<table>
<thead>
<tr>
<th>Description</th>
<th>Link/Download</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resources for teaching and learning</td>
<td>Overview&lt;br&gt;How to use this website&lt;br&gt;Glossary</td>
</tr>
<tr>
<td>Choosing the right resource for the job</td>
<td>Selecting and using learning resources&lt;br&gt;What resources do you and your students have access to?&lt;br&gt;Selecting and categorising textbooks&lt;br&gt;Compiling a reading list&lt;br&gt;How much reading should you set?&lt;br&gt;Developing student's use of the library&lt;br&gt;Other text-based resources&lt;br&gt;Selecting and using audio-visual resources&lt;br&gt;Locating AV resources&lt;br&gt;Interactive resources: games, case studies and simulations&lt;br&gt;People as learning resources&lt;br&gt;Experience as a resource for learning&lt;br&gt;Selecting and using ICT and online resources</td>
</tr>
<tr>
<td>Producing your own learning resources</td>
<td>Designing independent learning materials&lt;br&gt;Effective production of handouts and problem sheets&lt;br&gt;Writing and using course guides&lt;br&gt;Using ICT to present or create resources&lt;br&gt;Custom publishing (compiling readers, study guides and manuals)&lt;br&gt;Copyright and the use of resources</td>
</tr>
<tr>
<td>Resource-based course designs</td>
<td>Self-paced study and PSI&lt;br&gt;Problem-based learning&lt;br&gt;Project-based learning&lt;br&gt;Open and distance learning&lt;br&gt;Reviewing the use of resources</td>
</tr>
<tr>
<td>Using ICT for teaching and learning</td>
<td>An overview of what information and communication technologies (ICT) can offer&lt;br&gt;Inappropriate use of information and communication technologies (ICT)&lt;br&gt;Putting on a show (Powerpoint uses and abuses)</td>
</tr>
<tr>
<td>Learning resources in a connected (online) environment</td>
<td>Computer conferencing&lt;br&gt;The connected document</td>
</tr>
<tr>
<td>Further reading</td>
<td>Further Reading</td>
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H850 Overview

by Graham Gibb, adapted by Chris Pegler

It is easy to treat teaching as central to a course and learning resources as an afterthought - for example, producing a reading list at the last minute after designing a lecture programme. But for many students learning resources are their main source of subject knowledge and they spend more time with them than they do in class. Increasingly in higher education, courses are being designed around learning resources, together with the activities that engage students with these resources. In some cases, for example in distance or resource-based learning, programme design may start by exploring what learning resources are available, producing new resources to fill gaps, and then designing the teaching to support students' learning with the resources.

It is not enough simply to select appropriate resources and make them available to students. What are students supposed to do with these resources? Is the nature of the learning task clear enough? Do students have the learning skills to be able, for example, to get anything useful out of simply being told to 'read' a book? Planning or designing the learning activity that engages students with the resources and developing the learning skills required by this activity are important components of using learning resources.

Different subject areas vary widely in their use of learning resources: students' use of the library, of textbooks, of visual material and of computers, for example, differs from one subject to another. And the way these resources are organised and made available to students is also quite varied. You will probably need to consult your subject librarian and possibly a media librarian in order to locate sources and start exploring what exists. You will need to read case studies about other courses in your subject area to see how other teachers build learning activity around resources.

When planning your resource-based teaching, some of your most important decisions should concern how to make appropriate learning resources accessible to your students:

- what resources to choose and how much to use;
- whether to use existing resources or to produce your own;
- whether to use C&IT resources and, if so, in what ways;
- how to get learning resources into students' hands at times when they need them;
- how to judge the level and volume of resources which are appropriate;
- how to guide students to make purposeful, productive and active use of these resources.

Students may learn more from learning resources than from you, so these decisions are worth paying at least as much attention to as to the preparation of your classes. In extreme cases, for example in open and distance learning, the design of learning resources is the main course design task.

The growth in the use of information and communications technologies (ICT), often described as information and learning technologies (ILT) in the FE sector, offers major challenges in simply keeping up with technological developments while staying focused on what is really important in terms of teaching and learning gains. It is easy to get carried away with an over-abundance of enthusiasm for the technology. And some take the opposite tack - rejecting new technology on the grounds that it is too expensive, involves too much hassle, or demands too much time. There is definitely a balance to be struck between these two extremes! The websites explored in this unit and the Further Reading, should give you some ideas on how to stay well informed, as well as giving you access to further examples of successful use of ICT.

Whether or not you believe that your teaching could be described as resource-based, and whether or not you are enthusiastic about increasing use of Information and Communications Technologies in your teaching we hope this unit has helped you think through the importance of resources - or all types - in your support for student learning.
by Chris Pegler

This part of the course is concerned with practical ways that learning resources are used in your teaching role. When exploring and reflecting on the different approaches here you should draw on the appropriate guidance for your own practice. It is suggested that you dip into the different sections to discover more about the range of resources and issues involved, returning to study particular resources in more depth. The activities are designed to explore the use of learning resources in your own courses or practice-based teaching and to help you to make decisions about what resources to use.

In browsing through this part of the course you will quickly realise that it covers a wide range of resources, from people, through print to technology. The emphasis is on exploring different approaches to using resources and understanding how you can select, produce and use a variety of resources. Not all of the resources, or models of using resources, will be appropriate to your teaching or to your students.

Each section is structured as a set of independent online 'learning object' so there is no need to study in a predetermined pattern or order. Feel free to choose your own route through the material. You are not required to read all the pages, or to follow a set sequence in your reading. How much or how little you use or refer to this material is a matter of personal preference or interest. This flexible approach to use is also supported in the other online sections of Pack 5.
You may be unfamiliar with some of the terms used in writing about eLearning. Some of these terms are highly technical and others are acronyms describing technologies or bodies connected with online education or the wider Internet.

This short activity introduces you to four different online glossaries that provide valuable aids whenever you encounter a term you are unfamiliar with during the course. There is considerable overlap between the coverage of these glossaries.

### Activity: Introducing some glossaries

1. Spend a short time exploring each of these four glossaries:
   - Learning Circuits glossary (provided by the online magazine Learning Circuits)
   - JISC glossary of acronyms; hosted by the JISC (Joint Information Systems committee)
   - The CETIS encyclopedia; maintained by CETIS (the Centre for Educational Technology Interoperability Standards).
   - The glossary on the LTSN (Learning and Teaching Subject Network) Generic Centre site. This includes a wide range of words and acronyms used in education, including eLearning terms.
2. Use these four glossaries to find definitions of the following terms: PDA (personal digital assistant), videoconferencing, metadata and IMs.
3. Bookmark the glossary or glossaries that you prefer. This will make reference easier whenever you are online.
4. If you have used or generated bespoke glossaries for particular courses or subjects before, how satisfactory do you find the use of online glossaries here?
5. Would you consider use of online glossaries to support your own teaching?
by Graham Gibbs, adapted by Chris Pegler

This section is designed to help you to think through how you decide what learning resources to use and how to use them. If you are new to teaching or have been concentrating on practice or research, the chances are that you have not recently read textbooks or introductory material in your subject area. You may be very familiar with up-to-date research literature or current practice, but this may not be the best place to start for students new to the subject. You may not know what videos or case study materials or websites are available to support the topics you teach and, although you may know how to undertake a conventional literature search, you may not know how to find videos.

The first step is to familiarise yourself with the kind of resources that could support your students’ learning. You may be able to obtain ideas from colleagues who teach in the same area, from reading lists on similar courses, or from book reviews in journals concerned with the teaching of your subject. You will also find the Learning and Teaching Support Network appropriate to your subject area may provide useful links to up-to-date resources.

Before considering different categories of resources, we ought to stop and consider what learning resources are for. If, at first, this seems self-evident, we hope the list in this Activity, highlights the fact that resources do serve different functions.

Activity: What are resources for in your context?

The left-hand column of this table lists a number of the functions of learning resources in higher education courses. This is not intended to be an exhaustive list. The second column gives one example. In the third column, add an example of the use of this function of learning resources that already exists in your own course or practice. Add further functions you would want learning resources to perform in your course at the bottom of the table in the space provided. *(You can download a copy of this table in Word to save or print locally.)*

<table>
<thead>
<tr>
<th>Function of a learning resource</th>
<th>Example</th>
<th>Example in your own course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide factual information to be memorised</td>
<td>Handout listing chemical formulae</td>
<td></td>
</tr>
<tr>
<td>Illustrate the phenomena being studied</td>
<td>A case study of a business reorganisation</td>
<td></td>
</tr>
<tr>
<td>Explain or illustrate procedures or techniques</td>
<td>Journal article using a selected statistical technique</td>
<td></td>
</tr>
<tr>
<td>Explain concepts or theories</td>
<td>Supply/demand graphs which can be manipulated in the economics computer package WinECON</td>
<td></td>
</tr>
<tr>
<td>Illustrate concepts, providing examples</td>
<td>Film slides of geological formations</td>
<td></td>
</tr>
<tr>
<td>Critique concepts or theories</td>
<td>A textbook chapter comparing three models of soil erosion</td>
<td></td>
</tr>
<tr>
<td>Demonstrate the discourse of the discipline</td>
<td>An art critic’s analysis of a painting</td>
<td></td>
</tr>
<tr>
<td>Demonstrate the application of concepts or techniques to practice</td>
<td>A video of an experienced counsellor using a therapeutic approach</td>
<td></td>
</tr>
<tr>
<td>Provide the basis for learning activity</td>
<td>A text to be analysed or a problem to be tackled</td>
<td></td>
</tr>
<tr>
<td>Provide first-hand experience as a resource</td>
<td>A laboratory experiment or a work placement</td>
<td></td>
</tr>
<tr>
<td>Provide a substitute experience</td>
<td>A computer simulation of a beam-bending experiment</td>
<td></td>
</tr>
<tr>
<td>Provide guidance on skills or techniques</td>
<td>‘How to write history essays’ guide</td>
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</tbody>
</table>
By examining the learning outcomes for your course, you will be able to identify the kinds of learning resources you will need.

For example, if your outcomes include the ability to apply techniques, then students may need learning resources that provide:

- an account of the techniques and guidance on how to apply them;
- examples of the techniques being applied;
- problems or tasks which provide scope to apply the techniques;
- criteria by which the use of the techniques can be judged;
- references to, or extracts from, more advanced or specialist material on the techniques or on alternatives.

**What resources do you and your students have access to?**

A wide variety of resources are available to support different learning outcomes, and while it is important to appreciate the full range, not all students will be able to access or use all the types of resources which may be available. For example, some of the resources that you, or your students, may ideally wish to use, may not be available to you by virtue of cost, lack of convenient access to resources or equipment to access them or licensing restrictions on their use off-site. Some resources may only be available in a form which will restrict use by some students, for instance students who are hearing impaired may need transcriptions of audio material, those who are studying at a distance or part-time may not be able to book time in campus-based computer rooms, or visit the library.

It is useful to have an idea of whom you will be teaching and any technological resources they have or will need to access material that you have selected for them. If students are required to have access to computers, the Internet, CD-ROM, video, tape or DVD players, then they should know well in advance that this is a requirement of their course.

It’s important to strike a balance between the cost of equipment required and the use to which it’ll be put during and after your course. Investment in a microscope or computer for personal use, for example, may be appropriate if students use it throughout a three-year degree course. It may be not be an acceptable expense if it’s only used in a single course, or over a single term.

The concept of ‘access’ also needs to be understood. A computer or video in a shared house, for example, or a computer within a library or bookable computer lab may not constitute sufficient access for your students because other users such as family members or other students may get priority. This is a particular problem if the use of computers within your course is tightly scheduled so that users have to access a database, or be online within a specific limited period of time.
What resources do you and your students have access to?

by Graham Gibbs, adapted by Chris Pegler

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The Open University carries out an annual survey of learners’ use of media for each faculty. This survey shows how use and access to technological resources is changing over time for Open University students and differs between OU disciplines. What the most recent surveys (2001 onwards) show is that there appears to be a 'peak' to personal access to some technologies.

Activity: How good is access for your students?

1. For each of the following resources consider what percentage of your own students have access to each of these.
2. You may like to compare your conclusions with those of 2-3 of your colleagues. Do you broadly agree?
3. How do you see access to these resources changing over the next five years and what do you expect the impact of those changes to be? (For example there is a growth in mobile computing power, the laptop in the lecture theatre.)

<table>
<thead>
<tr>
<th>Technology</th>
<th>Personal control over access. (Can access whenever they want and for however long they want.)</th>
<th>Restrictions on access. (Access from work or home but with some restrictions on use - duration or type.)</th>
<th>No direct access. (Could access through booking or hiring, but severe restrictions on duration and type of use.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Computer</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Video playback</td>
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<tr>
<td>Audio playback</td>
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<tr>
<td>DVD player</td>
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<tr>
<td>Email</td>
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<tr>
<td>Internet</td>
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</table>
**H850 Selecting and categorising textbooks**

by Graham Gibbs, adapted by Chris Pegler

We asked one experienced teacher how she selected textbooks for her courses. She said that she:

- checks if books have been published within the last five years;
- checks key references she uses to see if they are cited;
- reads reviews in her discipline's monthly journal;
- asks publishers for complimentary copies of any textbooks she considers recommending;
- asks librarians which books students most often take out of the library;
- checks if books are written for students in US or UK.

If the books were written for US students, they may be more user-friendly and may cover the whole course, but at a more introductory level than required. UK textbooks, she finds, can be harder for students to work with and more idiosyncratic in their coverage, forcing her to select more than one to cover the whole course, but they are likely to be at a more suitably advanced level. She usually recommends books from both sources, explaining the pros and cons of each in her reading list.

### Activity: Selecting textbooks

You may be able to think of additional or different guides to selecting textbooks for your own students.

1. Consider the criteria suggested in the list above and try to identify other or amended measures that would apply to decide select textbooks to support the type of teaching that you do. For example you may feel that your subject moves very fast and books published even three or four years ago would not be a good choice. Or you may be team-teaching a subject and need to agree a textbook which will be used with other lecturers, perhaps earlier or later in the course.

2. Compare your list of criteria with this extended list. Did you find any additional criteria which were perhaps specific to your discipline?

It is sometimes more sensible to adjust your syllabus to suit a superb textbook than to reject the textbook because it does not include everything you originally wanted to cover. Textbook authors have probably put far more time into planning and writing their text than you can afford to put into designing your course. Even though a textbook may not take exactly the approach that you might have taken, it is likely to be more coherent and well thought through than anything you could manage in the time available.

"When I was a student, some of my lecturers listed textbooks on the reading list, but only one lecturer ever referred to a textbook in class or used it to support any learning activity. This seemed to me a missed opportunity". (Graham Gibbs)

Students appreciate a course designed around the main textbook they use.

### What type of reading?

When recommending texts to students where not all items are equally important you may wish to make this clear to students in the way that you describe the type of reading. One common way of providing guidance on reading is use of a category system. For example:

- **Required or set reading**: this contains material that students cannot afford to miss. It may involve authors or theories which are central to the course or which relate to lectures, exam questions or seminar topics. This is material you would expect all students to read in its entirety and without which their assessed work would look obviously threadbare. You would have to make sure this material was readily available - either in a required textbook, in materials copied and handed to students, or in multiple copies on short loan in the library. Nothing annoys students more than required reading that is impossible to obtain. You might want to allocate no more than half of all available reading time to required reading. If the required reading list looks unrealistically long, students will not take it seriously.

- **Recommended reading**: indicates material that you hope all students read, although it may not be necessary for everyone to read it all, and you could identify alternatives and indicate priorities in your list.

- **Specialist or further reading**: could relate to essay titles or seminar presentation topics which an individual student might need to prepare. Some students might not read any of this material for most topics, but it would provide support for students pursuing some topics in depth.

Before adopting this system, or your drawing up your own, first check whether there is a generally agreed use of terms to describes readings, (e.g. set, required, essential, recommended, additional, further or background reading). Students need to be clear about which books they must or should have at the earliest opportunity so that they can decide how best to obtain these.
**Activity: Categories of reading**

1. If you are not yet familiar with the terms used to describe different levels of required reading within your own institution construct a short 'dummy' reading list including all the descriptive terms that you feel may be appropriate.
2. Now ask three colleagues within your institution how they would interpret each of your categories if they were a student.
3. Encourage them to share their own terms and categories with you.
4. Devise a simple categorisation for your own reading lists which you feel confident will be well understood by students and colleagues.
5. Ask for feedback from your students when you first use this.
by Graham Gibbs, adapted by Chris Pegler

Reading lists should not be an afterthought constructed around the first ten references you can find on the topic, or confined to works that you are already familiar with. In making your selection consider the following:

- **The type of material you find useful and inspiring might be too advanced for your students**, assuming background knowledge and an existing conceptual overview that they do not have. It can be useful to list introductory material as an easy way for students to get started - even including short encyclopedia entries and material written for a non-specialist audience.

- **Items you want may not be readily available to students.** Check with your subject librarian about the availability of each item you want to put on your list. At the same time, it is worth discussing whether additional copies should be purchased, or whether items should be put on short loan or in reserve collections (which, like reference material is not available for loan). Some departments have a system for sending reading lists to libraries and an annual deadline by which lists need to be submitted. Find out how the systems work in your institutions so that you meet any deadlines for influencing which books are stocked by your library.

- **Consider the copyright implications.** Many universities and colleges will already have licensing agreements that provide guidance on what you can and cannot copy for students (e.g. the CLA (Copyright Licensing Agency) License). Copying within the terms of the license is straightforward and should be displayed beside each photocopier, but it may not cover all the material that you need. If you need to arrange clearance for other items, seek the advice of an expert within your institution for guidance about what rights you need to apply for and the likely cost. Both library purchase and copyright clearance can take many months, so reading lists need to be prepared well in advance of the course start date.

- **Links to online sources may change suddenly.** So-called 'link rot' can occur without warning. This is where websites and resources with correctly cited URLs (online addresses) suddenly cease to work, generating a '404: Resource not found' message. Even if you have checked all links shortly before course starts there is no guarantee that the URLs will remain the same through the life of the course, or even throughout a single presentation. If the reading list is itself online then it is possible to alter the links to the correct address or replace the resource and publish an explanation. If you are using printed lists you will need to alert your students to any changes through a different route. In either case, it will help if students recognise why the 'Resource not found' warning occurs, and encourage them to very carefully check themselves for obvious errors such as mistakes in transcribing the URL.

As well as citing electronic resources you can use electronic services as an aid to compiling reading lists. For example the service Autojournals provided by BIDS - a bibliographic information service from the University of Bath - automatically e-mails the contents pages of journals of your choice as they are published. You can keep a file on each topic you teach and add references to this file as you encounter them.

**Additional information that students need**

When you have selected some excellent readings you need to consider how to compile this into a useful reading list. Students may find a bald list of references unhelpful. You can add advice in a variety of ways.

- **Give full and accurate references**, including catalogue numbers, until your students are familiar with your library system.

- **Provide chapter numbers or even page numbers**, rather than references to whole books or articles, until students are more sophisticated as readers and are familiar enough with the field to read selectively.

- **Give annotations**, such as: 'useful introductory chapter for an overview of X, but somewhat technical and over-detailed on Y and Z'; 'Read this before reading Johnson and you will appreciate the contrast in approach'; or 'useful alternative to Johnson, it takes a utilitarian approach and is excellent on systems theory.'

- **Provide information about availability**, for example: 'Two copies in the main campus library (short loan only); one copy in the Smithson Library (reserve collection). Bookshop stocks multiple copies at £26.95.'

- **Give guidance on what to do when the items on your list are unavailable.** This may involve generic library or web search skills advice. For example, Habeshaw et al. (1987) offer a tutorial exercise entitled 'Without reading the book' which involves sending your tutorial group to the library to find as many alternatives as possible to a book on the reading list of which you have the only copy. Or you can offer a short list of alternatives to each of the recommended texts.

- **Explain why the reading has been set and when it will be used**, for example: 'Reading 1 provides the theoretical framework for the workshop in week seven. Readings 2 and 3 are case studies of this framework in use. We will tackle a third case study in the workshop in week seven, so Readings 2 and 3 model how to apply the theory. In the exam you won't be assessed on your knowledge of the case studies, only on your ability to apply the theory.'

**Activity: Exploring the electronic options**

1. Spend a short time exploring what what the OU library has to offer by referring to its list of databases and e-journals (electronic journals). This is an unusually extensive list.
2. Ask about services within your own institution and determine whether you or your students can access these from off-campus.
3. Set up your own preferences within BIDS or other electronic resources within the OU library or your own institution's library. BIDS is mentioned above but other popular services are ScienceDirect, EmeraldFullText and EBSCOHost. Each of these are subscription-only and provide access to the full-text versions of articles as they are published (OU students can access all of these online via the OU [http://students.open.ac.uk/desktop/h850-05k/files/resource.zip/rftl_compile.htm](http://students.open.ac.uk/desktop/h850-05k/files/resource.zip/rftl_compile.htm)).
library). They often also support searching across several journals at once for topics of interest.

4. If you wish to cite online sources, and are unclear about how to do so, you can find useful advice in this OU Library resource on citing online references.

References

by Graham Gibbs, adapted by Chris Pegler

The answer will of course depend on a number of factors such as the type of course and students. However it is worthwhile considering the research evidence on how much reading students can accomplish and the variety in reading speeds depending on the type of text.

Research evidence suggests that students can read as a study activity at about the following rates from printed texts:

**Typical reading speeds** *(Chambers, 1992 pp. 141-53)*

<table>
<thead>
<tr>
<th>Type of reading</th>
<th>Words per minute</th>
<th>Pages per hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unfamiliar text that is dense and difficult</td>
<td>40</td>
<td>6</td>
</tr>
<tr>
<td>Most text, average difficulty</td>
<td>70</td>
<td>10.5</td>
</tr>
<tr>
<td>Reasonably easy reading</td>
<td>100</td>
<td>15</td>
</tr>
</tbody>
</table>

[1] Assumes 400 words per page.

Based on these figures, a student with four hours a week to study out of class should be given between 24 and 60 pages a week to read, depending on the difficulty of the text. Material which involves symbolic text - such as music or mathematics, or which involves associated practical activity, such as modern languages - can require considerably more time (see Chambers, 1994). Reading literature may involve very different rates of study depending on the purpose of reading. A common mistake by both new and experienced teachers is to overload students and assume that they can study a great deal more than is possible, forcing them into a superficial and selective approach to study that is not conducive to learning.

A student reading online could be expected to be less efficient for some types of reading - a common suggestion is that they will be 20% less efficient. But there may be efficiencies in using online material in terms of ability to make notes, search, follow up references or simply in locating the text in the first place.

Having determined how much reading students could do within a set amount of time the question remains, how much reading should you set them? The answer to this depends on four further questions.

- **How much time will your students have?** If you have done an analysis of the learning hours available to you, you will know how many hours a week your students have allocated to reading and study on your course.

- **What is the reading for?** You may want students to learn how to use techniques in the text, to be able to answer factual questions on the text or to achieve sufficient familiarity with the ideas and terminology to be able to take part in a subsequent tutorial. Each will involve a very different rate and type of reading.

- **What kind of material is it?** Reading material differs greatly in type and in difficulty and students can devour large quantities of some materials and struggle with only a few pages of other material.

- **What kind of students do you have?** Students' background knowledge and sophistication as learners will have a major impact on how much they can read. You can probably read texts in your specialist area three or four times faster than a student new to the area.

**Activity: How much reading time do your students have?**

Choosing a course which you currently teach, or that you will teach in the future look at the course descriptions and syllabus, answer the questions:

1. How much time will your students have?
2. What is the reading for?
3. What kind of material is it?
4. What kind of students do you have?
5. Then using Chambers' estimates of reading speed (above) calculate the amount of reading suggested as essential or required for this course.
6. If there is a substantial difference between the two sets of answers decide whether you would alter the course description and syllabus or the reading requirements? How?

**References**

Chambers, E. (1992)

by Graham Gibbs, adapted by Chris Pegler

You may need to establish new patterns of library use if students are not accustomed to using a library or spending extended periods of time on independent reading. To make your expectations explicit you may wish to:

- **Convey a clear expectation of the level of use of the library your course requires**, for example: ‘This course relies heavily on your use of a wide range of sources in the library and you will need to spend about four hours a week there to keep up.’

- **Reward use of the library**, for example: ‘20 per cent of the marks for reports will be allocated for appropriate use of a wide range of relevant sources, properly referenced.’

- **Train students to use a wide range of library resources with a ‘paper chase’ exercise undertaken in the first week**. List all the kinds of resources you would want students to use and set questions such as: ‘Find, and correctly cite, four recent articles on salmonella in two different bacteriology journals. Find two by using abstracts and two by using BIDS.’

- **Set assignments that involve creating annotated bibliographies**, for example: ‘You will see that there is no reading list for week eight. Produce a useful reading list on the topics covered that week, with annotations and comments, in the same format as I’ve used for other weeks. I’ll produce a compilation of the best lists for everyone to use.’

- **Make public your students’ use of resources**. For example, at the start of each seminar, say: ‘To begin, each person in turn please tell us what you have read on the topic of today’s seminar, so that we know what resources we are working with.’

You should also investigate for yourself, and ask colleagues, the use made of the service provided by the library to assist students and alert students to new or specialist services which they may find useful.

Within the OU an example of such a service is the SAFARI short online course on web searching. Increasingly libraries offer services and support of this type, although many students and staff may not realise this. Make time yourself, and make time for your students to make full use the library services.
by Graham Gibbs, adapted by Chris Pegler

Although books are a familiar academic resource, newspapers and periodicals can also provide valuable sources for student learning. They can be topical and interesting, easy to read and can provide good overviews of a topic very succinctly. Back copies of newspapers are held on CD-ROMs or on websites such as The Guardian Unlimited, making them searchable by topic.

The Internet is increasingly a source which students and academics use for locating information in a variety of forms, although the quality of the resources that it provides is typically very variable. Specific teaching resources can be located by searching the Internet and either reused or accessed directly (depending on your requirements and the site's licensing requirements). Other institutions may have made teaching material available to others via the Internet as 'courseware' or 'learning objects', teaching material which has been developed to be reused by others. Further information can be found about major initiatives such as MIT's OpenCourseware project, or more local repositories such as SeSDL by visiting their websites.

Material developed for use as part of an Open or Distance Learning (ODL) programme is another option. Creating a package from scratch may be too resource intensive, but resources developed by institutions as such The Open University can often be purchased or accessed as packs, parts or purchased as readers.

A good source of information about ODL resources internationally is the International Centre for Distance Learning, a database containing over 30,000 courses and associated materials from around 850 institutions and over 8,000 entries describing books, journals and articles about distance education.

Activity: Relevant resources

Busy professional people seldom use academic libraries, but they do refer to other information sources such as Companies House, databases, government statistics, reference texts, internet sites, and so on.

1. What kinds of resources are your students likely to make use of, once they are working?
2. How could you build students' awareness and experience of these resources into your course?
3. What transferrable skills can you foster in your course through use of academic resources?
Audiovisual resources

Some subject areas are inherently visual and use static and moving images or sound all the time. Images or sound may be the object of study, as in art history or music, but other subjects which rarely use visual or audio material could greatly benefit if they did. Audiovisual elements of the course can provide information and also three other vital ingredients:

- **They set study in a social and personal context that students can relate to.** For example, wildlife films can convey something of the life and work of a botanist, or a television documentary about the social consequences of third world debt can provide a context for students’ study of global economics.

- **They provide a different perspective on the subject.** For example, film dramatisations of set novels on the course, dramatisations of historical novels set in the period students are studying, or social-realist films made in the country and in the language that students are learning, or audio recordings capturing memories of people with first-hand experience of recent history.

- **They provide a wider picture within which detailed technical studies are set.** For example, a DVD or CD-ROM about landslides can present systems theory approaches to the behaviour of sediment particles during erosion to earth science students.

Active learning with audiovisual resources

Although they can be highly effective, students need to be taught to ‘read’ educational audiovisual material in a different manner to the way they watch movies, just as they may need to be taught to read academic books in a different way to novels. Watching visual materials for the purpose of learning and reflection rather than for entertainment is not something that comes easily to all students. In subject areas that use film a great deal, such as geography, there are well-established reviews which advise on how to use the resources and how to train students to learn from them (see Jenkins and Youngs, 1983).

Showing a video in class can be more interesting than a lecture but it can also be a very passive experience for students, especially if they are not sure what they are watching for, or if they do not already understand what ideas are being illustrated or what issues are being raised. If the lights are down, students may not be able to take notes, and they rarely interrupt a film with questions. There are a number of things you can do to make learning from AV resources more active.

- Highlight important features to which students should pay attention by discussing key issues before viewing a video in class.

- Provide students with questions or a structured handout to encourage note-taking and thinking during viewing or listening.

- Break up the presentation with short discussions in groups of about three, or as a whole class, to make the best use of ideas as they emerge.

- Leave enough time at the end to have a discussion before the class is over.

- Instead of showing a video in class, make copies available on CD-ROM or DVD so that students can watch and study in their own time, stopping and starting and re-running sections as they wish.

Audiovisual alternatives; pros and cons

The growth in access to and use of information and communications technologies (ICT) has transformed the range of audiovisual formats available to teachers and students. Data projection of DVD or CD-ROM material can now be used to demonstrate practical laboratory skills and to show experiments via computer simulations to campus-based and remote students, where only a few years ago a tape-slide presentation - involving a synchronised audiotape cassette and film slide projector - would have been the best option. The greater availability of digital recording devices, for video, still images and sound, also make it feasible for individuals (teachers and students) to make and edit their own AV resources.

The activity below identifies a range of AV media, and the pros and cons of each.

### Activity: AV format pros and cons

This table identifies a range of audiovisual formats. Consider the pros and cons that have been identified for each of these. For each format consider whether, on the basis of your own practice, you agree with these and whether you could suggest additional of alternative pros and cons.
**H850: Selecting and using audio-visual learning resources**

The final four format types have no pros and cons attached. Suggest what these should be.

<table>
<thead>
<tr>
<th>Format</th>
<th>Advantages (Pros)</th>
<th>Disadvantages (Cons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Film slides or photos</td>
<td>Libraries may have substantial collections of images, accessible in a resource centre. Can be digitised and mounted on a website, a CD or DVD allowing easy indexing, searching and sequencing. (Accurate colour is difficult to achieve with online reproduction of slides.)</td>
<td>Requires a teacher's interpretation or an accompanying study guide to make viewing interesting, active and purposeful. Viewing slides in class requires blackout and special projectors unless stored digitally. Storage of slides, and accessing and retrieving them in non-digital form can be time-consuming and awkward.</td>
</tr>
<tr>
<td>Audiotape</td>
<td>Easy for students to listen to, under their own control, in any location, on their personal tape player. Useful for study guidance on texts, visual information, guided tours, etc. Can be used at otherwise 'idle' times such as during car, bus or train journeys.</td>
<td>Difficult to concentrate productively on audio for extended periods unless there is an accompanying task. Not suitable for hearing-impaired students unless a transcript is provided. Regional accents may be difficult to understand, especially for non-native English speakers.</td>
</tr>
<tr>
<td>Video</td>
<td>Video recordings and playback material is readily available. Possible to record from broadcasts, with a licence.</td>
<td>Requires uninterrupted access to a video player to view. Requires large screen, and often blackout, to view in large groups.</td>
</tr>
<tr>
<td>TVI (Tutored Video Instruction)</td>
<td>Usually used to record lectures presented in special lecture studios, TVI enables students to learn from lectures in places and at times other than when they were originally given. May allow distance and part-time students to benefit from lectures for full-time students.</td>
<td>A video lecture, even if it has been more carefully prepared than a normal lecture, provides a less interactive learning experience. The lecturer needs to remain fairly static in front of the camera. Difficult to achieve interaction between lecturer and remote students, as compared to 'live' lectures.</td>
</tr>
<tr>
<td>Video or audio conferences</td>
<td>Allows participation in a lecture or tutorial by students or academics who are off-campus, e.g. expert speakers from overseas. Can be 'canned' (recorded) for future use. Can also usually support question-and-answer sessions using text, audio or video.</td>
<td>Specialist equipment is required and technical set-up can be complicated. Visual quality is generally poor. Turn-taking (not speaking all at once) can require practice. When used across many time zones the synchronous nature requires some students or staff to work in anti-social hours.</td>
</tr>
<tr>
<td>Artefacts, (e.g. geology specimens or pathology samples)</td>
<td>Invaluable in subjects where students need to learn to identify items, learn manual skills and interpret two-dimensional diagrams and pictures. Can be used to prepare students for access to real-life specimens.</td>
<td>Can be difficult to obtain and awkward to store and make available. May degrade over time.</td>
</tr>
</tbody>
</table>
**Internet**

A vast source of existing visual (and some auditory) material, accessible cheaply from the desk or library. Multiple simultaneous use possible. Easy to 'store'. Can be displayed on large screens during lectures using a data projector - although resolution may be poor.

Searching for sources can be time-consuming and hit-and-miss (although searching within sites can be fast and flexible). Visual quality can be poor. Additional software tools may need to be downloaded to view material.

**CD-ROMs**

Becoming the main means of storage to large information sources and databases. Can integrate moving visual images, sound and text. Searchable. Can integrate with presentation software (and hardware) for use during lectures.

Range of CD-ROMs still modest and may be further restricted if students use non-PC platforms (eg. Apple Mac). Requires use of computer with CD-ROM drive. Requires printing to hard copy in order to be used away from a computer. Visual quality can be poor.

**Photographs**

**3D-models**

**Powerpoint (or other presentation software)**

**DVD**

*DVDs (digital versatile disks) can contain far more information than CD-ROMs, combining text, audio and video for an entire course in a single disk. They can be played back in computer DVD drives, on some home DVD systems and using some games systems (eg. Sony Playstation 2). They can contain live weblinks.*

**References**

Audio-visual (AV) and other multimedia resources can be frustratingly difficult to track down and until you have had the opportunity to view and use them you may be concerned about their quality or their applicability. As the cost of these resources is usually higher than for text-based equivalents you may need to call on expert advice and tap into specialist sources before placing an order. For example:

- **Ask your subject librarian for assistance.** Locating AV resources is less straightforward than locating journals or books, and materials are organised in subject-specific ways.

- **Your institution may have a licence to copy and use BBC broadcasts** (audio and video material) and may already have a substantial stock of such material as well as broadcast calendars for documentaries and Open University programmes. The BBC and OU websites both contain information about broadcasts and a joint BBC/OU website ([Open2.NET](http://www.open2.net)) gives information about new and current series and viewing schedules for OU programmes up to 6 weeks in advance.

- **Some journals include reviews of learning resources.** The *Journal of Geography in Higher Education*, for example devotes a whole section every issue to reviews of film, video, simulations and computer software that geography teachers have used. Look at back issues of specialist journals in your own field.

- **The British Universities Film and Video Council produces a regular newsletter**, 'Viewfinder’, with reviews of educational videos, and is a source of television programmes you may have missed.

- **Several of the Learning and Teaching Subject Network sites have resources sections** which include peer-reviews of multimedia resources.

- **Gateway to Educational Materials (GEM)** a large-scale US federally-funded searchable database is designed to provide easy access to AV resources. Like most such sources it is patchy in coverage.

- **Ask colleagues** what they have used or have available.
H850 Experience as a resource for learning

H850 Interactive resources: games, case studies and simulations

by Graham Gibbs, adapted by Chris Pegler

Probably the best-known user of case studies as a central resource for teaching and learning is the Harvard Business School, where students examine case studies prior to large classes, during which the case material is analysed by the lecturer asking questions of the students. Case studies are used extensively in a number of subject areas - notably the professions, such as law, medicine and engineering. Many teachers base at least part of their courses around interactive group work that focuses on games, case material or simulations. They can be engaging for students and can help them relate theory to real-world contexts and to integrate academic knowledge in tackling complex problems. They can generate large quantities of focused learning activity with very little teaching support. They can also be fun for teachers.

Once you have found suitable material you may need to change a few things.

- Your timetable and use of classroom space may need to be altered to allow for intensive 'workshop' sessions. Although this is not always necessary. Independent work on case studies can be undertaken in preparation for conventional classes. Some simulations can be undertaken individually, especially computer simulations, and some can be undertaken within an hour even with a very large class. But most involve small- or medium-sized groups working for hours or even days.

- Additional teaching time may need to be used to brief students or to provide tutorial support as students work independently with the material.

- Since the outcomes of work with such materials look very different from the outcomes of conventional study, your method of assessment may alter, perhaps to include the use of project reports.

- The way students access the academic content of the course may need to change, since they may need to draw on it as they work on the games or simulations.

While some lecturers prepare their own case material, few lecturers prepare their own games and simulations because it is time consuming and difficult to do well. However, there are large collections of published material accessible through a range of sources, and a key problem to using these effectively is locating and reviewing the material they contain to check that it suits the aims of your course. There are whole organisations, journals and conferences devoted to this type of learning.

Each subject area has its own sources for such learning resources. For example, sources for management cases or simulations include:

- The European Case Clearing House (ECCH) for management education and training based at Cranfield University, which contains a stock of over 14,000 titles and related teaching notes, technical notes, industry background notes and videos. ECCH provides support services for authors of cases, runs workshops, seminars and conferences about using case studies, and markets case studies produced at other universities around the world

- COLIS (Case Online Information System): the most comprehensive electronic bibliography of management case study materials in the world with search and free-text retrieval facilities. (Accessible via ECCH.)

- BIZ/ED Virtual Learning Arcade is a series of economics and business simulations on various topics with supporting materials.

Activity: Finding appropriate resources

Contact your subject librarian or media librarian and ask for assistance in finding sources of games, case studies and simulations in your own subject area. Identify one or two potentially useful resources, together with enough information about them to evaluate their usefulness, for example:

- their academic level and what academic knowledge they draw on;
- the type of students each was written for, and their knowledge and experience;
- how much time they take and whether, for example, they require extended classroom contact;
- whether the materials have accompanying tutor notes and suggestions for use.
People as learning resources

by Graham Gibbs, adapted by Chris Pegler

It is easy to underestimate the importance of people as learning resources.

- **Other students can perform the role of peer assessors** (for example, giving feedback on each other's assignments for improvement before being submitted). They can be project team members or perform specialist roles within learning teams; they can be peer tutors; or mentors (as when second-year students look after first-year students in their first term). They can also be proctors or supervisors (as when second-year students act as research assistants on third-year students' projects). Students are probably your main under-used resource.

- **Other lecturers, or postgraduate students**, who have specialist expertise that could be drawn on by students. There may be lecturers in other departments or even other institutions (especially for final-year project and dissertation work) who could be useful. Ask these lecturers first before advising your students to approach them!

- **Supervisors in the work place** who support work-based learning.

- **Support staff in the departmental office**, who can advise students on handouts, regulations, deadlines, changes of course and so on.

- **Support staff in laboratories, libraries, computer centres and student services**, who can show students how to use equipment, or provide training and advice on IT skills, information retrieval and study skills. Talk to these staff about what support they would be happy to provide.

- **Clients of students acting as consultants**. For example, students on a survey and statistical methods course at Oxford Brookes University 'sign up' with academics from any discipline who have survey- or statistics-related questions they would like answered. A group of students then answer these questions using survey methods.

> I used to act as a client and ask questions such as 'Do third-year students spend their study time in a different way to first-year students?' and I would get four weeks worth of consultancy and research undertaken for me by students who were interested in this question. A number of universities work with real industrial clients and use the experience to train students to tackle complex real-world problems. (Graham Gibbs)

### Activity: Maximising your use of people as resources

1. List all the people who might be able to perform some function as a resource for your students.
2. Make notes on what sort of support they might be able to provide and how that support could be maximised?

For H850 (the course supported by these materials) a number of people are able to act as resources for the tutors of the course.

<table>
<thead>
<tr>
<th>Who can act as a learning resource for H850?</th>
<th>What support might they be able to provide and how might that support be maximised?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teachers’ colleagues</strong></td>
<td>Offering advice, sharing teaching materials, checking teaching plans, double marking to check standards. Could be maximised simply by making regular requests for assistance or by offering help in return.</td>
</tr>
<tr>
<td><strong>Mentors</strong></td>
<td>As colleagues, but more pro-active and looking at draft portfolio material. Maximise by fixing regular meetings and discussing how you are working together.</td>
</tr>
<tr>
<td><strong>Students</strong></td>
<td>Providing feedback on teaching and on the course. Maximise by telling them what they can do to help.</td>
</tr>
<tr>
<td><strong>Course team who wrote the materials</strong></td>
<td>Responding to online discussions via FirstClass. Maximise by making themselves available at particular times for advice.</td>
</tr>
<tr>
<td><strong>Other tutors teaching on this course</strong></td>
<td>By sharing ideas and approaches at tutor meetings and through the online tutor discussions in FirstClass. Maximise by ‘pairing’ experienced and less experienced tutors in a buddy system and through regular exchanges of advice and experiences.</td>
</tr>
<tr>
<td><strong>IT support and Helpdesk staff</strong></td>
<td>Can advise on how to use the technology and suggest alternative technological approaches to delivery. Maximise by using in combination with other (printed and online advice) and by anticipating your own requirements.</td>
</tr>
<tr>
<td>Library staff</td>
<td>Library staff can help staff and students with access to alternative resources, particularly online resources that may be more accessible to some students.</td>
</tr>
</tbody>
</table>
Experience as a resource for learning

by Graham Gibbs, adapted by Chris Pegler

Most of my current academic knowledge and competence was acquired outside the context of formal education through first-hand experience and this seems to be the norm in most professions. Along the way I have used books, journal articles and conferences to help me to conceptualise my experience. But most of what I know and understand about teaching and learning in higher education is from having seen teachers in action, from interviewing students, and from working with teachers as they redesigned their courses. The resource that has led to more of my learning than anything else has been my consultancy work. (Graham Gibbs)

Increasingly, higher education has attempted to make better use of experience as a source of learning. Certain subjects have always used practical work, such as in laboratories or in studios. Some institutions have always used short or long periods of work experience for all students ('sandwich courses'), and some professional training has always included periods of professional practice. But today, students of academic and theoretical material are more likely than ever before to have structured experiences designed into their courses as a major component. As well as planned work experience, this can take the form of:

- visits and field trips;
- observation or shadowing of professionals in action;
- undertaking supervised consultancy work;
- substitutes for experience, such as role play, games or simulations.

As you will recognise, if you have been using the materials in this series of packs, what turns experience into learning is reflection. As well as planning students’ experiences as a learning resource, you will have to think about what students will have to do in order to notice what is going on, to think about it and to relate it to the content of your course. This may involve negotiating a learning contract in advance, in order to focus the students’ attention on the intended outcomes from the experience, and keeping a reflective log or diary.

Activity: Learning from experience

1. Choosing one of the four forms of experience mentioned in the list above, and relating this to your own teaching, prepare a suitable ‘learning contract’ or advice sheet for your student(s) advising them on how best to approach and benefit from this opportunity to learn from experience.
2. Consider whether there is a similar need to advise others involved in the learning experience, e.g. employers or experts. What would this advice consist of and how would you communicate it?
3. What form of debrief may be necessary to encourage the group of students as a whole (or the partnership of employer and student) to learn from these experiences? How might you prepare yourself and your students for this?
Selecting and using ICT and online resources

H850 Selecting and using ICT and online resources

by Chris Pegler, based on work by Graham Gibbs

Electronic resources have become ever more central to student learning and to course design. The growth in access to computers and the increase in functionality of the typical machine has grown rapidly over the past decade. Meanwhile the growth in use of the internet and the ease with which digital resource material can now be created, revised and disseminated has meant that the supply of resources for use with computers has kept pace with the advances in technology. Computers have become not only more powerful but also more portable, flexible and desirable. The increasing use of the web and/or suites of software to create and publish resources makes them more user-friendly, using the same set of navigational skills across many sites and packages and allowing easier integration of material from different sources.

Websites as resources

In some subject areas, it is already possible to provide many of the learning resources students need for a course via the Internet. Quality and comprehensiveness can vary, but gateways and specialist sites provide marvellous resources for study and search engines provide a means of locating resources internationally with unprecedented ease.

Many of the traditional library resources for students in Higher Education, particularly databases and journals, are now also accessible online. This improves the opportunities for students to access the resources more conveniently and, increasingly, allows searching across collections of resources.

With these opportunities have also grown anxieties, in particular concerns about the potential that the internet offers for students to ‘cut and paste’ material without reflection, or at worst, plagiarising by copying or adapting such material in their assessed work without adequate attribution. It does not help matters that sites can change overnight and referencing within sites may be poor, often lacking even basic information about the date or authorship. Students (and teachers) may need information about how to reference online resources correctly, for example something like the advice provided by the OU library.

Activity: Learning and Teaching Support Network (LTSN)

The Learning and Teaching Support Network has developed network of 24 online ‘subject centres’ together with a ‘generic centre’. Each of these different centres offers easy access to selected resources, aimed at a higher-education audience and developed for a specific discipline (eg. Medicine, Dentistry and Veterinary Medicine).

1. Explore the subject centre webpage of the LTSN which is most relevant to your own teaching practice. (If you are not a subject-specialist you may prefer to choose the generic teaching and learning site.)
2. Find and bookmark or note the URLs of 5 web-based resources that you could use with your students or use to prepare resources for your students.
3. Now using your preferred search engine (e.g. Google) try and locate these resources by searching on keywords but without referring to its title or authors. (Don't spend too long on this, just get an idea for yourself how easy or difficult this is.)
4. Would you have found these resources more easily through an independent search?

CD-ROM and DVD resources

Information previously held only in databases or in a combination of ways (e.g. video and handouts, or as multiple recordings) is now often available on CD-ROMs or even as DVDs. The relatively low cost of creating a CD-ROM, and the high level of storage now makes it practicable for teachers to use them to provide material for every student in this way - for example, by providing a large selection of accessible legal cases to support student work on some law essays.

It may be more desirable to store photographic images, video, audio, extensive documents or other large files on a CD-ROM or DVD than it would be to use a website. Unless all your students have access to very fast connections to the internet they may otherwise spend a lot of time downloading resources.
You may choose to use CD-ROM as a medium for storing your resources for future use.

**Remote databases**

Library search facilities such as BIDS can provide access to hundreds of library catalogues, online journals, and so on. Professional databases containing legal or scientific information are available via subscription or through academic libraries.

**Instructional software**

A growing library of interactive computer-based teaching material is available which could serve to reinforce a lecture, substitute for an individual tutorial, or even replace an entire course.

In some instances publishers have produced instructional material to support the use of a particular textbook, for example a set of teaching tools such as slides as part of a 'teacher's edition' and a test-bank as part of the student version of the same text. These may be linked to a book website providing more up-to-date information to support the text between editions.

**Computer and online simulations**

Computer-based or online simulations are increasingly used to provide virtual experiments in place of 'wet' experiments, which can be dangerous, expensive, impossible or unethical. They can also provide a means of experimenting with a variety of inputs and outcomes, for example queuing simulations as part of an operational research course where the student can input different variables and view the effect time and time again.

Using communications technologies such as video or audio conferencing it is also possible to undertake role plays with students from elsewhere, perhaps even an institution based overseas. One such simulation at the OU uses Lyceum audio-conferencing to run a case study based on the United Nations, simulating the different discussions and working environments found in the UN building.

**Computer conferencing, bulletin boards and mailing lists**

Students can use each other as resources via computer conferencing and these conferences can be integrated into teaching so that students post the results of activities into the conferences for comment or undertake tasks as members of a 'virtual' team. This can be particularly useful for part-time or distance-taught students who may otherwise have little opportunity to work with their peers outside scheduled classes. With the growth in use of virtual learning environments (VLEs) such as Blackboard and WebCT many courses now make use of bulletin boards and group email as the main method of allowing students access to lecture notes, assessment information, copies of presentations and information about new resources. Other courses which have an element of work-based experience may find these useful forums for students to share and reflect on their learning, or simply request support from their peers, whilst away from campus.

At its most intensive, computer-mediated communication (which can be text- video- or audio-based) can replace conventional face-to-face teaching. An increasing number of courses are based around this form of online communication.

Virtual communities using conferences, bulletin boards and mailing lists mailbases exist within and beyond university environments and can allow students to ask questions of interested communities beyond the boundaries of their course.

**Activity: Conferencing beyond the course**

JISC (The Joint Information Systems Committee) runs a series of Mailing Lists to support a series of higher education interest groups.
1. Visit the Jiscmail site and look at the range of mailing lists on offer. Then select a mailing list that appeals to or interests you.
2. Join this mailing list if you wish. It's quite easy to do.
3. Look at recent messages for your chosen mailing lists by browsing the archives or searching for keywords.
4. Consider whether these lists, or the ability to set up your own list would be of interest to your students.
5. How would using lists like these support teaching and/or learning within your subject area?

IT tools as resources

Almost all students use computers as learning resources - sometimes for a significant proportion of their time. They use word processors, spreadsheets, databases, statistical packages, design packages, presentation packages and a whole host of discipline-specific tools such as equation-solving software, graph plotting, 3D modelling, and so on. They use the Internet, electronic search tools, e-mail and possibly computer conferencing. They use computers as part of the analytical toolkit within their discipline: programming, analysing remote sensing data, or using computer models of the economy, of population dynamics or of cognitive functioning. To make sure your students are able to use IT as a resource in their learning, you may need to address the following areas.

- If students are not required to provide their own computer and the relevant software you will need to arrange access. Estimate the total number of student learning hours usage involved and talk to the computer centre about availability of computers and service support. Book computer labs if necessary. 60 per cent or more of your students may have access to computers off campus, but they may not have access to the programs you need them to use. If it looks as though access to IT facilities is simply not available in sufficient quantity, and at the right times, you may need to re-think the demands your course makes. Be particularly careful about making heavy demands in the weeks when most courses have their deadlines for word-processed course work.

- Undertake a simple audit of students’ existing IT skills and experience to check if your assumptions about them are accurate.

- Plan additional training for those who need it. This may not involve much of your effort. Your computer centre may offer basic training. Students who already know how to use some software could be organised to act as peer tutors to those who do not.

- Make sure that students know about any special IT requirements as early as possible, ideally before the course starts. For example if any software is unsuitable to a Mac computer, or will not run on some operating systems, or requires a DVD player or headset.

- Consider carefully what functionality you actually need. You may decide to use a software version that is readily available to students even if this is not the most recent version. Most software offers some ‘backward compatibility’ (i.e. it will support use of resources designed for earlier versions).
Also known as self-study materials, learning packages and open learning materials, independent learning materials are often designed to act as a completely self-contained resource from which students can learn with little or no intervention or help from a teacher. They differ from conventional textbooks in that they may include a range of teaching devices which might otherwise appear elsewhere within a course:

- aims and objectives;
- study guidance;
- informal style and language, writing as if the author is alongside the reader guiding them as a tutor, rather than facing and telling them like a lecturer;
- interactive devices such as questions and answers, activities and self-test questions;
- examples, cases, diagrams and other illustrative material;
- introductions, reviews and summaries of each section;
- glossaries;
- well-targeted links out to quite specific additional material, rather than extensive referencing to all sources.

Several books which give detailed advice and examples about how to write such material are listed in Further reading.
When you started teaching, you may have had your hands full designing your first courses, and may have needed to rely on whatever learning resources were readily available. However, as your experience and confidence grow, you may want to produce your own resources to suit your courses and your students’ learning needs. Handouts, problem sheets and study guides are technically simple resources and so may be the first things that you produce for yourself.

Handouts

Handouts are the most common resource that teachers prepare for their students. They can take a wide variety of forms:

- summaries of lecture or seminar sessions or of a whole series of sessions;
- copies of presentation slides, perhaps arranged so that notes can be added easily;
- additional material not covered in class;
- reading lists or other lists of learning resources;
- glossaries of terms;
- ‘gapped’ handouts with key information missing which students have to fill in for themselves, to create interaction and maintain attention;
- activities or problem sheets, containing tasks for students to tackle;
- guidance about assignments, or about more extended independent study activities such as fieldwork, projects or visits;
- case material, data, maps, drawings, photographs or other resources which students work on while they tackle out-of-class learning activities;
- copies of reading material, articles, chapters or other material (with copyright clearance, of course).

Handouts can be provided as hard copy or made available electronically as word-processed files or on an intranet site. Whichever format you choose you should consider how to organise and store ‘masters’ or versions of these resources so that you can re-use them for future presentations of the same course, or adapt them for different courses.

‘Problem sheets’

Problem sheets are ubiquitous in maths and technology and, for teachers not working in those subject areas, it is helpful to understand why, because their use could be advantageously extended to other subjects.

We learn to solve problems by practicing solving problems. Students are normally given a sheet of problems based on a lecture or a week’s work, tackling these independently before coming to a tutorial or problem class in which solutions and difficulties are discussed. In some subjects, tasks similar to problems are set - as with the analysis of cases in law or business. In many other subjects, students only get to hear or read about a topic - they don't do anything with that knowledge. Social science and humanities students could also benefit from short tasks, in the form of analysing data or text, which involve using techniques or concepts taught in an earlier class. Such problem sheets give structure and focus to independent study and also give students something concrete to discuss in subsequent seminars.

There are several areas to consider when designing traditional problem sheets:

- Refer to the lectures, handouts or textbook sections on which the problems are based.
- Use notation and terminology with which students are familiar from lectures or textbooks.
- To give students confidence, start with an easy problem.
- Ask to look at colleagues’ problem sheets to obtain ideas about types of problem, the level of difficulty, the number of problems and the amount of advice it is sensible to provide. When you have drafted some problem sheets of your own, show them to an experienced colleague and ask for their comments and suggestions.
- Label every page of every set of problems with your name, the course title, lecture and topic involved. Store it on your computer in a way that will allow easy recovery, revision or re-working in the future.
- Make it clear what use will be made of students’ work, for example:
Problems 1 to 8 are introductory and for practice. You will encounter these solution forms repeatedly and need to be thoroughly familiar with them in whatever guise they appear. Problems 9 to 15 will be the focus of the problem class in week six. I'll ask students at random to come to the board to demonstrate their solution or to explain the nature of their difficulty. Problems 13 to 15 are of a form you may encounter in the exam. Have a go at problem 16 - we'll encounter this type of problem again in weeks nine and ten.

- List problems in a logical order, especially in terms of level of difficulty, or where early problems involve use of techniques or solutions on which later problems rely.

- Offer advice, in the form of clues or hints, to help students who are 'stuck', for example:

  This problem has similar features to Problem 8 on Problem Sheet 6 in that it involves non-parametric data with unequal group sizes.

- Include relevant references, for example:

  A worked example that uses techniques you may find useful here can be found in Wurtz, 1997, p. 218.

- Provide one or two really challenging problems for the able students to cut their teeth on, but mark them clearly as advanced problems.

- Offer general study advice, for example:

  You may find it helpful to work on these problems with a friend - but leave at least a couple of the later problems to tackle on your own to check that you can do it.

Do not feel that you have to mark all the problems you set. Students are usually perfectly capable of marking each other’s problem sheets and giving useful, if blunt, feedback when given a little guidance. But you do have to let students know that their work will not be ignored, and that it is not possible to get by without tackling the problems.
Course guides take many forms and can vary in length from a one-page handout to a 100-page handbook. If you see your job, in part, as managing your students' learning, course guides perform one of the most valuable management functions. They may contain any or all of the following sections.

- **An overview of the course:** its aims and outcomes, why it is important, why it covers what it does, how it fits in with the overall programme, and why it might be valuable to students.

- **A detailed description of the teaching schedule:** this can include a timetable, explanation about which groups students are in, room locations, and a paragraph about each lecture, seminar or lab session, explaining the topic and the preparation associated with it.

- **A guide to the assessment:** this could include the actual assignment questions or tasks, advice on how to go about these assignments (for example: 'How to write Egyptology field reports'), deadlines, rules about plagiarism and late submission, marking criteria and arrangements for tutorials or feedback associated with assignments. An explanation of what a successful outcome looks like and what standard is required against a clear set of criteria is also can be also be invaluable.

- **A guide to learning resources:** this could include advice on using equipment or computer software, an annotated reading list for each week, information about useful websites and electronic bibliographic search facilities available, lists of video or other audio-visual sources, the name of the subject librarian, information about other libraries and information sources off-campus. The aim should be to make students as self-sufficient as possible in locating and using a wide range of resources so that they don't grind to a halt when they find that 'the book is out'.

- **A guide to student support:** this could include tutorial arrangements; teachers' office hours; information about where IT or study skills can be learned; what to do if, for example, an extension is required for illness; and contact information about student services.

### Activity: Using course guides

Where students are not present in the same physical space as their teacher(s) for most of the course the course guide become a more important and authoritative source. For distance taught courses such as this one the course guide is often the first option for students seeking clarification on a variety of issues.

1. As a student on H850 locate the course overview, teaching schedule, assessment information, guidance on resources and student support. Note how this information has been presented to you and in which formats (i.e. print, online, through FirstClass conferences).
2. Use the H850 course guide, or equivalent information, to locate answers to the following questions:
   - Which programmes of study does this course contribute to?
   - Where would you find the timetable for this course?
   - What length of extension to the assignments can your tutor allow and when do you need to request an extension?
   - Are there any aids to using the online library?
   - Who should you contact if you are having problems with accessing your FirstClass account?
3. How easy was it to find this information?
4. Would you have known where to find equivalent information for your own courses?
5. OU courses where students are required to have internet may direct students to material held on the student homepages, for example the learners' guides or qualification planner. Consider how your own students might benefit from online sources of information, and how you would make them aware of this information without overloading them.
Learners who take part in courses delivered entirely via the Internet are often surprised to discover that, at least at first glance, that these course have very few printed 'materials'. In some cases the only item that students will receive is a web address or a CD-ROM and their user ID and password, perhaps augmented by a few printed set texts which the students themselves provide.

However, what is available to students from within the CD-ROM or website may be a more extensive range of resources than anything that they would normally receive through a course based primarily on classroom delivery. Students will often find that they need to be self-disciplined and selective if they are to make best use of such exhaustive resource repositories. The teacher will need to provide guidance in the form of a study guide and design the materials so that there is sensible intuitive navigation, otherwise it will be possible for students to miss key resources altogether or spend inappropriately large amounts of time investigating material which, although personally interesting, may be of minor importance to the course.

New technologies can help you to present many types of material more effectively, both during classes and in the broader sense of improved supporting materials and resources immediately before, after and sometimes as alternatives to, usual face-to-face presentations.

For example here are some of the functions of a lecture that ICT can offer:

- **Providing up-to-date information**. If the latest data is on the internet, you can tell your students about it, linking to it during your own presentation (perhaps embedding a live link in your presentation slides) or by supplying the URL for students to explore themselves.

- **Guiding students through a topic**. You might create a set of headings and use this electronic template to display a list of questions or problems on the departmental intranet or course website prior to a lecture; this can become a handout for students to take notes on during the lecture, and can be used as a structure for a list of further readings.

- **Giving students something they will remember**. A multimedia presentation with visuals and sound can help to make your message more memorable, provided you keep it simple. You can use commercial presentation software, e.g., Powerpoint, to create a slide show, or prepare web pages. In either case this presentation can be published on the local computer network, or on the internet for students to access later.

- **Providing diagnostic quizzes, exercises and online help for students**. Students can receive individual feedback before the classes and the teacher can receive an analysis of what the students already know and which areas might need revision. Individual students who require additional support can be referred to online guidance as a first step to exploring their areas of difficulty without slowing the progress of the class.

- **Creating a flexible environment for students to discuss the work in the class**. Part-time students, those with off-campus responsibilities, or those who are following specialist courses are likely to have less opportunity to meet face-to-face with others studying the same subject. Such students may benefit from a simple online conferencing environment in which they can work together and provide each other with some peer support. If they are well-frequented, such conferences can also be a good way for teachers to communicate with students outside the classroom and publish useful resources for them.

Tutoring programs of various kinds, some more interactive than others, can be found now in most subject areas. If you find one or two that are very good, you may decide they can replace some of your lectures, assuming your students have adequate access to the required facilities. Replacing a whole lecture series with tutoring software is rarely possible but a 'blended' approach is often popular with students and teachers - a composite course with some computer-based sessions, some lectures delivered in person, and some electronically. You may know a colleague in another institution (perhaps in another country) with whom you could arrange to do reciprocal guest lectures using whatever technology is available to you, e.g., a closed e-mail list, an online conference, a video conference. A software package can sometimes be adapted to include an element of communication between learners and teachers.

For example, in the teaching of philosophy, a subject in which dialogue is particularly valued, a learning package for first year undergraduate students was developed at Manchester Metropolitan University. This package included a 'Notes and queries' page, designed so that student support can be referred to online guidance as a first step to exploring their areas of difficulty without slowing the progress of the class.

### Activity: Connecting with your networks

1. **Visit the website of the LTSN website for your subject.** Find one project or application that might help you to present materials to students, and outline three different ways in which you could use this resource, deciding for each whether there are any likely benefits or drawbacks for you, or your students, or colleagues for each of the three different implementations.

2. **Either:** If it is a project decide what questions you would wish to ask the developer before committing to using this. Decide what convincing arguments you would make to colleagues and students about using this. **Or:** If it is a published application use an internet search engine to find reviews or examples of use. Comparing these with your proposed uses review your proposals and amend or add to these.

3. **For either the project or application of your choice consider what the problems would be in implementing the uses you propose.**

Many approaches to using ICT to support or replace formal teaching exploits the freedom from capacity constraints that still attach to printed...
materials and what can be delivered during a set time period in the classroom, tutorial or lab session. However consideration should be given to whether by not printing out material for students you are simply passing on the printing costs to those students. In terms of efficient management of costs and time a copy generated by the institutional reprographics facility will be far cheaper to produce than something printed out at home using relatively expensive printer cartridges and paper. The result is also likely to be of inferior quality, particularly where there is colour printing involved.

Other approaches to using ICT do not simply shift resources online, they encourage students to use ICT to locate and create their own content through their searches, discussions, comments and collaborations. Here the online tutor is not presenting materials as a set piece and the course content will vary with each cohort of students. However the role of the online tutor in such courses is usually a key to the success of the course and may be expensive in terms of the staff resources that it consumes. In some cases such a role may be difficult to fill within your own institution.
Once you have identified which resources you wish your students to use you will need to consider how to make these accessible to students in a form which is convenient to use, so that you can present the material in a cost-effective manner. With print-based resources the solution may be to compile the resources into a single volume. This reader is an example of ‘custom publishing’ and can range from loose leaf photocopying arranged in a folder, to a bound book, using including some introduction and advice on how to use the material contained in this. For large volumes and where the materials are derived substantially from a single publishing house, large publishers (e.g. Pearson’s) may themselves offer a custom publishing service, including 'branding' the item with your course title with a professionally published 'finish'.

In other instances it may be impractical to present materials together as a single item, but you may wish to create a substantial guide or manual to be used alongside the resources. Sometimes a guide will be used even where the range or number of resources is small, but the route through them, or the ways in which they should be accessed and used by students is not self-evident.

Compiling readers

It is increasingly common for lecturers to make reading material available to students by producing a reader consisting of a selection of articles and extracts from sources that would otherwise be unavailable or difficult to access due to competition from other students. There are several points to bear in mind when producing your own reader.

It is easy to overestimate how much students can read or what level of sophistication of writing students are able to learn from.

- **Extracts taken out of context may be difficult to make sense of.** You may need to write brief introductions or even a study guide to maximise student learning from readers.

- **You may need to distinguish carefully between material that all students absolutely must read and recommended reading you can provide a reading list for.**

- **Some publishers will negotiate ‘on-demand’ publishing** of books or off-prints made up of extracts from any of their publications. **You will need to clear, and possibly pay for, copyright.** Print rooms will usually not handle material without an assurance, or even proof, that copyright has been cleared on third party material. Rights will usually need to be cleared and paid for with each presentation of the course.

- **You will also need some advice on copyright even where you are using a standard license such as the Copyright Licensing Agency agreement.** Ensure that you are understand and are aware of any proscriptions on copying items and adhered to. For example limits on the number of copies and the level of charges that you can pass on to students.

- **Understand the logistical implications of the task.** Printing 100 copies of a 200-page reader is a significant task and you will need to plan ahead - ask the print room how much lead time they need, arrange delivery and find convenient and secure storage space for the readers until you hand them out to students.

- **Consider how you will distribute the readers to students.** You may wish to keep a record of who has received (and paid for) a copy so the most convenient opportunity to do this may not be at a lecture, because of the time taken and because not everyone may turn up to the class when you hand it out. If your departmental office is prepared to store copies and sign them out to students, this can save a good deal of trouble. The library may also be prepared to perform this service.

- **You may not be allowed to print large runs without departmental approval or a special budget.** However, you may be allowed to pass on some of the production costs to students under the terms of the copyright license. If the material is very expensive to produce then you might consider a loan service for the duration of the course. This may entail a returnable deposit from students and will involve considerations of how large a surplus is needed to cater for items not returned or damaged in use.

Study guides

Study guides turn textbooks or readers into courses. They do this by adding many of the features you would find in a full distance learning course: aims and objectives, learning activities, examples, self-test questions and longer assignments. These make studying the text more purposeful and structured and more active. Kember (1991) describes writing study guides as imagining yourself as a tutor alongside a student as she or he reads the text. What would you want to point out? What would you want to ask? When would you want the students to stop and do something that used the ideas in the text? How would you check that the student had understood what you wanted them to? It is extremely time consuming to write textbooks or distance learning material, but you can write study guides more quickly because they concentrate on process rather than only on content, on the learning activity involved rather than only on what is being learned. Well designed activities can generate many hours of productive learning activity, whereas it may take many hours of academic writing to support one hour of student reading. If textbooks have deficiencies, such as being too difficult or unfriendly, you can remedy this with your course guide.

Writing manuals and guides

Students appreciate advice on how to tackle the tasks they are set, such as writing laboratory reports, undertaking surveys, using equipment, working with computer software, tackling assignments or working in teams. They find it helpful if this advice is written down so that they can refer to it as they tackle the task. It is inefficient to dictate such advice in lectures and especially inefficient to have to deal with repeated
individual student queries if they have not followed your oral advice. As a consequence, it has become common for teachers to write handbooks and guides. Advice on how to write such guides is similar to advice on giving any complex explanation.

- Provide an overview at the start, before diving into technical details.
- Provide a contents list or conceptual map to the guide.
- Divide the explanations and instructions into sections with self-explanatory labels so that students do not get lost and can deal with the material in bite-sized chunks.
- Use diagrams and graphics to help explain ideas.
- Use self-checks, for example: 'At this point you should be able to see the cross-wires through the viewfinder, but they may be out of focus.'
- Provide reviews periodically before moving on, for example: 'This completes the setting up procedure. You are now ready to take readings.'
- Show what the end product should look like, for example, a model laboratory report, a representation of a computer display, a diagram of assembled equipment.
- Provide basic advice for dealing with difficulties when things go wrong. For example, a guide to group project work called 'Learning in Teams' includes a checklist for students to identify what is going wrong in their team and how to give feedback to each other and move on (Gibbs, 1994).

Most standard topics, such as how to write essays, or how to use Word for Windows, have been covered so many times that it is a waste of time to write your own from scratch, even if you have some unique features you want to add. Some universities provide guidance on a whole range of study skills and practical topics, either in short printed booklets or electronically, for students to access or for teachers to adapt.

Web-based publishing

An increasingly popular option, perhaps the fastest-growing area of self-publishing, is to publish materials on the web and to use web-based study guides with links to resources. If your students have good access to the internet and have already developing (or are seeking to develop) skills in using the internet then this can be a highly effective option. With web editing or word processing software it is possible to quickly assemble an online guide incorporating links to key documents, screenshots and images, answers to frequently asked questions (FAQs) and an email link so that students can provide feedback to their teachers or request help. Where students are making extensive use of web-based or other interactive resources on a course a web-based guide to using these can be the most helpful format.

One of the main advantages of online publishing is that the tutor may be able to include material 'in case' students need this, or easily add to the resources as the rather course develops, rather than restrict their selection to those materials that students will certainly use and available before the start of the course. Although copyright concerns continue to apply (and many print-based licensing agreements do not cover this type of reproduction) using the internet avoids the physical costs of production and can offer a convenient solution to students and teachers.

One issue to be seriously considered in using the web in place of a reader or study guide is the extent to which the students will be printing out the website material and using this as a print-based resource - which may make access to materials less rather than more convenient.

References


Copyright and the use of resources

by Chris Pegler

Copyright is a complex and changing area which you will need to become acquainted with during your teaching (or learning) career. It is important to have a basic knowledge of the restrictions in copying material for use in your courses, or make these resources available to your students. Advice, and restrictions, vary depending on the media and type of resource and the method of dissemination that you propose. You should seek advice from the institution within which you teach before you make a firm decision to use copyright material. In essence, as most material created in the past 50 years is under copyright, this includes any material which is created by someone other than yourself. The absence of a copyright statement does not mean that a work is free from copyright.

Copyright owners (whether authors or publishers) can place restrictions upon the use of their material, particularly if you wish to use this in its entirety. There is always a requirement to acknowledge the author or the work and not to do so would leave you open not only to legal action from the author for non-attribution, but also to allegations of plagiarism. It is usually not permissible to modify a resource produced by a third party without obtaining the creator's permission. Some authors allow this through licensing arrangements such as that provided by the Creative Commons, but this is still an unusual arrangement.

In addition to the 'moral rights' to be acknowledged as creator of the work and exercise control over adaptations, copyright holders also have 'economic rights' over their work and may charge for its use. In the Open University a large Rights department clears rights for the use of material in our distance learning courses, but this is not a typical arrangement. Most educational institutions in the UK pay a licensing fee which allows them a variety of rights to copy from collections of sources. The best known of these licenses covers the reprographic reproduction of print sources (excluding some categories such as music and maps) and is administered by the Copyright Licensing Agency. A summary of the license should be displayed by every photocopier in institutions covered by this license, so it will be easy to discover whether you are yourself operating under this scheme. Take time to read this license, to find out about the restrictions within your own institution and, if you are interested, consult the advice given on the Copyright Licensing Agency (CLA) website. Other, similar, licensing schemes apply to copying from terrestrial television, using recordings, etc.. You will need to ask to find out what scheme applies in your own case.

Copyright rules and higher education licenses negotiated with the CLA and other schemes change from time to time and copyright legislation within the European Union is also changing. It would be sensible to check your plans to copy material for your course with a librarian or other copyright expert in your institution at an early stage. If material is not covered by a license arrangement within your institution there is likely to be a cost involved in using it, there may be a long delay before permission is granted and there may be restrictions of that permission. Sometimes it will be easier to find another resource than obtain the necessary permissions to use your first choice resource.
Self-paced study simply involves students using prepared learning resources to their own schedule. Without some kind of external pressure from deadlines, class sessions or testing, students might get behind or lack the motivation to put in the necessary hours. Consequently, successful self-paced study usually includes other elements, such as extensive tutorial support and monitoring of student progress.

The personalised system of instruction (PSI), is a structured form of self-paced study. It involves dividing courses into units, usually of a week's duration. For each unit students are provided with structured study materials, or study guides for use with textbooks, problem sheets and accompanying guidance, or written instructions to carry out experiments, and then present themselves for a test on this material when they are ready. The tests are marked immediately by 'proctors' - senior students - who give feedback on any mistakes or misunderstandings. If students are successful - and the pass mark is usually set at 80 per cent or higher - they continue to the next unit. If not, they can retake a parallel form of the test after they have undertaken some more study. Any teaching, such as lectures, may be used as a reward for passing the test or as a supplement to independent study, rather than to present core material. (For a more detailed account of a course using PSI together with video and computer resources (see Rae, 1993)

There are large numbers of studies comparing PSI with lectures and lecture-based programmes, and they generally find PSI to be more effective. For example, Kulik et al. (1976) found 38 out of 39 comparisons with lectures to favour PSI. Ruskin and Hess (1974) reviewed 239 studies of PSI and most compared it favourably with traditional teaching-centred methods.

References


Problem-based learning (PBL) involves starting with a problem to be tackled, instead of with information. This approach encourages students not only to solve the problem, but also provides them with a rich and engaging learning environment. PBL has three features that are relevant to learning resources.

- Students draw on resources in order to learn what they need so that they can make progress with the problem. The problem itself may contain a range of resources - for example, a medical problem may include case notes and a geology problem may include a survey. There are usually no lectures or any other teaching except problem-centred tutorials. It is common for the key resources students will need to be provided in a pack to accompany the problem. This pack might include a photocopy of an article, a book, some data, some photographs, a video-tape and so on - in fact a range of library and non-library resources. Students will explore resources beyond this pack, but it does provide a coherent starting point.

- In PBL, students nearly always work in groups, so that each group can share a pack with only one copy required per group. The other students should also be considered a resource, with work shared out among the group members.

- Since information is not presented in a set sequence, parallel groups will usually be studying different problems, and there is often no fixed route through the course. Consequently, there should be no competition for resources between groups. One package per problem is all that is required. This makes it possible to invest in putting together very high-quality packages.

PBL has been adopted most widely in those subject areas, such as medicine, that previously relied heavily on lectures to present a high volume of information. It was not that information was not available in textbooks or lecture handouts, but it was difficult to engage students actively with these resources.

Activity: Exploring problem-based learning

The London Guildhall University deLiberations site includes a useful selection of links on problem-based learning.

1. Briefly explore two of the resources linked from the deLiberations site, getting a feeling for how problem-based learning is approached across different institutions.
2. Use the Problem-Based Clearinghouse link view one of the two samples contained on the site.
3. How would you develop one of your own learning activities into a problem-based learning form?
4. What resources would you need to provide for students if you did this?
Project-based learning relies on learning resources more than on teaching, and it does this in two main ways:

1. **Where students negotiate their own projects** using whatever resources they can find in the library or elsewhere, or generating their own resources by collecting data, undertaking visits and interviews, for example. Students need good information search skills for this, but they are unlikely to be competing with other students for the same resources as they may all be tackling different topics. Project supervisors may need to help students to locate relevant and useful learning resources at an early stage of the project, but they are unlikely to have to provide resources themselves.

2. **Projects where all students undertake basically the same task** - as when geology students undertake a field mapping exercise - usually require a guide to the project. This may involve advice about the process of the project, its stages, the techniques involved, how the project report should be written up, and so on. But it may also be necessary to provide all students with key references or material to which everyone will need to refer. This is particularly important if the project is being undertaken off-site and away from libraries or Internet access.

The assessment of project-based courses of the first variety can raise workload issues not only in supporting students with an appropriate range of resources but also in terms of the assessment. Typically this type of course is offered as in the last stages of studying for a qualification, offering an opportunity for students to apply knowledge that they have gained through several courses of study. Examples of such courses include the Open University's [Open Technology Project (T402)](http://students.open.ac.uk/desktop/h850-05k/files/resource.zip/rftl_project.htm)
The design of open and distance learning materials and courses is a complete area of study in itself and only the most common design features can be touched upon here. They include the following.

- **Specially written material**, often in the form of an informal discussion or 'tutorial in print', divided into short units, with activities, self-test questions and references to additional material. Previously mainly print-based, many distance learning courses are now mounted on the Internet or on CD-ROMs and involve interaction.

- **Study guides**, explaining how to work with this material and how to undertake assignments.

- **Readers** containing copyright-cleared collections of key sources, sometimes with detailed study guidance.

- **Correspondence tuition**, nearly always focused around giving feedback on assignments. Part-time Open University students receive more written feedback on their work than most of their full-time face-to-face counterparts. Postal submission of assignments is increasingly being replaced by electronic submission.

- **Telephone or e-mail tuition or computer conferencing.** In cases where audio contact is important (for example in language teaching) telephone tutoring is sometimes supplemented or replaced by audio conferencing, such as the Open University's Lyceum audio conferencing system which allows document and whiteboard sharing and concept mapping while supporting real-time audio conferencing and text-based 'chat'.

- **Self-help groups for students**, and organised by the students themselves. Contact can be via telephone, through meetings and increasingly through use of computer conferencing or instant messaging. The support offered by these groups may be formal and academic or informal and social. Both provide important support elements to students who might otherwise feel very isolated from their peers.

- **Video and broadcast elements**, formerly a major component in larger open and distance learning (ODL) courses such as those offered by the Open University, are now declining in popularity because of high costs and inflexibility of use. Use of video is now more likely to be incorporated into CD-ROMs, DVDs and used on websites as excerpts to reinforce teaching, provide simulations, offer virtual experiences or additional context. Recent relatively cheap access to recording and editing in digital form will ensure that video remains a popular medium for use in future ODL courses, although as the non-technical costs of creating genuinely educational programmes remain high, recording of lectures or pre-existing learning events will continue to be a more popular application.

- **Limited face-to-face tuition** in the form of evening classes, day schools and residential schools. This may be particularly important for inexperienced students and for subjects such as philosophy, which rely heavily on discussion, or science, which rely on laboratory work.

- **‘Home experiment kits’** or other equipment allowing students to undertake practical or experimental work away from laboratories.

- **Starting points, rates of progress and finishing points.** While it is possible to have a great deal of flexibility in these areas with open and distance learning materials, it is common for these to be fixed, as for conventional courses.

- **Websites** are now a feature of most ODL courses, particularly those which support students in a variety of locations, perhaps even overseas student cohorts. As virtual learning environments become more popular within higher education for the support of on-campus students the potential to spin-off an ODL variant of that course increases.

Distance learning and the production of distance learning materials have been most common where learners' time is expensive. For example, it may be cheaper for managers to pay for expensively developed distance learning courses than to take extended periods of time off work to attend face-to-face courses. In contrast, conventional undergraduate student time is 'free'.

Contrary to popular belief, there are few subject areas that cannot be studied successfully at a distance, either using simulations of face-to-face facilities or work-based experience to substitute for conventional teaching. Practical skills for engineers normally learned in workshops have been learned in distant students' own work contexts (Pemberton et al., 1997). Open University science students have home experiment kits and computer simulations of experiments and can use 'virtual microscopes' to view thousands of images stored on CD-ROMs. Trainee school teachers can gain their teaching qualification at a distance with school-based learning supported by a mentor and distance learning materials. Nursing education uses distance learning materials extensively, especially for advanced study.

In all such examples of distance or open learning, however, the resources are only one part of the course design. Just as important are the support mechanisms. In Open University courses, students may have a tutor they see in evening tutorials, weekend schools or during a week-long residential school; access to the tutor and other students via computer conferencing; a 24-hour helpline to answer queries; detailed guidance on how to use the resources; and more regular assignments and feedback. If you try to run a distance learning course without such support, drop out rates could soar to 75 per cent. The Open University calls its system 'supported open learning' and has drop-out rates comparable with face-to-face courses with similar types of students. This level of retention could not be achieved by simply having well-designed learning resources.

The mere fact that such learning is possible throws a new light on the relative importance and roles of learning resources and teaching in
conventional settings. You may not be expected to design distance learning courses, let alone the administrative infrastructure necessary to make such courses function. However, as funding declines there are growing similarities between distance education and traditional face-to-face higher education as it comes to rely more on learning resources.

References

“While what goes on in your classes is open to observation, most of what goes on when students use (or fail to use) learning resources, is invisible - it happens out of sight and students may not talk about it (some of what goes on can indeed only be revealed by special investigative techniques).” (Graham Gibbs)

Activity: Reviewing your students' use of learning resources

1. Consider what you would like to know about your students' use of learning resources and how you could find out?
2. Devise a list of ten questions that you would like answers to.
3. Compare this list with the one provided below and for each point decide on how you would find the answers to these questions within your own organisation.
4. Do you feel that you have answers to any of these questions already? If not how would you get answers and how would you use these to improve your teaching of the course?

Questions about student's use of learning resources might include:

- Do students have the necessary information skills to locate the learning resources they need?
- Do they ask librarians to help them or do they use electronic search tools?
- Was my reading list adequate so that students could find what they needed and when found were these resources useful?
- Could I use student experience and comments to improve my list for next time round?
- How do students select resources, do they prefer a wide or narrow range?
- Do students experience the level and focus of the resources as well matched to the level and focus of the course?
- Do students spend the amount of time reading and using resources I would expect?
- Can they get through the material I set them to do in the time they have available, or have I over-estimated their rate of reading?
- Do students buy their own copies of key texts so that they always have a copy to hand when they need it?
- Do students use internet resources and do they find them helpful?
- Have they found useful website addresses I could add to my list?
- Where do my students study, and is it congenial learning space?
- Do my students have adequate access to facilities such as computers?
- Are part-time students disadvantaged in accessing or using any resources?

“My own means for getting answers to these questions include using questionnaires, asking my students to keep a learning log, asking my subject librarian about data kept on usage of texts I have listed, and informal interviews with students.” (Graham Gibbs)
by Graham Gibbs, adapted by Chris Pegler

Most higher education programmes now include some use of information and communication technologies (ICT) in at least some of their courses. The emphasis on communication, as opposed to 'just IT', is relatively recent, but it is very important. Those who have previously been highly sceptical about what IT can do for them and for their students' learning are taking a second look at what is currently possible. It is also a great time for newcomers to this area, as the advantages of communication technologies are very plain to see.

Some of your time might be spent helping students become familiar with computer-based tools which are part of professional practice in your subject field: spreadsheets, graphics software, databases, a design package, a translation program, etc. Computer-supported discussion and teamwork are increasingly an important part of professional practice. This links in well with good teaching practice. Good communication between you and your students is what much of ICT is all about. Most people now use e-mail as part of their professional life: using a conferencing system is an extension of this practice. In its simplest form, computer conferencing can be very similar to e-mail, except that text messages are grouped according to the topic of discussion and it is quite easy to have a number of such discussions running in parallel, or in different groups, without getting confused. If you want your students to work together on a task, assignment, or project, you might try using software that is specifically designed for collaborative work. There are now a number of software systems which offer an integrated way of dealing with the various aspects of a course - discussion, collaboration, resources, feedback, assignment submission, marking, and so on.

**Typical uses of ICT in teaching**

Many teaching and learning activities that employ new technologies are formed by different combinations of activity or outcome: communication between teachers and learners; collaborative activities; and access to resources and to live information simulation of real life experiences. The internet makes it particularly easy to combine these quite different modes of activity. For example:

- you could ask your students to look for web-based resources as a collaborative task in which they also co-author a critical report about those resources;
- you could find on the Internet some materials to help you develop a multi-cultural perspective on the subject of your lecture or online presentation;
- you could ask for feedback from your students to be submitted via e-mail, through an online evaluation form, or by an electronic poll;
- your students could follow a live event on the Internet over several weeks (e.g., an expedition, an election campaign, a creative experiment, an online conference), and summarise it in an IT-based presentation;
- you could work with your students to collect different types of data in support of a joint research project, through e-mail questionnaires, a discussion website, logs of website usage, questions sent to experts, querying of databases, use of reported observation data (e.g., satellite images, war reports) and so on, and perhaps analyse the data using appropriate software;
- you and your students could take part in a virtual field trip (e.g., a journey down a river), a virtual museum tour, medical examination of a virtual patient, etc. and discuss your experiences or your findings online.

Of course, in each discipline area there will be a different emphasis and range of key activities. Thus, in the sciences, much use is made of visualisation through animations, video sequences, exploratory environments, interactive graphs, etc., whereas in languages there is emphasis on linking together speakers of different languages and giving access to up-to-the-minute cultural information and vocabulary.

**Communication between teachers and learners**

New technologies can make it easier for you to communicate with your students and for them to get in touch with you. You may also find an improvement in the level or quality of communication that takes place among students on your courses, particularly if the students are part-time and have infrequent opportunities to meet.

Electronic interactions between teachers and learners can consist of:

- informal chat
- discussions based on the subject content of a course
- clarifications of understanding (e.g., in relation to assessment)
- feedback on performance
- advice and counselling
- administrative arrangements e.g. agreement of meetings or deadlines.

E-mail is valuable for one-to-one communication; it is uncomplicated, private, and often the quickest way of reaching someone electronically. Use of an e-mail list makes it possible to have exchanges with a group of students, for example to give them feedback or guidance in a relatively economical way (without having to repeat the same advice to each student). The main drawback of e-mail is the rather difficult management of incoming messages from different people and groups, concerning different topics. If you use it for one small group of students, and your course has a very well defined structure, it could very well be exactly the right thing for your course - provided your students are not doing too many other courses that also use e-mail!!
Computers are an excellent way of storing and distributing information, giving students better access to the resources they need for learning.

Computer conferencing is becoming more common. This is still a mainly text-based communication, similar to e-mail, except that messages are grouped visually according to who has sent them and the topic of discussion. The FirstClass conferencing system used for this course offers computer conferencing and email within one integrated package. For the educator these students make it easier to manage several groups of learners and many ongoing conversations. The fact that these exchanges are all in writing can be a plus. Students who are normally very quiet in class can become much more active in an online conference. In this environment there may be more opportunity for reflection before contributing and the focus is on what someone has to say, rather than on how they look, their gender, age or nationality. Most activity in conferencing systems such as FirstClass are 'asynchronous', meaning that messages are written over a period of hours, days or weeks. By contrast, 'synchronous' communication takes place at an appointed time (let's say, three people agree to be online for half an hour on Monday, starting at 4 p.m.), or on a drop-in basis (e.g., a virtual chatroom where you might 'meet' and talk to people who happen to be there at the time). The typical result is a more informal but ephemeral conversation.

Some conferencing systems allow users to add pictures, sound files and video clips to their messages. Conferencing which uses predominantly video, audio and graphics is also becoming more widespread, although there are often greater technical difficulties in establishing and maintaining these types of communications. Some experiences with desktop video conferencing (where students see their teacher and one another on their computer screens) suggest that it is best used to support learning tasks and dialogue with individual students, rather than as a means of delivering content to a group. It can put more pressure on teachers and learners, but there is the potential advantage of being able to replay a whole session, clips from a session, or just the sound component at a later date.

With the introduction of new technologies, teachers and learners have to take on new roles and acquire new sets of skills.

**Collaborative activities through new technology**

In many ways, an online environment is ideal for collaboration between students. They can keep in touch between meetings, or do all their work online without having to meet at all. They can participate in inter-institutional collaborative projects. In their collaborative tasks and projects they may be able to:

- share files
- review each other's work
- jointly produce new designs
- pool Internet resources
- conduct investigations across the Internet
- co-author web pages and documents.

But, like most teaching, online collaborative activity needs to be carefully planned if it is to succeed. Above all, electronic communication requires very clear goals and outcomes, so that students are not using valuable time discussing, 'What are we supposed to be doing?'

It is important to have the right software environment for any task. There is software available which is designed specifically for computer-supported collaborative work (CSCW); this type of software can sometimes include a shared space like a whiteboard for sketching out ideas, and communication through audio or video, as well as more basic facilities like file sharing and keeping track of document versions. The Open University has developed its own audio conferencing environment with shared whiteboard and concept mapping. Called **Lyceum** this software has proved useful for supporting language teaching or for collaborative work on creative management courses.

Computer-based work more generally can also be used as a basis for collaboration. For instance, you can arrange for students to work in twos or threes on a joint task around one computer screen. You will then, as a teacher, be able to step back a little, allowing your students to learn together and from one another. When needed, you can guide, facilitate and moderate. Peer learning can be very effective and the ability to collaborate or co-operate is an important 'employability' skill.

**Case study: Glasgow School of Art**

At the Glasgow School of Art and the University of Strathclyde, a study was carried out to determine the feasibility of web-based collaborative projects between undergraduate product design engineering students at the two institutions. The ICON (Institutional Collaboration Over Networks) project used a range of technologies: e-mail, shared workspaces, shared whiteboards, chat, audio and video conferencing. Despite technical difficulties, the project was felt to be a success by the students and staff involved. Recommendations made by ICON for future projects of this kind included the following:

- agree on the technologies in advance and standardise hardware and software
- allow time to set up and test the technologies, and to register students to use the software, if necessary
- give students time to familiarise themselves with the technologies
- ensure you have adequate technical support
- provide a variety of communication channels, so that if one fails, another can be used instead
- be realistic about what you can achieve.

**Access to resources and to live information**

Computers are an excellent way of storing and distributing information, giving students better access to the resources they need for learning.
You may be a user of databases like BIDS (Bath Information and Data Services for bibliographic information), which your students might also be using, and ERIC (Educational Resources Information Center).

**Activity: Selecting and using web-based resources**

1. Consider the selection of web-based resources in the following list. Some are general categories, while others are examples of a specific type of resource. Choose three that you might want to have a look at with a view to expanding the range you offer your students.

2. Use a search engine on the Internet to find one example of each of your circled resources, and bookmark them for future use.

<table>
<thead>
<tr>
<th>Contact with book authors</th>
<th>Academic journal with a discussion forum</th>
<th>Census data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guides to legal language</td>
<td>A virtual hospital</td>
<td>Film clips</td>
</tr>
<tr>
<td>Music samples</td>
<td>Online bookshop</td>
<td>Pharmaceutical yellow pages</td>
</tr>
<tr>
<td>Audio mini-lectures about J. F. Kennedy</td>
<td>Interviews with Hiroshima survivors</td>
<td>Museum collections</td>
</tr>
<tr>
<td>Dictionaries</td>
<td>Picture libraries</td>
<td>Live pictures from a location</td>
</tr>
<tr>
<td>National newspapers</td>
<td>An online novel-writing project</td>
<td>Weather reports</td>
</tr>
<tr>
<td>Advice on grammar</td>
<td>Free software</td>
<td>Internet user surveys</td>
</tr>
<tr>
<td>Advice about allergies</td>
<td>Shopping mall</td>
<td>Collections of texts</td>
</tr>
<tr>
<td>City tours</td>
<td>Online art studio</td>
<td>Weblogs</td>
</tr>
</tbody>
</table>

‘Live’ websites relate to what is happening right now - the most up-to-date information, the latest pictures - but the internet is also a good source for replaying some recent event that has been captured in one or more media forms. The event itself could be real, imagined, virtual, or a combination of all three. It is not always easy to tell by looking at a website what kind of event is represented there, so you might consider contacting the webmaster or author of the materials on the website and ask for some background information.

It is also not always easy for students to access multimedia components (audio, video, animations) in websites, for reasons of inexperience, lack of appropriate software, and so on. As you set web-tasks, you need to ask yourself whether all your students will have equal access to the resources that are necessary to complete them.

As well as using resources available on the Internet, your students may want to create their own. Work produced by one group of students can be kept electronically as a resource for future students, or you might devise a specific task in which students build up a course resource. Past students can volunteer to be available online to answer queries by current students. An integrated software environment for a course or a programme of study can help you to build on the good things that have come out of one presentation of a course in order to enhance the next one.

**Simulating real life experiences**

If you are looking for ways in which ICT can assist you in the design of experiential learning, you should be able to find something relevant. You may already know of computer programs in your subject area that are described as ‘simulations’, ‘microworlds’, or that offer some form of data modelling. A computer-based simulation models an aspect of the world (e.g., a nuclear power plant, an ecosystem, a conversation in a foreign language) and allows students to make inputs to the system and see the results. Students participate in an active way, which is one of the reasons why simulations attract quite a lot of interest. They are considered to be good for motivating students, helping them to apply themselves and to retain what they have learned.

For a growing number of students who graduate from your courses, the Internet will be an integral part of their work environment. It may even be the main way in which they conduct their business, offer their services, display their creative work, do their research, and so on. In this sense, it may be important for you to arrange for your students to gain simulated experience of work on the Internet. You could use the Internet to help your students do things that are essential in your discipline, e.g., fieldwork through a virtual field trip.

**Reference**
Inappropriate use of ICT

by Graham Gibbs, adapted by Chris Pegler

With so much on offer, why is it that ICT sometimes fails to live up to our expectations? One of the main reasons for this seems to be the inappropriate use of new technology and media. It can be when you forget to ask yourself: What are the outcomes for my course, and will using ICT help achieve these outcomes? Another common mistake is to use new technology as if it were old technology, forgetting to identify its special weaknesses and strengths. The following table lists other examples of inappropriate use.

Some examples of inappropriate use of new technology

<table>
<thead>
<tr>
<th>Example</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Putting traditional lecture notes up on the Web, without modification.</td>
<td>Traditional notes are typically written in such a way that they may be best read on paper or used as prompts for a speaker.</td>
</tr>
<tr>
<td>Creating a website with dozens of links to other websites from all its pages.</td>
<td>This might be excessive use of a feature just because it's there. Plenty of opportunities for students to become lost or distracted.</td>
</tr>
<tr>
<td>Developing a multimedia software package.</td>
<td>Sometimes the same thing be can done more cheaply using a range of conventional media, including paper.</td>
</tr>
<tr>
<td>Use of a multiple-choice program in which learners choose from a finite set of answers (in a discursive discipline).</td>
<td>Discursive disciplines often require learners to express an opinion or an interpretation.</td>
</tr>
</tbody>
</table>

Other common reasons for ICT failing to deliver expected results include:

- **The wrong motivation for using ICT** - e.g., to gain prestige, to reduce the amount of face-to-face class contact, to avoid teaching boring material.
- **A mismatch between teaching and assessment** - one is changed to incorporate use of new technology, but the other stays as it was before.
- **A lack of integration with other course activities** - e.g., a computer-based activity that is never discussed in class or online, and is not perceived to be directly related to course assessment.
- **Technical problems**, coupled with inadequate preparation and lack of technical support where and when it is most needed.

Common unforeseen impacts - on yourself and others, include:

- **Increased workload** - making yourself (and other staff who teach on your course) available to students all day, every day of the year, because you raised students' expectations that e-mail and conferencing queries will be answered instantly.
- **The assessment process** - not only do students have to understand the criteria and have the necessary skills for a new form of assessment, but so do second-markers, moderators, and possibly external examiners.
- **Worsening access** - Inadvertently making it difficult for certain types of people to sign up for your course. (Does your course require regular access to a high specification or networked computer, for instance? Is remote access required at times when it is most expensive for those who have to pay for it out of their own pocket? How easy is it for your part-time students to complete computer-based assignments on the train, or in a busy household where several people compete for access to the computer or telephone?)

Activity: ICT impacts and problems

Choose a course which makes extensive use of ICT and ask yourself the following questions:

1. Is this successful or unsuccessful use of ICT? If the course is too new for you to have evidence for success then do you think that it will be successful or unsuccessful?
2. What makes it successful (or unsuccessful)? In particular how has it avoided, or tried to ameliorate, some of the impacts and failures identified above?
3. Were there any further impacts and failures not identified here?
4. What steps have been taken (or are being taken) to avoid further impacts/failures in future presentations?
Presentation software such as Microsoft Powerpoint is now frequently bundled with ‘Office’ software packages as a standard item. This increases access to these tools, and has underpinned their popularity for preparing and presenting teaching material to an audience. In addition to offering a powerful tool for designing, creating, ordering and storing slides, they create a more powerful, durable and versatile product than the overhead projector transparency (OHT) that they replace, and offer an easy means of duplicating, circulating and even publishing the presentation.

However, as with other computer design tools, the end result can range be highly professional to deeply disappointing (for the audience as well as the presenter). The following ten tips offer suggestions for avoiding some of the more obvious problems that arise as a result of using presentation software to teach. General principles of presenting, such as considering your audience and the time available also apply.

- **Don’t be tempted to squeeze too much text into a single slide.**
  You should try to confine what you have to say to a series of bullet points which can act as helpful prompts to you and your audience, there is no need to include a full explanation of every point that you intend to make. If you need to provide detailed definitions, or descriptions, or a detailed diagram which will not display effectively on a single slide, consider providing print outs for your audience to refer to, or focus on one part of the definition. description or diagram on each slide.

- **Explore the potential of handouts.**
  The print option of Powerpoint offers different layouts (e.g. six slides to a page, slides with notes, three slides and space for notes, etc). You may decide to choose one format for your audience and another for yourself. I usually choose the three slide layout for myself and write my speakers notes in the space on the right hand side. You may prefer to type the notes as you design the slides, copying and pasting from previous presentations and printing the slides in note format so that you have a script to refer to when presenting.

- **Consider the options for electronic dissemination.**
  You may be asked to distribute copies of your slides as an alternative to providing handouts, or as an additional service to participants who were unable to attend the session. If you have access to webspace you can simply copy the presentation to the site in slide show format and publicise the URL (internet address), or you could supply your email address and respond to requests for copies by attaching the slide show to an email. In either case an email address on your first or last slide will help people to find you easily if they have questions about the presentation.

- **Keep the design simple and ensure a good contrast between text and background.**
  The larger the size of the room the greater the need for contrast and the larger the text will need to be to allow viewers at the back to read it. Black and white using familiar fonts may seem boring when presented with so many other options, but it will ensure that the content of your slides is clearly visible and easy to read. Consider using one of the design templates offered within the package. If you feel the need to be original you can customise the colour scheme.

  If you are including weblinks within your slides consider whether the colour of these links will change as you click on them. The contrast between visited and unvisited links may result in the links seeming to disappear into the background. This may not be the effect that you wanted.

- **Use animation and sound sparingly and consistently.**
  There are dozens of visual and audio effects offered within Powerpoint which can be triggered by a mouse click or set to autorun. The text can revolve, expand, fly in, dissolve or blink. You can even set an applause soundtrack to coincide with your best effect. It is however worth considering whether you should use the effects at all, whether they will add any value to your presentation. It is unlikely that a combination of several effects within a single slide will inspire your audience or reflect the time taken to create the show. Ideally the effects should not be so distracting that your audience concentrates on the animations and not on the message.

- **Consider how much time you will need to open links.**
  It is possible to embed links to websites into your presentation so that these launch the site when you click on them. However you should consider how much time you have available to follow these links (the computer will first need to launch the browser and there may be password-protection on your chosen site). You should also consider what your ‘fallback position’ is if the site of suddenly unavailable, or the Internet service provided within the presentation room is not functioning, or much slower than expected. If you require plugins to view parts of the websites you have selected you need to know whether this additional software is loaded into the machine you will be using for the presentation.

- **Save time by using templates and reusing slides.**
  One advantage of presentation software is that once you have created a template, perhaps including logo and a specific colour scheme, you can reuse this for further presentations. You can also import (or simply cut and paste) slides from previous presentations, applying an up-to-date title and date to the whole presentation from one master slide. Before you start you may want to ask whether a template already exists within your institution and whether you need to use this.

- **Making copies of your slides.**
  Once you have created your slides on your computer the question will arise of how to ensure that you have a copy in the room where you are presenting. If you are taking your laptop from your desk to the podium you will need to ensure that you can simply plug it in when you arrive. This may mean that you need special leads, extension cables and a convenient network connection point. Alternatively you could copy the presentation to disk, or CD-ROM or to a removable storage device such as removable USB drive. If you have access to personal webspace you may decide to host a copy there so that you can download from that site and also refer your audience to the same URL.

- **Consider copyright.**
  It is tempting to copy and paste images, paragraphs of text, or even slides from the web into your presentation. You may have obtained these from the internet or other electronic sources without any clear advice being given about copyright. However you need to be conscious of the copyright restrictions imposed on you as a presenter and the restrictions on your further dissemination of the material. As a teacher in a classroom you may enjoy certain rights to use copyrighted material in your lessons, however these rights do not generally extend to handouts which persist beyond the teaching session or if you decide to publish the slides on your website.
Use the help system.

This could be the help provided by the software itself, the help provided in 'How to ...' guides or the help of colleagues or technicians within your institution. It is all too easy to spend a disproportionate amount of time in learning how to do some simple task in an overcomplicated way. If you see something in someone else's presentation that you would like to use ask them how they did that, or 'ask' the Help system how they did it.

Activity: The good the bad and the ugly

This activity provides an opportunity to apply some of the principles outlined above. I have provided an example here of a presentation which clearly breaks some of the rules of good presentation design.

The downright ugly or just plain bad presentation

Using this presentation or choosing one that you made earlier:

1. View the presentation and, using the guidelines given above, consider how it could be improved.
2. If you have access to Powerpoint yourself you may wish to make the improvements yourself to see what effect this has. You will need to save the presentation to your computer and then open it using Powerpoint in order to make your modifications. If you are unsure about how to achieve (or override) any of the effects use the Powerpoint Help system.
by Chris Pegler, adapted from work by Graham Gibbs

Computer conferencing or CMC (computer-mediated conferencing) for computer-supported discussion and teamwork is increasingly an important part of professional practice. There is now a large number of virtual communities or online communities of practice covering a wide variety of areas, including teaching and teaching practice.

Good communication between you and your students, between you and other teachers on the course and between students is what much of ICT is all about. Most people now use e-mail as part of their professional life and many academics belong to mailing lists (e.g. JISCMAIL). Using a text-based asynchronous conferencing system is an extension of this practice just as using audio- or video-conferencing (which are real-time, synchronous equivalents) can be seen as an extension of telephone use.

In its simplest form, computer conferencing can be very similar to e-mail, except that text messages are usually organised and ordered according to the topic of discussion and it is quite easy to have a number of such discussions running in parallel, or in different groups, without getting confused. At its most complex a conferencing environment (such as the OU's FirstClass conferences) supports a level of permissions and privilege levels such that specified users can exercise greater or lesser degrees of control over the conferences. For example you may be able to customise the conferencing environment, view only sub-sets of the conferences that are available, edit and move other user's postings (i.e. moderator privileges) and even create new conferences and subscribe new conference members.

Some of the more powerful conferencing systems - which, in general also require installation of software - will allow a range of web-publishing activities, support synchronous chat and voice messaging and offer a variety of choice and control, all of which takes conferencing to a higher level, requiring relatively advanced skills. Against this higher level of functionality you will usually need to balance not only the time required to learn how to use additional software but also the problems of distributing and updating software and integrating its use into the use of course websites and other online resources. For this reason many courses prefer to use basic web-based conferencing which can be accessed from a link on a website. Conferencing of this type is usually a part of any virtual learning environment.

Provision of access to conferencing is not sufficient to encourage students to use it. While it can be very effective as a tool for collaborative or group working online, most students will be ill-equipped and little-inclined to use it in this way without some initial induction (often in the form of an online icebreaker) and some motivation to use it.

And while a lively well-used computer conference can be a valuable addition to a course and provide feedback on how the course is progressing, perhaps an early-warning of any problem areas, a little-used conference can be very difficult to energise and may result in a drain on teacher and student time - logging in and logging out again - for little gain.

Activity: Lurker or sniffer?

'Lurker' is a term often used to describe conference members who read messages in a conference but do not contribute to that body of messages. In some systems the existence of lurkers is difficult to detect, but for systems which display a message history (i.e. show who has read a message and when) it is possible to build a picture of who (student or teacher) is reading messages without leaving messages in response.

'Sniffer' is a far less common term that has been used to describe conference users that appear to be 'addicted' to conferencing and leave messages in their own, and often other tutor groups. These users may make derogatory comments about the inaction of lurkers.

1. Reflect on your own use of computer conferencing (FirstClass) on this and other courses. Have you been a 'sniffer' or 'lurker' yourself?
2. What would encourage, or force, you to change your behaviour?
3. How might you encourage lurkers to become more active participants in a conference? Why might you want to encourage this?
4. Choose a conference and compare the levels of online lurking with the level of equivalent behavior in similar-sized class (i.e. listening but not asking or answering questions in public). Are the levels similar, and if so does online lurking present any greater problem than 'face-to-face lurking'?
Introduction

Connectivity can be seen as both the problem and the solution. It takes up more time with increased communication and quantity of information to be dealt with but in some ways it can save time. For example, the internet allows access to many documents almost instantaneously. Good search engines often lead you to the documents you need with very little effort (although sometimes searches can be frustrating and time consuming). Time can also be saved through the creation of ‘connected documents’. In a highly connected environment it is not always sensible, or necessary, to create a document that consists entirely of original content. Instead documents can be created that link to other documents, often relatively quickly.

In this timed activity you are going to explore whether connectivity can lead to savings in time and effort by creating a connected document. You should also consider to what extent you currently use connected documents in your teaching or in the preparation of your teaching, and what use of connected documents you students could make.

Activity

There are a number of issues associated with connected documents: intellectual property, copyright, reliability of third party material, consistency of styles, etc. Produce a connected document on one of the following topics. Some suggestions for the type of material your document might cover are also provided:

- **Deep linking and copyright** - some companies have suggested that linking to web pages that bypass their front page is a breach of copyright. What are the issues and implications of such a view, what cases have been brought in this area, what are proponents of both sides claiming?

- **Reliability of online information** - how can you be sure information is reliable, what means are there of evaluating online resources, how does this differ from 'traditional' information sources?

- **The connected document and plagiarism** - exposure to many different types of information sources can be very beneficial in education and the creation of connected documents can take students beyond the standard essay format, but it also raises problems. Plagiarism is becoming an increasing problem in many areas, but particularly in education. What are the concerns in this area and is there any data to suggest an increase in plagiarism? How can it be combated? What forms of assessment are particularly susceptible to it and what forms are resistant to it? Does this have implications for education in general?

You should not aim to write all the material yourself in your document, but rather you should provide the 'glue' that holds together material from other sources, to which you will provide links. Your document should be aimed at a general, not specialist, audience and is therefore acting as an introduction to the area. The following weblogs (blogs) provide examples of connected documents. Don't worry about their content, they are merely to illustrate the way a number of external links can be combined to produce a 'connected document' in a relatively short timescale:
The aim of this exercise is to explore whether high connectivity enables one to both quickly gain an understanding of a topic and produce an explanatory document. We have therefore set **time limits** for the activity. In order to gain any benefit from this exercise, it is important that you do not exceed these timings. Given enough time, we can all produce a good document in an area, but the key here is to investigate whether a good quality document can be produced within a limited timescale. Such time constraints are common in the workplace so being able to gain an understanding of a topic in a short time is a valuable skill in the connected economy.

The timings are as follows:

- **Search for online resources - 1 hour.** Find a number of resources that you feel contribute to the topic you are covering. You may only have time to skim read them.
- **Produce a connected document - 45 minutes.** Using the resources you have found, produce a connected document, adding in your own text to cover areas that haven't been addressed in any of the resources and provide a coherent narrative binding the document together.
- **Revision - 15 minutes.** Give yourself some time to check the document over, ensure that it covers the area as you wish and has a coherent style.

**Reflection**

Once you have produced your connected document, you should reflect upon the following questions:

1. Was the time allocated sufficient? Did you produce a completed document? If the time had been doubled, would you have been able to produce a document that was twice as good?
2. Do you feel that you have gained a good understanding of the topic area? Do you feel as though you could converse about the area with some confidence, or do you think that you have only gained a superficial understanding?
3. How does this way of working compare with a more traditional approach to information sources and documents? How does it compare to the way in which you would more usually prepare a teaching or learning resource?
4. What would your students gain from a similar exercise? What difficulties might they encounter and how could these be overcome?
ALT-J (The Association for Learning Technology Journal). An international journal devoted to research and good practice in the use of learning technologies within tertiary education. Published three times per year by the University of Wales Press. ISSN: 0968-776, Members of ALT receive ALT-J as part of their subscription. ALT-J content covers:

- Innovative teaching
- Independent and collaborative learning
- Computer-assisted learning
- Learner support
- Interactive media
- Knowledge representation and acquisition
- Networking
- On-line information

An introduction to PBL with many case studies, many of which emphasise the design of problems and supporting learning resources.

Although the main audience for this book are those who design multimedia software, it has excellent chapters on learning through interactive media and on different methods of evaluating multimedia.

A book packed with practical ideas for using distance learning technologies in a wide range of formal and informal settings.

This guide focuses as much on the design of classroom sessions, and projects that use case studies, as on the design of the cases themselves.

A practical introduction to all aspects of the design of educational games, before the widespread introduction of computer-based games, with information about published examples.

A superb introduction to a whole range of uses of learning resources within a discipline, written by an experienced geography teacher, with over 50 short case studies to illustrate types of use. Further case studies can be found at: http://www.chelt.ac.uk/gdn/. Includes a comprehensive set of references.

Includes advice on the learning resources upon which students draw when tackling projects.

A study guide to Derek Rowntree's book, Teaching through Self-instruction, in which Kember takes readers through the process of turning a textbook into a complete self-study course in a step-by-step way, with many practical examples about techniques such as teaching through diagrams.

This book has sections on critical issues in web-based learning environments, designing and delivering Web-based instruction, and case studies of Web-based courses. There is also a chapter on factors to consider when evaluating a web-based course. The majority of contributors are North American and Canadian.

JIME - Journal of Interactive Media in Education  
This electronic journal on the Web has online discussions around each article and interactive demonstrations of educational software.

Laurillard, D. (2001) Rethinking University Teaching: a framework for the effective use of educational technology, London, Routledge. Explores the potential of technological media to improve student learning, and proposes a practical methodology for the design, development and implementation of educational technologies. Parameters of costs of using different media are addressed.

A practical guide to writing activities which engage students in learning with and from texts, with many useful examples and models to follow.

A collection of essays on the main issues in computer conferencing, focusing on the act of writing, and social and personal dimensions. Richly illustrated with examples of different kinds of online messages.

A practical guide to preparing a range of materials for use in contexts where there is little or no face-to-face teaching.

A practical guide to preparing audio learning resources and accompanying text material and exercises.

Flexible learning involves providing learning resources and emphasises student independence and autonomy. The first half of this book concerns course design issues and the second half contains case studies.

Concentrates on using video in educationally effective ways, rather than on video production, and contains 23 case studies.