



## How can IT help in teaching and learning?

This table lists typical problem areas in five key areas of teaching and learning, then suggests an IT solution (but remember there may be perfectly good non-IT solutions!). Finally, it indicates the UMIST support you can call on in specific areas.

### Key:

ISD (Information Systems Department): Computer support service (x 3535)

LWT Learning & Web Technologies section (x3544) of the ISD

AVA Audio Visual Aids (x4973)

SDU Staff Development Unit (x3530)

## 1. Lecture Presentation / Information Dissemination

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Typical problems in teaching and learning	Possible IT solution(s)	UMIST support
General	Use a <b>presentation tool</b> e.g. MS PowerPoint or the Web	Quick start documents and training are available for Microsoft <a href="#">PowerPoint</a> and the Web
Lecture material not very visually simulating.	Include illustrations in your presentations. <ul style="list-style-type: none"> <li>• Customise or use original clip art from galleries in PT</li> <li>• Digitise photos and drawings and import them into your presentation using a simple graphics package.</li> </ul>	<ul style="list-style-type: none"> <li>• Scanner (to digitise photos and 'read' text) and digital camera can be booked at the ISD.</li> <li>• Training available for the easy-to-use graphics package <a href="#">PaintShop Pro</a></li> </ul>
Presentation too static.	If you use a <b>digital projector</b> , you can include 'animated slides', video and animation clips in <i>PowerPoint</i> or use 'live' tools such as spreadsheets.	Projectors can be booked from <a href="#">AVA</a> and a video capture (digitisation) facility is available from ISD.
<ul style="list-style-type: none"> <li>• Too much rote note taking and not enough 'thinking time' during the lectures.</li> <li>• Students need better access to course materials at revision time.</li> </ul>	Provide as much materials <b>on-line</b> as possible for good revision aids, including any CBT modules and lab simulations used during the course, and old exam papers. <ul style="list-style-type: none"> <li>• Put the slides and additional notes on the <b>Web</b>, which is very</li> </ul>	Quick guides are available for converting PowerPoint presentations into Web pages, or putting them on-line for download.

	easy if you use PowerPoint.	
Too much complex factual information presented in the lectures.	Some material may be covered in off-the-shelf <b>CBT packages</b> or develop your own notes and examples into simple self-study Web resources	<i>LWT team can advise on both off-the-shelf packages and in quick ways of producing your own Web material.</i>
Requests to run my postgraduate course in a 'distance learning' format.	The <b>Web</b> and <b>communications tools</b> make it much easier to develop distance-learning formats. UMIST is also investigating <b>digital video lectures</b> .	<i>Ask how LWT can support you in 'converting' a course.</i>

## **2. Communication with and among students**

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Difficulties in communicating with large numbers of students.	Set up a <b>course Web page</b> with all the relevant information such as timetables and exam schedules.	<i>The LWT can help you do this in a standard format.</i>
Repetitive questions from students.	Set up a <b>discussion list</b> or conference for the course. Keep monitoring it but you may find that students are able to answer many of the queries from among themselves. Archive the discussion and use it to create a list of Frequently Asked Questions.	<i>The LWT can advise and help you set up a discussion group using WebBoard.</i>
Would like to include more group work, but difficult to organise.	Small, project-based <b>discussion lists</b> or conference for the course can be used to support collaborative work..	<i>See above.</i>
Would like to communicate with students when they are on placement or I am overseas.	A synchronous tool such as NetMeeting includes video, whiteboard, chat, and the ability to 'share' applications.	<i>NetMeeting is free, though you may need a cheap video camera (and a sound card) at each end. Support provided by LWT.</i>

## **3. Assessment, Monitoring and Feedback**

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Some students are ill prepared at start of the course.	Develop a range of on-line <b>diagnostic quizzes</b> to target problem areas that direct the students to appropriate on-line worksheets or tutorials.
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Students need more feedback as to how they are getting on.

Marking is very time-consuming.

Develop a range of **self-assessment tests** in *Question Mark* or the Web version *Perception*.

Consider **examining part** of course on-line using *Question Mark*.

*UMIST has a site licence for quiz-development tool, [Question Mark](#). These can be translated into Web-based quizzes by LWT using the Web version *QM Perception**

#### **4. 'Activity' - Labs and Tutorials**

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Tutorials are difficult to organise and can be repetitive for the tutor.

Discussion tends to be dominated by the more confident students.

Students have insufficient grounding in mathematics.

More variety in students' project work.

Too many students and labs expensive to run.

Need to improve students' problem-solving skills.

Students' career prospects are improved by good IT skills.

Consider replacing some tutorials with **self-study exercises** and use email or conferencing to discuss problem areas.

An **online conference** tends to be a more 'level playing field' for less confident students to contribute.

Investigate **CBT maths packages** for remedial use. For more complex visualisation and problem-solving, consider using the maths engine *Mathematica*.

**Ask students to develop on-line materials.** They may produce resource of value to other students.

Use **on-line materials** or videos to prepare students properly, so optimising actual lab time. It may be possible to obtain or develop **CAL simulations** as replacements for some (eg the more repetitive) lab exercises or to give students a wider range of examples.

Develop a range of examples in *Excel spreadsheet* or other appropriate modelling or professional tools. Encourage students to build their own models.

Encourage students to use **professional software tools** wherever appropriate.

*The LWT will advise and assist on setting up a conference using *WebBoard*.*

*TLTP maths CAL packages [TransMath](#) and [MathWise](#) are available for public access. [Mathematica](#) site licence and tutorial material are available from *ISD*.*

*The LWTG is happy to advise on and help with the technical supervision of LT-related projects.*

*Video cameras can be borrowed from *AVA*. The LWTG can advise on simulations and simulation software.*

*Training material is available for [Excel](#) from *SDU* and *LWTG*. The latter will also advise on other modelling tools.*

*Training available [on-line](#) and in [booklets](#) for teaching *Microsoft Office* and other packages.*

#### **5. Course Management**

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**All these online resources are hard to**

A good web site-building tool such as *FrontPage* makes

*LWT runs courses in *Microsoft FrontPage*.*

**maintain.**

**'Virtual students' are hard to manage, e.g. how can control access to the course?**

the job of site maintenance much easier

Managed Learning Environments help organise and control access to Web-based online courses and materials.

*LWT currently has a number of licences for WebCT, a course management tool.*