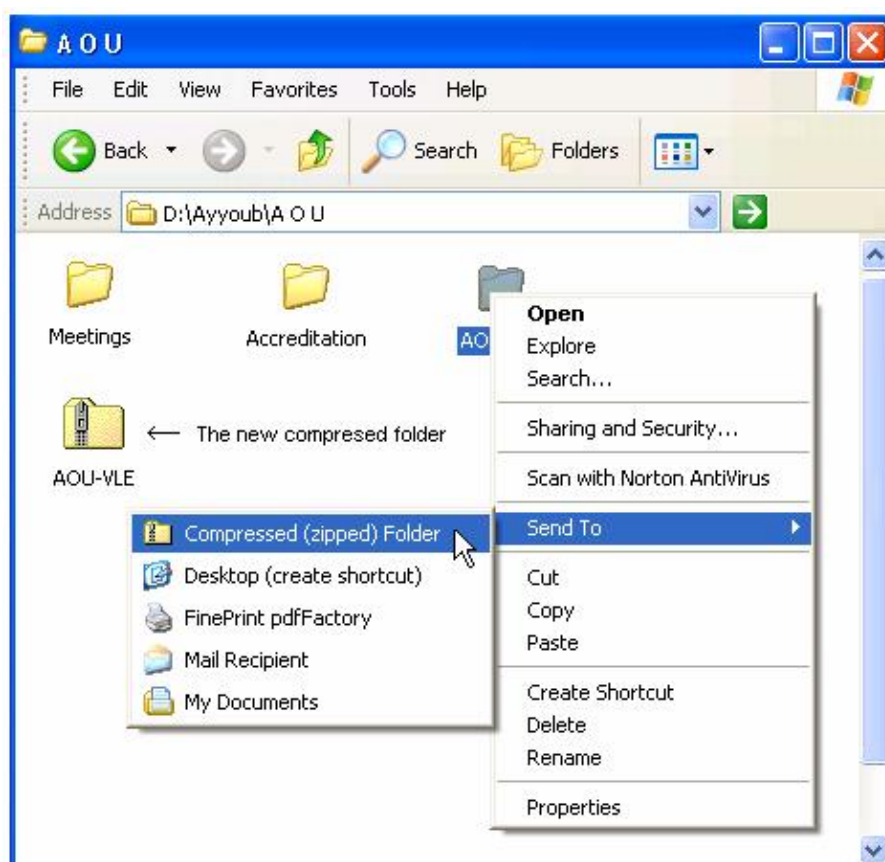
Files and folder can be deleted by selecting them (click on them using the mouse left button) and the pressing the *Del* key on the keyboard. Of course this is not the\only way to delete files and folders. We will leave to you to learn additional methods to delete files and folders.

Deleted files or folders can be restored from the *Recycle Bin* (the first place where the deleted items go when they are deleted). Open the Recycle Bin, right-click on the files you want to restore, and then select *Restore*. Deleted files will be permanently lost of you empty the Recycle Bin by right-clicking on the Recycle Bin and then selecting *Empty Recycle Bin*.

Compressing and *decompressing* files is rather easy in Windows. To compress on or more files and folder into one piece do the following:

1. Select the files and folders you want to compress. Here you can use the *CTRL* button on the keyboard to select non-adjacent files or folders. Just press the *CTRL* key (and keep you left finger on it) and then point the mouse on the files/folders and left-click on them one after another.
2. Once the section is done, right-click on any of the selected files. A side menu will appear.
3. From the side menu select *Send to*. Another side menu will appear.
4. From the second side menu select *Compressed (zipped) Folder*.
5. Finally a new file will show on the same windows which contains all the files and folder selected in steps 1.
6. To decompress a zip (compress) files simple double-left-click on it. A new window will open with the original contents of the zip file.

The figure below shows a diagrammatical explanation for the above compression steps.



Web exercise

In this exercise you will connect to the Internet and find a page on the World Wide Web. Before you begin this exercise you need to:

- do the working with Windows exercise, and
- set up an account with an Internet Services Provider (ISP) if you decide to use your computer at home.

Connecting to the Internet

Again, you can use the AOU's labs in the closest center to access the Internet; however if you prefer to use your own computer and need to get it connected to the Internet then do the following:

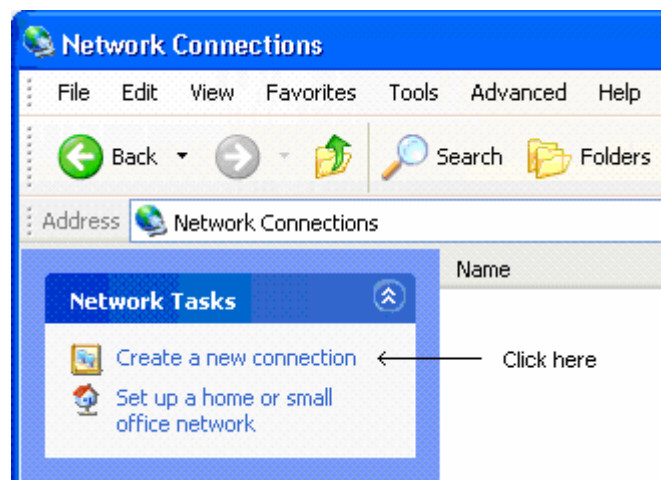
- 1) Make that your computer has a modem. Simply look at the backside of the system unit and see if it has a socket that fits the phone jack. If you can see this socket then insert the phone line into it.
- 2) Now to add a connection to the Internet, click on *Start* then select *Control Panel* as shown in the figure below.



- 3) In the *Control Panel* window open the program *Network Connection* as shown below (the figure does not show the rest of the items in the Control Panel).




- 4) In the *Network Connection* window click on *Create New Connection* as shown below. A *Wizard* will start with successive dialogue boxes where you will need to provide the ISP phone numbers and other information as explained next.



- 5) In the first dialogue box in the *Network Connection Wizard*, click on *Next*.
- 6) In the second dialogue box select *Connect to the Internet* then click on *Next*.
- 7) In the third dialogue box select *Set up my connection manually* then click on *Next*.
- 8) In the fourth dialogue box select *Connect using a dial-up modem* then click on *Next*.
- 9) In the fifth dialogue box enter the ISP name then click on *Next*.
- 10) In the sixth dialogue box enter the phone number of the ISP then click on *Next*. This number should be given to you by the ISP. Contact them if you don't know this number.
- 11) In the fifth dialogue box enter the username and password as given to you by the ISP then click on *Next*.
- 12) Finally click on *finish*.

Now to connect to the Internet just double-left-click on the ISP name under the *Network Connections*. Read steps 2 and 3 to see how to get to the *Network Connections*. If the connect is not successful then check the phone cable, the username and password, and the modem card. Ask for help from the relevant parties for any or all of these items.

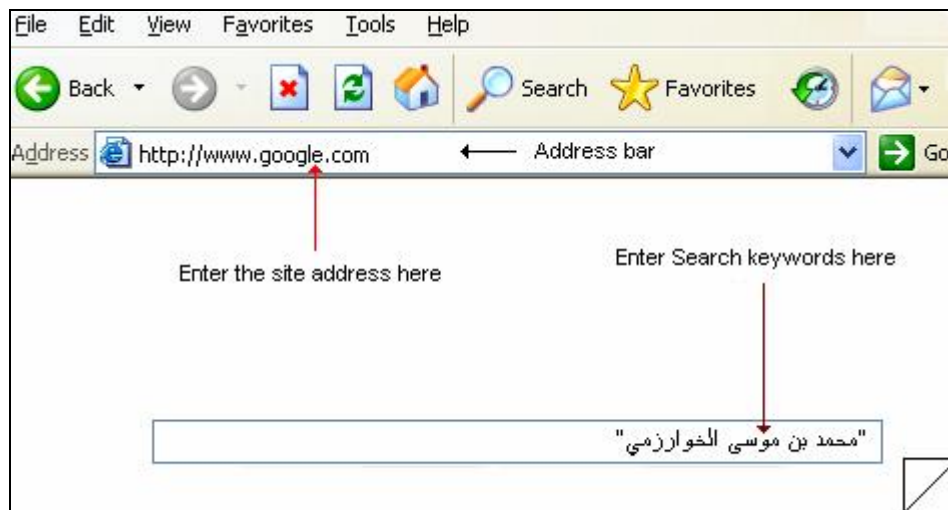
Browsing the Internet

After you successfully connect to the Internet, The icon  will be shown on your *system tray* (the right bottom corner of your desktop). At this point you can browse the Internet using any browser program such as the *Internet Explorer* or *Netscape Navigator*. The Internet Explorer can be started from the Start menu. Below are few detailed steps that guide you through the browsing.

- 1) Start the Internet Explorer can be started from the Start menu. The icon is similar to this one



- 2) After the Internet Explorer starts it will display a default page. To view another page (the AOU-LMS page for example) just type its address in the address bar. The figure below shows a search engine site (a site that tells you about other sites). In the example we are trying to search for all sites that contain the given keyword in them.



Try to visit more sites and have a look at the addresses of the sites you visit. Can you find any relation between the sites' contents and their address? In Section 4 of this course you will learn more about these addresses and how to locate information on the Internet.

AOU-LMS exercise

The AOU Learning Management System is a fairly easy to use system with many services to help you study your courses. The services include online communication using synchronous chat, forums, and dialogues. You can also retrieve the online section of the course and also you can download a complete offline version of the course website. Other services include online assignment submission and online exam among many other services.

To access and use the AOU-LMS do the following:

1. From the Start menu run the Internet Explorer or any other browser you are comfortable with.

2. In the browser address bar enter the address of the AOU-LMS which is given in the welcome letter sent to you by the course team in your branch. Ask you tutor or any pf the lab supervisors in your branch in case you can't locate the address.
3. Once you enter the address press *Enter* to see the first page from which you will be able to login. Click on *Login* and then enter your username and password. Again these are given in the welcome letter Ask you tutor in case you didn't receive this letter.
4. The first screen you will see after you login contains the list of courses you are registered. Among this list you will see the TU170. Click on the course to enter to the course main page in the AOU-LMS. There you will see links to the full list of course services, resources and activities. The course main page look the following:

People

- Participants
- Groups
- Edit profile

Activities

- Assignments
- Chats
- Choices
- Dialogues
- Forums
- Quizzes
- Resources
- Surveys
- Wikis

Links to the course resources, activities, and services

Calendar

<< August 2004 >>

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Weekly outline

- News forum
- Tutor Group Forum
- Dialogue
- Chat

9 October - 15 October

Start of Section 1: [Joining the online world](#)

In this part of the course you will learn to use e-mail and computer conferencing, then join an online academic community with an 'ice breaker' activity. There is also further work on study skills.

By the end of this week you should complete the following:

- Read [Section 1.1 E-mail and computer-based forums](#).
- Read and do the Activity List for E-mail and computer-based forums.

Latest news

[Add a new topic...](#)

20 Jul, 13:01 - Admin User
Assessment parts and weights [more...](#)

20 Jul, 12:48 - Admin User
The assessment strategy differs from that given in the audio track [more...](#)

Recent activity

Activity since Monday, 30 August 2004, 12:43 PM

[Full report of recent activity...](#)

The second week's study guide which contains all links to the relevant resources, activities, and services.

For further details on how to use the AOU-LMS refer to the User's Manual. You should obtain your copy of this manual from the University branch. Talk to your tutor about it.

Introduction to study skills

This activity introduces some basic study skills. The key point is to help you make effective use of the time you spend studying this course and any future courses. The key resource for this activity is Chapter

1 of the book, *The Sciences Good Study Guide*, by Northedge, Thomas, Lane and Peasgood, which was developed from many years experience with Open University students at UK.

Chapter 1 is reprinted as Appendix 1 in this booklet.

What you should do

Read Chapter 1 of *The Sciences Good Study Guide* and try the exercises within it. The aims of Sections 1 and 2 are to get you oriented to studying, and to help you reflect on your existing study skills. The purpose of Section 3 is to help you to organize your study time and place. Section 4 talks about the difference between deep and superficial learning. I recommend you follow the suggestion and keep a study diary.

Clear Thinking exercise

‘The ability to think clearly, to make sense of confusing and contradictory information, to be able to see patterns and structures in what you learn, is one of the key learning skills. You may already be good at it, but you may find a few useful ideas here too.’

(from *On Clear Thinking*, in Appendix 2)

I recommend this Clear Thinking exercise to all TUI70 students. You may find some things in it which you consider to be basic common sense, but you may also find some ideas which challenge the way you see things.

You will be expected to show evidence of the clear thinking principles in your assignments.

What you should do:

- 1 Read the short document *On Clear Thinking*, which is reproduced in Appendix 2 of this booklet
- 2 Try the Clear Thinking Quiz below. You will be able to discuss your answers with other students in your group when the course starts.

Clear Thinking quiz

Decide whether you agree with each of the following statements, and whether the author of *On Clear Thinking* would agree with each statement. Put either a to indicate that you or the author would agree or a to indicate that you or the author would disagree.

Self	Author	
<input type="checkbox"/>	<input type="checkbox"/>	1 When evaluating statements made by anyone you should always consider the perspective and biases of the person making the statement, and what they are trying to accomplish by it.
<input type="checkbox"/>	<input type="checkbox"/>	2 When evaluating statements by an expert it isn't necessary to consider their perspective, biases and what they are trying to accomplish because as an expert they are objective.
<input type="checkbox"/>	<input type="checkbox"/>	3 Facts are concepts that are universally true.
<input type="checkbox"/>	<input type="checkbox"/>	4 Values are concepts that are personal, or limited to a group. They are opinions, and are not necessarily true.
<input type="checkbox"/>	<input type="checkbox"/>	5 Facts and values are part of a spectrum of agreement: at the fact end, there is near-universal agreement, values are the shared

views of a group, and at the other extreme are unique individual views.

- — 6 Once a scientific theory is proven to be true it is true for all time.
- — 7 A scientific theory is an explanation which links observations. It can be more or less widely applicable, but never 'true' in an absolute sense.
- — 8 It is useful to look for the limits of validity of a theory, to find the circumstances under which it no longer applies.
- — 9 It is useful in daily life to distinguish statements which describe observations from statements which are explanations or theories about observations.

Appendix 1: The Sciences Good Study Guide

The text reproduced below is Chapter 1 from Northedge, A., Thomas, J., Lane, A. and Peasgood, A. (1997) *The Sciences Good Study Guide*, The Open University. ISBN 0 7492 3411 3.

Chapter 1 Getting started

The hardest part of a journey is taking the first step.
An old saying

1 The first step of the journey

Starting a course of study is rather like starting a long journey.

Activity Break

Think of some long journeys you have taken. Why should the first step be any harder than the other steps? Get a piece of paper and write down a few thoughts before reading any further.

Here are some answers to compare with yours.

- Before you can start you have to *plan* your journey, making difficult strategic decisions about how to travel and what route to take.
- You also have to make lots of *routine preparations*: looking up train times, making bookings, working out money arrangements, stopping the papers, packing, switching everything off and locking up the house.
- But perhaps the greatest difficulties are *mental*. You have to *commit* yourself. *This* is the day – there will be no more putting it off. And *this* is the journey, as opposed to other journeys you might have made instead. You have to let go of all other plans – of all those other things for which you could have used the time.
- Even then you may take the first step with an uneasy feeling that you have forgotten something. Later, as you settle into a travel routine, you may come to see that many of your worries were unnecessary, but at that first moment you feel raw and vulnerable.

1.1 Preparing for study

What can starting a journey tell us about starting to study? One thing we see is that it is not the step itself – putting one foot forward – that is difficult. It is all the things you have to do to make the first step possible. Similarly, the first study tasks in a course are usually designed to be easy. The difficulties lie in the planning, the preparations and the state of mind you have to adopt to get yourself started – and in feeling edgy because you haven't yet settled into a 'study routine'.

Planning

There are more ways than one to make most journeys, and there are different routes through your studies. Consequently, you need to plan your way ahead. And if, for any reason, some paths are not open to you (say, you cannot participate in some elements of your course because of limitations on your time, your resources, or some other impediment) you can still work out a route to your destination. Arriving is what counts. How you get there is up to you. The key is to find out what your options are, draw up a plan that will work for you and then follow it. I shall look at planning in Section 3 of this chapter.

Preparation

Preparation for study, as for most journeys, does not have to be enormously complicated – but there are a few essentials you need to sort out if you are to be successful. What these are will depend on your circumstances, so you need to take the time to think ahead. Section 3 will also help with your preparation.

Mental readiness

Are you mentally ready to set out on your study journey? Sections 2 and 4 of this chapter offer assistance with your mental preparations. As you will see, I suggest that you keep a kind of ‘travelogue’ of your thoughts and plans in the form of a *Study Diary*. In fact, it’s worth starting this now, before you read any further. It will bring your own thoughts on studying to the front of your mind, and so help you to engage effectively with the rest of the chapter. And it will be interesting, later, to look back and see how the experience of studying has changed your thinking.

Activity Break

- 1 Why have you committed yourself to this particular course of studies?
- 2 What kinds of highs and lows do you expect to encounter?
- 3 How well do you think you will cope?
- 4 Where do you think you will have arrived at the end?

Jot down some answers to each of these questions on a sheet of paper and put it in a folder marked ‘Study Diary’.

I cannot say what your answers should be. These are questions only you can answer. I hope that, by the end of this chapter, you will have plenty more thoughts to add to your notes.

1.2 Working out your own answers

In this book you will keep meeting ‘Activity Breaks’, in which we ask you to write down your own ideas. We believe that *you already know a lot about how you learn*. We imagine, too, that *you have already had advice about studying* – people telling you to be organized, to keep to time, to plan before you write, to present your work neatly, and so on. Advice is easy. The difficulty lies in connecting it up to studying as *you* experience it.

To develop techniques you can use in your studies, you will often have to work things out for yourself. This book aims to present you with thought-provoking activities that will connect with your own experience. These activities will include questions to stimulate you to reflect on your situation and your personal capabilities. The intention is to bring to the fore what you already know about yourself and the way you learn, so that you can work out your own study solutions.

We assume that you will acquire study skills through:

- an active engagement with genuine problems
- making connections with your own experience
- thoughtful reflection on your study strategies.

There is more on this topic in Section 4.1.

1.3 Capturing your thoughts

Finally, in doing the two activities in this section you have already encountered a key ‘study skill’. By asking you to *think* and then *jot ideas down on paper*, I was introducing a basic study technique. You

do not learn simply by ‘soaking it up’ like a sponge. You need to work with pen and paper beside you at all times, so that you can write as thoughts come to you. If you make a habit of noting thoughts down, you will find that, while some are soon thrown away, others turn out to be very useful. Once you have ideas on paper, you can *work* on them – refine them, extend them and connect them to each other. In becoming a student, you have entered ‘thinking’ territory. You need to get as much out of your thoughts as you can.

Key Points

- Studying involves:

planning your route (don’t just set off in hope)

making a few *essential preparations* (after working out what these preparations should be)

getting yourself into the right *frame of mind* (be clear about why you are studying and what you want to achieve).

- We learn study skills in an active manner, by thinking about our experiences and working out our own solutions.
- As you study you should make a habit of writing your thoughts down, so you can look at them and work on them.

2 Why read about studying?

If you can work out your own solutions, why should you need a study skills book? Isn’t studying a fairly straightforward activity anyway? You read the books, attend tutorials, do the practical work and complete your assignments. What could be simpler than that? But is it so simple?

Mark looked up again and saw that it was 7:20 – nearly an hour since he ’d started and he was still on page 3. In another hour he ’d have to walk over to collect Amy from her class. Would he ever start again after that?

‘Early morning tomorrow – can ’t afford to be late tonight. And there ’s the police thriller from 9:00 till 10:00 – only two more episodes – can ’t miss this one. I wonder if the step-daughter is involved? No! Must get back to the reading – or perhaps a cup of coffee would help me concentrate – although I had one only 20 minutes ago.’

Mark looked at the page again. His eyes glazed over. He ’d been staring at it for so long now and nothing was going in. There was a diagram marked with arrows and letters, with two equations next to it

‘What am I supposed to do with this lot?’ He got up to straighten a photo on the mantelpiece and sat down again. He flicked ahead to some complicated-looking pages and wondered how he would ever cope. ‘At this pace I ’ll never reach them.’

The first page hadn ’t seemed too bad: a bit dry, too many long words, not many jokes – and he didn ’t see what they were going on about with the experiment so he ’d skipped that. Then there was some stuff he ’d done back at school, which he also skipped. But when he ran into the table and the equations at the bottom of page 2, he was lost. He just couldn ’t make them out, so he ’d left them and carried on. And now he had ground to a halt at these equations on page 3.

‘Who am I kidding, trying to get into this stuff?’ He went back to the previous paragraph, but found his attention slipping away again halfway through it. ‘Am I supposed to remember all this?’

If Amy asks, I won't be able to tell her a thing about it.'

'Why am I so bored? I thought it would be interesting when I saw the cover.' Mark looked at his note-pad. The topic was written at the top. The rest was blank. They said to make notes as you study – but notes of what? *'No point copying out the whole book. "Sum up the key points." How? Perhaps I'll just sort out my desk.'*

The phone rang. It was Ryan ...

Mark brought back some coffee and sat down again. 'Only half an hour left. Must concentrate. Let's go back to page 2. On second thoughts, why not go right back to the start and try to get some notes down? Or what about that table? I could try the calculation. No, I don't know what that symbol means. Oh, forget it! It's too late to get anywhere now.'

Meanwhile, in another room a few streets away ...

Sushma dropped another crumpled ball into the waste-paper basket and stared blankly at the pad. What now? She had made a half a dozen starts and she still couldn't see where to begin.

'How can I be stuck when I've hardly started? How long is this whole thing going to take? Will it ever be done? Not at this rate! ... "What are the physical limitations on the transfer of bacteria by insect vectors?" Where do you start with a question like that? I can't give them the whole chapter. Should I start with a definition, or a diagram, or a summary of the different bacteria and insects involved? What are insect vectors anyway? I thought I knew about infections before I started reading this. Biology always was my weak spot. I just can't make anything of those diagrams... What if I set it all out as a table? Or perhaps I could just take a few sentences from here and there in the textbook and change the words around a bit – at least they couldn't say I'd got it wrong. But the tutor said to write in your own words and to include diagrams.'

As her mind slipped back to the classroom she winced. Why hadn't she kept quiet, as she'd meant to do? She knew she didn't really understand what those articulate types were spouting about, with all that technical jargon – but the tutor seemed so keen for everyone to speak. When she'd finally wound herself up to say something the tutor had looked straight at her, so she'd blurted out her question too fast for anyone to understand. The tutor thought she was asking something really simple and had explained it to her so carefully – she'd felt about ten years old. She hadn't had the nerve to interrupt. She'd made a right idiot of herself. How could she face going back again?

'Anyway – I didn't come away with that much. Nothing I can't get from the book. Why not give it a miss this week? Would the tutor be offended? ... Oh, well – I'll think about that later. Must get back to this stupid assignment. I wish I could remember where I put the assignment notes. I suppose I'd better search the house again.

No – waste of time – I've looked ten times already. Where else could they be? Forget it! How about looking up "vectors" in the dictionary and starting from there? ... Why am I doing this to myself?'

Is it really as bad as that? Surely not ... at least not all the time. Yet there are some times when studying feels pretty bleak. Mark and Sushma are fictitious, but their problems are real enough – and they are not problems only for new students or 'weak' students. They are *general* problems of a sort we all face when we study – problems of *struggling to understand*, of *managing time*, of *completing a task*, and of keeping up one's *morale*.

Activity Break

Have you experienced any of Mark and Sushma's problems? What do you think they are doing wrong? Write down what you see as Mark's main problems and some ideas as to what he could do about them. Then do the same for Sushma.

One of Mark's problems is *finding time* for study given his social commitments, his work commitments and his leisure interests. And both Mark and Sushma have problems using their time *effectively*. Both are concerned about *what* they should be doing and *how long* it should be taking them. Both are 'stuck' and cannot see a way forward. Mark is repeatedly distracted – by a phone call, by his own thoughts, by making coffee, by tidying his desk and the mantelpiece, and most of all by the boredom he experiences when he reads the text. Sushma is distracted by her feelings of inadequacy: she sees herself as a very weak student and feels overawed by the tutor and the other students. As a result, she approaches the assignment in a very tentative way, which makes it difficult to get to grips with the subject. She is also feeling stupid and annoyed with herself for having lost her assignment notes. She is sitting there, almost hypnotized by the question, casting around desperately for some way of getting the assignment done. Both Mark and Sushma feel fed-up; they have lost the enthusiasm with which they started their studies and are in danger of giving up. They need some help.

On the other hand, Mark and Sushma may be doing better than they think. Studying *often* feels like a struggle. It is in the process of struggling that important learning starts to happen. We dropped in on Mark and Sushma at particularly low moments, but let's join them a few weeks later when things are looking up...

Sushma squeezed between the plastic chairs and put her cup and plate on the canteen table. 'I'm starving. I came straight here from work and I missed lunch today. I thought my stomach rumbles would drown out the tutorial.'

'I wouldn't stuff in that sandwich so fast if I were you,' said Mark. 'Don't forget our old friend Clostridium perfringens.'

'Yes,' chipped in Kathy, 'the curse of the canteen. That sarnie's been sitting under a warm light bulb for hours, I'll bet. Exponential growth of bacteria, you know.'

'Disgusting orgy of reproduction in your gut right now, I shouldn't wonder,' added Mehmet. 'Toxins pouring out all over. Still, you won't be on the run till tomorrow morning.'

'Oh, don't! I can't eat it now.'

'Don't worry,' Mark encouraged her. 'You'll be right again by Friday. Unless you're pregnant of course.'

'Oh, shut up! Anyway, you're all breathing in millions of bacteria just laughing.'

'Did anyone see that programme about microwaving food that's been in the fridge?' asked Mehmet. 'Now that was enough to spoil your appetite.'

'Yeah,' replied Kathy, 'and it felt dead good, being able to understand how the microwaves heat the food by exciting the water molecules. My family was dead impressed.'

'My molecules haven't had much excitement lately,' Sushma said. 'After I'd finished that last assignment I was far too exhausted to even think about enjoying myself.'

'It's amazing how much you can pick up from those science programmes, you know – when

you've got a bit of background. But you can see how they only give you one side of the story,' said Kathy.

'I'm saying, "Hey – what about the ecological impact?" And my family's saying, "Get her – two months of education and she's telling the boffins where to get off."'

Naomi joined in: 'My John still tries to show he knows it all – but I reckon he's getting a bit worried. I caught him sneaking a look at one of my books.'

'I found I was stopping myself using long words at work, so they wouldn't think I was a wally,' said Mark. 'Only a few weeks ago I thought I'd never crack that scientific jargon. I was completely lost.'

'Well, I'm still struggling,' said Sushma. 'I had a terrible problem with that maths on the growth rates of bacteria.'

'Oh, yeah. So did I,' said Kathy. 'It was a pain. I gave up and phoned Naomi. We sorted it out between us. But you're so good at it, Sushma. You got a great mark for that last assignment.'

'You should have seen me sweating over it. Nearly drove everyone in the house to a nervous breakdown. I find the assignments the worst. Though I don't much like the look of the next topic in the book either.'

'Oh, I don't know – it looks quite interesting,' said Mark. 'You just run yourself down, Sushma. I could cope with your grades.'

Hey – break-time's over – we'd better get back.'

And off they go to have a stimulating, friendly tutorial, while violins play in the background, and we see that studying can be wonderful after all... Well, I just wanted to show that, though studying is often frustrating and tough, it can also be rewarding. It's a bit like climbing mountains. You have to do a lot of hard slog on the way, and sometimes when conditions are hard you wonder why you bother, but when you reach the peaks it can be very satisfying. Many students say that studying not only teaches them about the subjects they study, but also gives them *more confidence, broader interests, and more purpose in life*. They begin to achieve more at home and at work. This is another reason for reading about studying. If you develop your study techniques, not only will you improve as a student, but you will also strengthen your abilities in other walks of life.

Activity Break

Are there any parallels between the stories about Mark and Sushma and your own experiences? Look back at the previous Activity Break and at the answers in your Study Diary folder. In the light of Mark and Sushma's experiences, would you change any of your answers now? If you would, write down the new answers and put them in your folder.

3 How to get yourself organized

When you begin, studying is difficult simply because it has no 'shape' for you. Until you have developed some kind of 'system' for organizing your studying – for deciding *what* needs to be done and *when* – you can spend a lot of time dithering about, starting one thing and then another, all the time wondering whether you are really getting anywhere. Mark clearly suffered from a lack of purpose or plan, and this left him with a major problem: how to *manage* his study time.

3.1 Managing time

In fact, Mark had *two* kinds of problems with time: *finding* enough time, and *using* it effectively.

Finding time

Mark had *social* commitments (picking up Amy, talking to Ryan on the telephone), *work* commitments (an early start the next day) and *leisure* interests (watching the police thriller). All of these things are important, but is there enough space in between for studying? Students always have to make very difficult decisions about priorities. When studying comes into your life, it generally means that something else has to go. And yet we know what ‘all work and no play’ does. Even students have to have some fun. So one of the first skills you have to develop is ‘a juggling act’, keeping an extra ball in the air. Studying often requires a lot of time in good-sized *chunks*. You have to become an expert at *creating* time. One way to set about this is to draw a chart of a ‘typical’ week and try to spot gaps for your studying. Figure 1.1 shows one student’s chart.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Morning	Housework	Study 1 hr	Study 1 hr	Visit Mum	Housework/ Shopping	Study 2 hrs	Study 2 hrs
Afternoon	Work	Work	Work	Work	Work	Free	Free
Evening	Evening Class	Study 1 hr	Study 2 hrs	Aerobics	Study 1½ hrs	Free	Free

Figure 1.1

When she had looked at her chart, the student wrote:

This was my first shot. When I saw that it gave me a total of ten and a half hours of study, I decided to make more time by doing two hours on Tuesday evening and an extra half hour on Saturday, to make a total of 12 hours. If I needed to, I could make some extra time at weekends (for writing an essay, say). And if I’m going out on one of the days, I can study for longer on another. Actually, now that I come to think about it, I’d rather have one weekend day completely free to relax. So, I think I’ll study for five to six hours on Saturday (in two sessions of two to three hours). This gives me a revised table containing about 13 hours of study.’

Figure 1.2 shows the student’s revised chart.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Morning	Housework	Study 1 hr	Study 1 hr	Visit Mum	Housework/ Shopping	Study 5/6 hrs	Free day
Afternoon	Work	Work	Work	Work	Work		
Evening	Evening Class	Study 2 hrs	Study 2 hrs	Aerobics	Study 1½ hrs		

Figure 1.2

Activity Break

Draw a chart for yourself like the one in Figure 1.2.

Work out the total study time you can reasonably expect to set aside and where in the week it falls. Try to identify where clashes may occur and where you might have to cut back on some things.

You don't need to go into great detail; you are just trying to give more 'shape' to your week. Don't be alarmed if you find this activity difficult. It is. Moreover, having made a plan, it is even harder to stick to it. Yet sticking to it is not necessarily the point. Even if you find that you keep having to change your plans, it is still worth making them, because even changing your plans forces you to think about *what* you are doing and *why*. Planning makes you think *strategically*, instead of just drifting.

Using time

Mark was having difficulty not only in finding *enough* time, but also in *making* effective use of time. He had not worked out what to do in the two hours he had allocated to his studying. By flitting about, he ended up finishing the session early, without having achieved much. To avoid this problem you need to develop ideas about *how much time* you require for *particular types of task* and about how long to stick at those tasks if you are running into difficulties. You will find you can do some tasks – such as studying a difficult passage or writing a report – only when you are *fresh* and have a *good-sized chunk of time* ahead of you. Other tasks – such as organizing your notes or reading through a draft of a report – you can squeeze into odd moments, or do when you are tired. You need to think about how long you can concentrate and whether you find it easier to work late at night or early in the morning. *People vary a lot in their patterns of working, so you must experiment and find out what works for you.* You need to *reflect* from time to time on whether you could parcel out your study time in different ways and get better results. Don't just plod on ahead, vaguely hoping for the best. You need to *manage* yourself more actively than that.

3.2 Completing a task

So far I have talked as though studying comes neatly bundled into clear-cut tasks. But, as Mark found, a lot of your work as a student is very *weakly defined*. In order to have a task to complete, *you* need to *define* the task for yourself.

Defining tasks

First, you need to have an *overall idea* of what you want to accomplish in a given week. Then, you need to define a number of *smaller tasks*, such as 'reading the next five pages of the chapter', so that you can decide how much *time* to give to each task. This enables you to *manage* yourself – that is, to:

- get yourself started
- keep yourself going
- decide when to stop and move on to another task.

With a big task, such as writing an assignment, it is particularly important to be able to break it down into a series of smaller tasks, so that you can see the way ahead. *When you have a task that is clearly defined, it is easier to focus your attention and keep yourself working*, resisting the kind of distractions to which Mark succumbed.

Why is it so easy to be distracted when you are studying?

Studying sometimes produces a sense of drifting in a sea of meaninglessness. This leads you to clutch at any straws of distraction you can find. When you don't really understand the text, or don't know what you are trying to achieve, you feel restless and uneasy.

Distractions offer you a chance to focus your attention on familiar and meaningful parts of your life and so escape from the uncertainties of studying. Our urge to avoid uncertainty is very strong. That is why it is so important to define tasks for yourself to create a pattern and a meaning to your work.

If you find that you keep stopping as you work, try setting yourself a smaller and more tightly defined task – particularly one with an active component. For example, if you keep 'drifting off' as you read, get a highlighting pen and search for key words or phrases. This will give you a specific task on which to focus.

There are many study tasks you can define for yourself. For example, you could:

- read the next section of the text you are studying
- make notes on an article you have recently read
- sort out and file all the notes you've made over the past couple of weeks
- watch a video-cassette
- do some practical work
- gather together notes and ideas for your next assignment
- plan your next assignment
- write the first draft of a report
- make contact with other students
- attend a tutorial
- go over your study plans for the coming week.

You will get a fuller picture of the range of tasks you can define for yourself as you work through the rest of this book.

When you have identified some tasks to be done, you can divide out the time available between them. It is unlikely that you will be able to stick exactly to your plans. Studying is too unpredictable. But you can *set broad targets* to help you to decide when it is time to stop doing one thing and start on the next. And you can keep reviewing and adapting your plans to take account of reality as you go along.

Time versus task

Time management and *task management* are closely bound up with each other. You need to balance one against the other. If you become too obsessed with *time* (as Mark was) then you tend to think in terms of the 'hours put in' rather than in terms of what you have achieved. You may start 'filling up' the time with relatively unimportant tasks, whiling it away until you can finish your session feeling virtuous. To avoid this 'time serving', you must start with the aim of completing certain tasks (even if you don't always succeed). On the other hand, if you focus *too* much on the task, you may let it drag on for too long. You need to keep switching your attention between *task* management and *time* management to strike a reasonable balance.

3.3 Practical arrangements

Activity Break

- 1 Where are you reading this book?
- 2 Will you be able to concentrate without disturbance?

- 3 Have you enough space in which to work?
- 4 Have you pen and paper handy in case you need to write?

If you are not properly set up, sort yourself out now.

Setting up a place to study

Does it matter where you work? Yes, it matters a lot. You may be able to find study time in your work breaks, or on the train, and you may choose to do some work on the sofa, or in bed. But there are some tasks, like writing an assignment, for which you need to be able to work undisturbed, with space to spread your books and papers out, and easy access to your files. You may also need room for a computer and a printer, and space for doing experiments. Ideally, you need good lighting and heating too. But for many people, the most important thing is simply to have a *regular* study place, so you can settle into the right mood quickly and find things easily. You may not be able to arrange everything just as you would like, but try to get as close as you can.

If you live with other people, you need to negotiate specific times when you can use a particular table or a particular room and be left undisturbed.

Those around you often don't realize just how hard you need to concentrate when you are studying. They want attention, or simply can't resist the delights of your conversation. Make sure they understand your study plans and know when you will be unavailable. Unless you can be left alone for substantial spells you are in for a very frustrating time.

The equipment you need will depend on the course you are studying, but here are some general suggestions: a supply of pens and pencils, a ruler, A4 plain and lined paper, graph paper, a calculator, a box of index cards, cardboard pocket files, filing boxes, labels, shelf space and a good dictionary. For some courses, you will also require a television, a video-recorder, a radio or an audio-cassette player, and possibly a computer.

If you study for any length of time you will soon accumulate large amounts of printed material: handouts, your own notes, old assignments and so on. In the early weeks, Sushma simply let the papers pile up. She had not worked out where to put things; that was how she came to slip her assignment notes into the back of one of her study texts and forget about them. Later, she wasted nearly an hour fruitlessly searching through piles of papers and magazines all over the house, before giving up defeated and demoralized. It is important to be systematic about storing your study materials. You need to develop a filing system, using folders, boxes and plenty of sticky labels. In the end, you will find that, as a student, it is not so much what you can remember that counts, *as what you can lay your hands on when you need it.*



Figure 1.3 A typical study 'kit'

A further preparation for study is to investigate the bookshops and libraries in your area to find out how much they have on your subject. When you start to study 'for real', you'll be concentrating on the main teaching texts, but consulting other sources of information can be very useful – *if time allows*. It can be intimidating when you first visit a large library or bookshop, and it may be hard to locate the particular section you need, especially if you are not sure what it is called. Assistants can usually help if you take the plunge and ask. You may be surprised at how much relevant material there is. Alternatively, you may be disappointed and realize that you need to learn how to order books through the library, or take part in book exchange schemes with other students (although, increasingly, CD-ROMs and online databases offer alternative routes to the information you need).

Key Points

As you start out on your studies, think carefully about the following issues.

- How to *manage your time*; in particular, how to:
find time, by planning your week
use time effectively, by doing work of different kinds in the most suitable time slots.
- How to *define tasks* for yourself, and then, how to:
allocate time
monitor your progress.
- Setting up a *place* to study.
- Negotiating your study times with *family* and *friends*.
- How to *equip* yourself for studying.
- How to *organize* things so that you can find them.
- Exploring *bookshops* and *libraries*.

Activity Break

- 1 Think back to Mark and Sushma's experiences and to what I've said so far about getting yourself organized. Then make two lists detailing things about you and your circumstances which:

- (a) may interfere with your studies
 - (b) may help with your studies.
- 2 In the light of these two lists, what are the few essential preparations you need to make as you start your studies?
 - 3 Sketch out a quick plan for tackling your next week of study (assuming that you are currently studying).

4 What is studying all about?

4.1 What do we mean by study skills?

The word 'skill' is rather beguiling. It conjures up images of learning a few tricks. You take a little training, put in some practice and then, 'hey presto', you are skilled. But study skills are not like that. They involve picking up *practical 'know-how'*, stopping to *think* about what you are doing, *managing yourself* shrewdly, and *keeping up your spirits*. You improve your study skills, not so much through hours of repetitive practice (as with skill in a sport, or playing a musical instrument), but by trying out new ways of doing things, reflecting on how well they work, being aware of your strengths and weaknesses, and thinking strategically.

Practical know-how

By 'practical know-how' I mean the insights you pick up from day-to-day experience. For example, Sushma had not been studying long enough to realize the vital importance of a filing system. A more experienced student would have known that you need a special folder for important documents like assignment notes. Getting hold of folders and boxes and designing your own filing system is not a high-level, technical skill. It does not require hours of practice. It just takes experience, thought and a willingness to experiment. Other kinds of practical know-how include knowing:

- where to get information
- who to go to for help and support
- what to do when you are stuck.

You can also pick up know-how about what courses tend to expect from you, and where to go to find out (for example, book lists, past exam papers and former students). And know-how enables you, when facing a task, to judge:

- what kind of a task it is
- how well-equipped you are to tackle it
- how long to allow for it.

You accumulate all this knowledge through doing and reflecting.

Getting to grips

Successful study also involves a determination to 'get to grips'. It is easy to let a course just 'happen to you' – simply 'coping' from day to day, instead of taking control and making sure you get good value for your time and money. As we have seen, you have to be ruthlessly *practical* when it comes to arranging a place where you can work undisturbed with your study materials around you. You can't afford to be half-hearted about such things. You also have to be *realistic*, and alert to the danger of

kidding yourself.

Beware of:

- ‘filling in time’, rather than really studying
- telling yourself you understand when you don’t
- avoiding facing up to approaching deadlines.
- To succeed you need to *take charge of your studies*, recognize things as they are, and keep working towards your targets.

Keeping your spirits up

There is nothing more damaging to your studies than sagging morale. We saw how little progress Mark and Sushma made when they were filled with doubt and despair – starting one thing and then another, frittering away time without achieving much. To stay on top of your studies, you have to *believe in your own abilities* and be clear about *why you are taking the course*. This self-belief is not easy. We all experience disappointments, confusion and self-doubt. The skill lies in knowing how to come to terms with these lows.

You can boost your morale by ‘positive thinking’.

- Think about your strengths.
- Recognize the progress you have made.
- Remind yourself of what you are getting out of the course.

This is why a Study Diary is a good idea, and why I suggested starting one with your answers to the questions.

Also, try to organize your studies so that you take advantage of your strong points. And tackle weaknesses head on, by working out ways to develop your skills. Finally, be ready to recognize your own human needs.

- Seek out the fun in studying.
- Mix tasks you don’t enjoy with ones you like.
- Don’t drive yourself too hard take a break from time to time.
- Make contact with other people when you feel down.

Being a ‘reflective self-manager’

It is most important that you take a systematic, *analytical*, *strategic* and *reflective* approach to managing yourself and your studies.

Being systematic

Think back to the study chart. Drawing a chart like this is being *systematic*. You are saying, ‘OK – I need to find 12 hours. Let’s set the week out, so that I can see all seven days together. I’ll divide each day into three parts and mark in the time that’s already committed. Then I can sketch a plan that spreads the work over the remaining time.’ Instead of muddling along, you take a rational, structured approach. (Being systematic means organizing what you do according to a ‘system’. In this case, the system is to draw a chart and fill it in carefully.)

Being analytical

When I talked about the importance of ‘defining tasks’ I was taking an *analytical* approach. You weigh up what kind of tasks you face, and break them down into their component parts, working out

what each task requires of you. (Analysis means taking things apart to see what the components are and how they fit together.)

Being strategic

When I talked about ‘using time’ – weighing up which tasks to do when you are fresh, and which to squeeze into odd moments – I was suggesting taking a *strategic* approach. You pay attention not only to the goal itself, but also to your motivation, your energy level and your powers of concentration – key resources if you are to reach your goals.

What is a strategic approach?

The terms ‘strategy’ and ‘strategic’ are important in this book, so you should be clear about what we mean by them.

A strategy is a broad plan for tackling a particular challenge.

Taking a strategic approach involves:

- working out exactly what you are trying to achieve and why (your goals)
- deciding which of your goals have the highest priority
- reviewing the resources available to you
- working out a plan that makes the best use of your resources to achieve your goals.

Being reflective

Having looked systematically and analytically at the tasks ahead of you, and having worked out a strategy, the final stage is to *reflect* on how successful you have been. Did your plans work out? Did you misjudge the task, or the time required? Did you learn anything that may help you to get it right next time? Taking a *reflective* approach means that you reflect on your past plans and achievements to develop principles that will shape your future plans.

A reflective approach gives you the flexibility to tackle a wide range of tasks (important in an age when the technology and organization of education are changing rapidly). You can learn and adapt continually, and *your abilities as a student improve throughout your life*.

This approach – systematic, analytical, strategic and reflective – is summarized in Figure 1.4. Acquiring study skills is shown as a spiral: you start in the middle and circle around in a continuous process of development. The central process is developing insights and skills from your own experience, though you may also pick up ideas from talking to others (and from reading books like this one). (You should begin at the middle of Figure 1.4 and read the diagram as a sequence of connected phrases.)

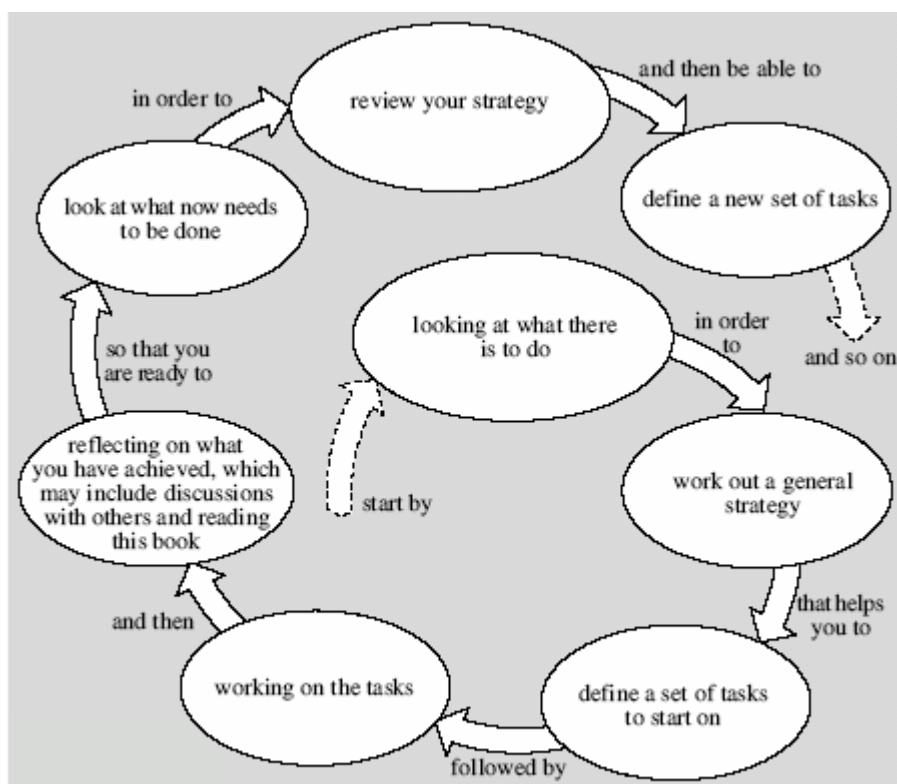


Figure 1.4 The study spiral of a reflective self-manager

Showing the sequence of analysis, strategic planning and reflection in a diagram highlights the general principles. But don't think of it as a formal process – as a set of steps to be performed on a daily basis. Managing your studies strategically and reflectively should become an unconscious habit. You may have to do it consciously at first, step by step, but eventually it should become second nature.

Becoming an independent learner

The older you get and the higher you go in the education system, the more responsibility you take for your own studies. In school, teachers take most of the responsibility for *what* you learn and *how*, and put pressure on you to work hard.

As an adult, you make your own choices. You decide your own priorities, set your own targets and work out strategies for achieving them.

You also take responsibility for your own ideas and points of view. You are expected to think for yourself and to question. For example, I started this chapter with a saying about the first step of a journey being the hardest. You might very reasonably have reacted by asking whether the saying is true. Is it supported by any evidence? What about all the other steps, some of which can be very hard – for example, when you miss your connection, or lose your luggage? A proposition being old and often repeated is no reason to treat it as 'true'. Indeed, at higher levels of knowledge the 'truth' is assumed to be *uncertain*. Your studies are understood to be an inquiry which *you* are undertaking into the nature of the world. You are expected to *weigh up* ideas, not just 'learn' facts. You read critically, make your own observations, conduct investigations and draw your own conclusions. You learn to present evidence, supporting one idea against another using the facts available. The whole emphasis changes from being a passive *receiver* of 'knowledge' to being an active *seeker* of 'understanding' and a *maker* of 'sense'.

This does not happen all at once, especially if you are returning to study after a long break. Nevertheless, your target is to become an 'independent' student, to be able to find your way around a

subject for yourself. You study to find out what you want to know.

Keeping a Study Diary

As I've already mentioned, one way of encouraging yourself to take a reflective approach is to keep a diary of your studies. Writing a page each week about what you have achieved, and how you feel about it, will set you thinking about why you have approached things in particular ways. It will also stimulate the production of new ideas. Looking back over a few weeks or months will enable you to identify patterns in your work and help you to think strategically about whether you are achieving as much as you could. Write your Study Diary under headings such as 'Feelings about my studies', 'Main achievements this week', 'What went badly', 'Lessons learned', 'Major tasks ahead', 'Strategies for tackling them', and so on.

You will have already started your Study Diary if you did the previous activity. (It can be a loose-leaf diary – just sheets clipped together in sequence and kept in a folder.) Even if you only keep a Study Diary for short spells, every now and again, it can produce a reflective and strategic pattern of thinking which continues long after you have abandoned it. On some courses you will be advised to keep a Study Diary but don't wait to be asked.

A life-long process

Developing study skills is not only for beginners. Whatever stage you reach, you can always gain from attempting to refine your technique. And, strangely enough, it is not always a matter of learning something 'new'. There are many basic truths you can come back to and understand again at a new level. Some sections of this book will be just as revealing if you return to them in a year or two with more experience of studying.

Key Points

Study skills are not a set of routine 'tricks' you learn once and apply for ever. Becoming a skilled student involves:

accumulating practical know-how, on the kinds of things you have to do as a student, and on how to set about doing them

being determined to get to grips with study challenges in a practical and realistic way

knowing how to keep your spirits up, by positive thinking, playing to your strengths, tackling your weaknesses and being kind to yourself

becoming a reflective self-manager, by taking a systematic, analytical, strategic and reflective approach to study tasks

becoming an independent learner, by taking responsibility for your own studies and for making your own judgements about ideas and knowledge.

Moreover, your study skills should continue to develop throughout your life.

4.2 What is learning?

The purpose of studying is to learn. But what does it mean to 'learn' something? At degree level, learning is not just memorizing information. It is more about *ideas* than information, about *understanding* rather than pure memory.

Understanding ideas versus memorizing facts

TV shows like *Mastermind* and *University Challenge* give the impression that being ‘clever’ involves knowing lots of facts. Clever people usually do know lots of facts – but they can answer the questions quickly because of how the facts are *organized* in their minds. What really distinguishes people who know a lot about a subject from those who don’t is the ‘*understanding*’ they bring to bear – the ideas they can use to analyse and discuss the topic. You will have to do a certain amount of memorizing, especially just before an exam, so that you can produce the information required quickly. But your exam result will depend more on the work you put into understanding key ideas.

I am using the word ‘ideas’ here to include ‘concepts’, ‘principles’, ‘laws’, ‘models’ and ‘theories’. Learning ideas involves three things.

- *Taking in new ideas* (and by ‘taking in’, I mean ‘making sense of’, not simply seeing, hearing or memorizing).
- *Thinking them through*, and fitting them alongside your existing ideas to build up a better ‘general understanding’.
- *Using newly formed ideas* (both in the sense of using them to do things and using them to communicate with others).

Taking in new ideas

When you look at an unread textbook on your shelf, you know that there is a lot of information in it – information that you want, somehow, to get into your head. This is what I mean by ‘taking in’ – taking ideas that are part of the outside world and making them your own. This means much more than simply passing your eyes over lots of words, numbers and pictures. It means ‘making sense’ as you read, so that you ‘understand’ the meaning. You can look at and memorize the symbols without too much difficulty. But that does not mean you have ‘made sense’ of the equation, or that you ‘understand’ what it is saying to you. To ‘take in’ such an equation you have to read it within a flow of other words and symbols, as part of a whole framework of ideas. So, when you are trying to ‘take in’ a text, a lecture or a TV programme, you need study techniques which emphasize ‘making sense’. That is why this book talks a lot about taking notes as you read, listen or view. Deciding what to note makes you pay attention to meaning. Chapters 2 to 7 of this book are about ways of ‘taking in’ various types of ideas from different kinds of source.

Thinking them through

It takes time before you can really get new ideas properly into focus. You have to connect them with other ideas already in your head. And when new ideas conflict with old ones, you have to work out where that leaves you. Various study activities help with this ‘thinking through’ process. For example, when you are jotting down assignment ideas, drawing a diagram, working through a mathematical problem, or ‘boiling down’ your course notes for exam revision, you are working your ideas into shape. These activities appear to be incidental chores around the edges of mainstream activities such as reading and writing.

But they are not marginal to studying. The odd moments when you are jotting down bits and pieces to yourself are the times when you are doing important ‘thinking through’.

Using ideas

You don’t *really* understand an idea until you put it to use. It is when you are the one pushing the thinking along that you really grasp the full force of an idea. So some activities, like working on problems, doing experiments and writing assignments, play a key part in establishing new ideas as part

of your mental ‘repertoire’ – that is, in making them your own. Chapters 8 to 10 are about this ‘doing’ side of learning, about using ideas.

‘Taking in’, ‘thinking through’ and ‘using’ are all active processes. None of them just ‘happens’, while your mind quietly dozes. Each requires purposeful, thoughtful action on your part. In fact, making a distinction between these three aspects of learning is artificial; in practice, they overlap. Yet the distinction is useful, because it emphasizes that learning happens at many different points during your studies, not just when you are reading a book, or listening to a lecture. It reminds you to give just as much effort to the ‘thinking through’ and the ‘using’ as you do to the ‘taking in’.

The learning spiral

These three aspects of learning are part of a continuing cycle of advancing understanding. We have enquiring minds and are never satisfied for long with what we learn. As you answer one set of questions you become aware of new questions. If you start from the middle of Figure 1.5 you will see what I mean.

Learning does not really happen as neatly as this, of course. You are usually starting on new ideas at the same time as writing assignments using established concepts. And this week’s new ideas often connect with last week’s, so that you begin to understand them in a new way. In fact, there is no identifiable moment when you learn a particular idea. You just find it ‘turning up’ in your thoughts as you work on other things. As you move around the learning spiral, you look back and realize that ideas you once struggled with now somehow seem obvious. You realize you must have ‘learned’ them, but you can’t pinpoint when. In other words, learning is not a neat, sequential process. It proceeds by lurches as you circle around new ideas. Yet it is not completely haphazard either, nor out of your control. The learning spiral in Figure 1.5 should give you an idea of the nature of the process, so that when you ‘reflect’ on your own learning (as part of your ‘reflective self-management’), you can make some sense of what is happening in your head and plan your way forward.

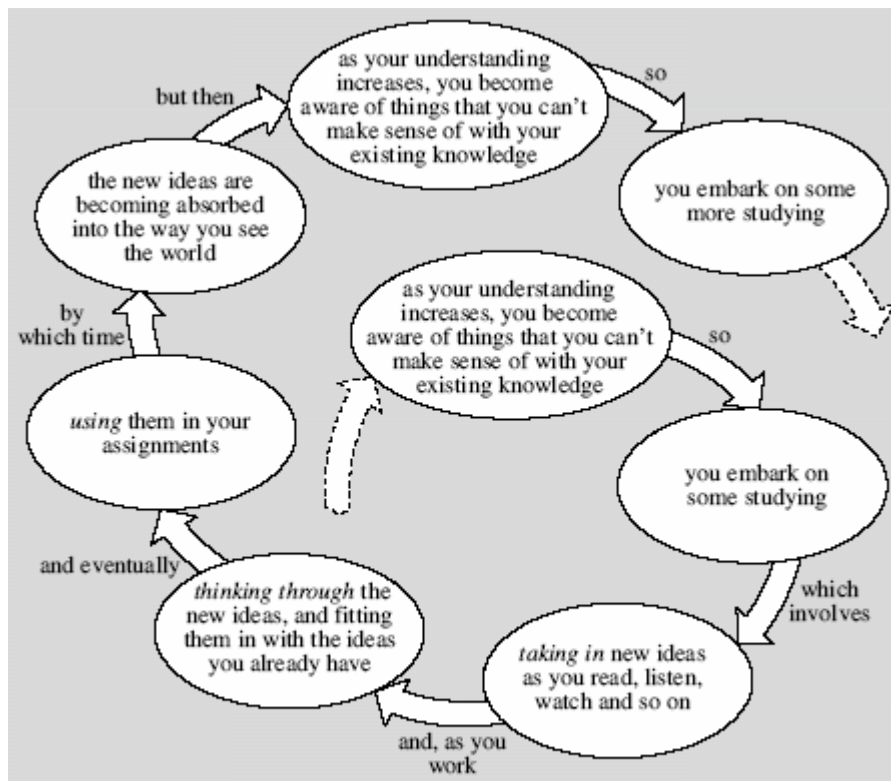


Figure 1.5 The learning spiral

Ideas and skills

Throughout this chapter I have emphasized the learning of ideas, but have not mentioned the learning of Maths, Science and Technology (MST) skills as such – for example, being able to draw graphs, carry out experiments, use a computer data analysis package or apply mathematical techniques. This is a distortion, since in the MST subjects learning skills goes hand in hand with learning ideas. Acquiring a practical competence often provides the basis for understanding an idea, just as understanding broad principles helps in developing a skill. I just thought it would over-complicate the discussion, and Figure 1.5, to include skills as well. In practice, you must give equal attention to learning MST skills.

Key Points

Learning at higher levels is a lot more than just memorizing information. The core task is understanding ideas.

To learn new ideas you have to take them in, think them through and put them to use.

Learning does not proceed along straight, neatly marked-off lines. It is better thought of as a process of spiralling through different stages of understanding and competence.

Activity Break

Now you have read about the nature of study skills and the learning process, take one more look at the questions in the previous Activity Break. Would you answer the questions differently now? Write down any new thoughts in your Study Diary.

In this chapter, I have described how to plan and prepare for the start of a course of studies and how to get yourself in the right frame of mind. I have also discussed the nature of studying and learning in general. In the next chapter, we shall get down to some real studying.

Appendix 2: On Clear Thinking

The ability to think clearly, to make sense of confusing and contradictory information, to be able to see patterns and structures in what you learn, is one of the key learning skills. You may already be good at it, but you may find a few useful ideas here too.

You may be wondering why we think a short exercise on clear thinking is needed here. Perhaps I can best illustrate this with some of the problems (or should I say challenges?) you are likely to face later in this and in other courses.

You will be doing various investigations, finding things out on the web:

- You will come upon contradictory views.
- You will have to distinguish between information which you can rely upon and that which is dubious.
- You will have to extract key ideas from unstructured materials.
- You will have to come to at least some clarity about what you find. This exercise will help you to do that.

The importance of context

The most fundamental principle of clear thinking is to always keep ideas in context. Suppose for example, that you find some contradictory information from two sources. Can you find out, or just work out, something about the people who wrote them? What are their perspectives? What are they trying to accomplish by putting that material on the Web? What are they basing their views upon? The perspective of the authors is an important part of the context of the ideas you are reading.

Remember that an ‘expert’ is only an expert relative to some other people. At the end of this course, you will probably be an expert on e-mail and electronic communications compared to many people you know. And although I have been working in this area for many years, and know more about it than a lot of people, I am also very aware of my limitations. There are several people I go to regularly when I am out of my depth about particular aspects. They in turn seek out other people on some areas, and even sometimes me.

Expertise has its limits. It applies in certain contexts. Keeping ideas in context often is a matter of recognizing the limits to which they apply. Mistakes are often made by extending ideas beyond the context in which they are valid.

Facts and values

So what about ‘facts’, which would seem to be ideas which are universally true? On the one hand everyone has their own perspective, their own view of the world, their own private reality. On the other hand, simply the fact that we have languages and cultures means that there is a lot of overlap in these views, a lot of agreement and shared reality.

At one extreme, some ideas are nearly universally agreed, for example that we can’t walk through walls or fly unaided (but perhaps you might occasionally find some people who might not agree even with that!). This virtually complete agreement is the nearest we can get to the traditional idea of an ‘absolute fact’. Often, we are happy to go along with a general agreement between people who have thought a lot about something or are generally considered to know a lot about it (an expert). So

although treating something as a ‘fact’ means that we expect it to be universally agreed, even then it is important to keep the context in mind: who is it that does agreed to this?

At the other extreme, some ideas are clearly the views of one individual (their feelings, their experiences). And somewhere in the middle, are views shared widely within some group, but contradicted by the shared views of some other groups. These include what are generally called ‘values’.

So part of the context of some material you find on the Web is not just the views of its authors, but how widely those views are shared and by whom.

Observations and theories

Another approach to ‘clear thinking’ is to consider the principles behind what is generally considered the ‘scientific’ approach. A scientific approach does not explain everything. It too, applies only in some contexts. Its chief value is that it gives an area of understanding which is relatively reliable, in part because it is more systematic.

Essentially, the scientific approach combines observations with theories which link those observations. For example, you may take measurements of the deflection of a spring when different weights are hung from it. That gives you a set of observations. You then compare the deflections and the weights and find that the deflection is proportional to the amount of weight. Specifically, you draw a graph of the measurements and find that it is a straight line. That is a theory, which links the observations. The value of a theory is that you can use it to make predictions. You can predict that other observations will fit the same patterns.

Of course any theory has its limits. If the weight is too great the deflection may stop being proportional to it, and for large enough weights the spring just won’t stretch any further. So again we come back to the importance of context. Just where does a theory apply?

The test of an observation is how accurate it is, how complete and reliable. How carefully was the observation made? Often, the observations we are going by are not our own. They may be reported to us by someone else, or may be in something we have read. There may be a chain of reports before the observation reaches us. At each stage of reporting there is the possibility that the story has been changed, that an observation may be replaced by someone’s theory, that crucial aspects have been left out.

You may meet someone new several times, and find that they behave oddly. You may conclude that they are ill or mentally disturbed. That is your theory, explaining the behaviour you have observed. But there may be some other explanation. Perhaps the person had just had some shock, or some experience that stopped them from behaving as they normally do.

When is one theory ‘better’ than another?

Often there are several theories which can account for the same observations. (Did that straight line of deflection versus weight really go through those points? Or did it miss some slightly? Does that illness really have all those symptoms?) One theory replaces another when it more accurately links observations, or more often, when it links a larger set of observations.

For example, Einstein’s Theory of Relativity is generally thought to have replaced Newton’s Laws of Motion. In fact, Einstein’s theory doesn’t replace Newton’s laws for the observations people could make in Newton’s time, or now for most of us. Most engineering calculation is based on Newton’s laws, not relativity. In some circumstances, such as when something is moving at speeds near the speed of light, relativity more accurately predicts its motion. So the theory of relativity is a ‘better’ theory

than Newton's theories in that it applies to a wider range of observations. Within the context of everyday objects and motion, Newton's laws are fully valid.

So the test of a theory then, is how accurately it links a given set of observations. How widely does it apply. It is more a matter of coherence, consistency and range of applicability than 'truth' in any absolute sense. A scientific theory is never considered to be true. The best it can be is the current best explanation, as generally agreed by most people who have thought a lot about it. Only in that limited sense, can it be considered to be a 'fact'.

In everyday terms, a theory is anything that explains some observations, some stories. Often, a theory will build upon other theories, which in turn build upon other theories. In the process of building these webs of theories, any original observations may get completely left out. Then they may become a seemingly self-consistent edifice which cannot be contradicted. Common examples of this are prejudices or biases against a group of people. But the whole point of a theory is that it should be able to make predictions of future observations. If there is little basis in observation, there is little reason to expect accurate prediction.

Conclusion

Finally, I'll try to sum up and bring these principles back to the issues you will face. You will find contradictory and incomplete information in your searches on the Web. It may help you, in your attempts to make sense of and summarise what you find if you:

- try to separate observations from the theories and explanations about them.
- consider how likely are they to have been observed accurately and connected coherently? Are they reporting events and observations, or theories about them?
- look for the perspective of whoever is making a statement. Are there any values they might have which colour what they are saying?

The best you can do is to look for the broadest patterns, the clearest and most coherent connections between the observations you come upon.