No.10 AUTUMN 1997

newsletter

ON-LINE EDITION

Teaching and Learning Technology Programme

EDITORIAL

New Central Ordering Service established

Welcome to the tenth issue of the Teaching and Learning Technology Programme (TLTP) Newsletter. This is, once again, an interesting time for TLTP: Dearing has reported; the announcement of the successful Phase 3 bids is awaited and the Government's white paper on Lifelong Learning is imminent.

In recognition of the way in which the world wide web is changing the delivery of teaching and learning, in this issue we have included a number of articles which explore current and potential applications of web technology in teaching and learning. These range from an article from Simon Baines, Cranfield University, about the way in which the library is helping the University make effective use of web resources, through to an article from the University of Western Australia describing their use of the web to assess students' work and provide them with immediate formative feedback.

In addition, there are articles on the use of video in teaching, the CLIVE project's experience of translating their materials into French and Spanish as well as the Earth Science Consortium's findings from investigating how their materials are being used.

Also, as technology begins to become an integral part of teaching and learning, the distinctions between many of the centrally funded programmes such as TLTP, LTDI, FDTL and eQuip begin to blur. In order to provide clarity about the roles, activities and complementarity of such programmes, we have included updates from each. We hope to be able to bring you regular updates and case studies which have a technological focus from these programmes in future issues of this newsletter.

Implications of Dearing

The National Committee of Inquiry into Higher Education, chaired by Sir Ron Dearing, reported in July. It was encouraging to see the importance placed by the Committee on the need to make effective use of Communication and Information Technologies (C&IT) in all aspects of university life and, more specifically, in teaching and learning. We were also interested to read of the Committee's recommendations for the establishment of an Institute for Learning and Teaching in Higher Education, to not only provide a mechanism for the professional accreditation of teachers but to also make a major contribution to encourage and support the use of C&IT in teaching and learning. Discussions about the establishment of such an Institute are well underway between the key players in higher education and we will watch these developments with interest over the coming months.

TLTP Phase 3

The third phase of the Programme is progressing well with some 193 expressions of interest submitted by institutions in October. Following the first stage assessment, 60 institutions have been successful in getting through to the next stage. We await with interest the announcement of the successful projects in February 1998.

In order to assist and support the successful projects in Phase 3, the HEFCE and DENI have invited tenders for the design and implementation of an evaluation strategy. This is to:

- assist projects to devise their own evaluation strategies;
- evaluate the success of projects against original objectives, and;
- evaluate the impact and outcomes of Phase 3 as a whole.

In addition, tenders for a second piece of work have also been invited to collate data and case studies of examples of usage of materials arising from Phases 1 and 2 of the Programme.

Teaching and Learning Technology Support Network (TLTSN)

The TLTSN Centres continue to work with a wide range of institutions, sharing good practice and assisting them in developing teaching and learning technology strategies. Three sets of case studies have been produced, each looking at a different aspect of the implementation of teaching and learning technology and two further sets are under production. During the last six months the TLTSN have also continued to both organise and participate in a range of events to provide opportunities for discussion and the sharing of good practice. On page 21 a review of one such event, organised by the Glasgow TLTSN Centre, can be found.

Plans are underway for two of the TLTSN Centres, at The Queen's University of Belfast and the University of Nottingham, to establish a technical support service for institutions installing TLTP materials. It is anticipated that this service will get up and running in the New Year. The service will provide telephone, email and web support to institutional staff encountering difficulties in installing TLTP materials. Further details of this service will be mailed to institutions shortly.

The four HE funding bodies, HEFCE, SHEFC, HEFCW and DENI, are shortly to embark on a review of both the TLTSN and the CTI Centres to consider their future. The Review Committee, chaired by Dr. Madeleine Atkins, Head of Education at the University of Newcastle, is scheduled to report its findings and recommendations to the funding bodies next May.

Projects Progress

Of the 76 projects funded under Phases 1 and 2 of TLTP, only five are still to complete. In order to assist institutions in acquiring copies of TLTP materials, we have established a central ordering service in Bristol. Emma Greenwood, the TLTP Projects Officer, is managing this service. Further details can be found on this page.

Of the 35 projects awarded continuation funding to provide ongoing support and maintenance for higher education, 11 have entered into partnerships with publishers and are beginning to sell their materials into new markets. Congratulations to the Chemistry Courseware Consortium at the University of Liverpool who have entered into an agreement with Houghton Mifflin in the US.

At the Centre we continue to help promote the Programme and sales of the materials in overseas markets. We recently launched a sales brochure and a 'sampler' CD-ROM. Copies have been mailed to the British Council offices world-wide. A similar catalogue and CD-ROM are under production for the UK higher education sector, together with a video to support implementation, and will be available early in the new year.

The continuing projects continue to meet with the Co-ordination Team and to explore opportunities for collaboration, both with one another as well as with other organisations. On 22nd September staff from 15 projects participated in a workshop, organised jointly by TLTP, Sun Microsystems and Relay Business Systems in Bath, to explore the potential uses of Java. As a result, a number of projects are exploring the use of Java to enable them to make greater use of the web. We would like to offer our thanks to Mike Searl of Sun Microsystems, and the staff of Relay Business Systems for making this such a valuable and worthwhile event.

Overseas Interest in TLTP

TLTP continues to generate interest overseas. At the end of October, TLTP hosted a visit by a group of five Chinese academics and officers from the State Education Commission. The visit was sponsored by the British Council in Beijing. During their two week stay in the UK, the group visited several different universities, including Bristol, Leeds, Aberdeen, Glasgow, Southampton and Nottingham, culminating in a seminar with TLTP projects drawn from mathematics, physics, biology, geography and chemistry. Representatives from some of the CTI Centres also attended and gave presentations jointly with TLTP project staff. Feedback from the Chinese delegation has been extremely positive and the group are keen to establish partnerships with UK institutions for collaboration on materials development and discussion about teaching and learning. We would like to extend our thanks to all those people involved in this visit and for their kind hospitality to the Chinese group.

At the start of November Su White, TLTSN Centre, University of Southampton, Niall Sclater, University of Strathclyde and Julia Meek, TLTP Mathwise Project, University of Birmingham, represented TLTP and the Scottish Use of MANs Initiative at a large conference and exhibition in Kuala Lumpur, Malaysia. Su, Niall and Julia gave presentations to senior officials from the Malaysian Ministry of Education and also attended the Distance and Open Learning Conference 1997. Contacts generated from this visit will be made available to the TLTP continuing projects to follow up.

Professor Roderick Floud, Provost at London Guildhall University, has invited TLTP to participate in the Biennial Meeting of Heads of European Universities next year. The meeting and conference is to be hosted by London Guildhall University in 1998 with the theme of the Renewal of Teaching. Professor Floud felt it important to include some examples of the ways in which technology can support teaching and learning. TLTP will be represented by a number of projects drawn from across the different subject areas.

Looking Ahead

The next six months will be a busy and challenging time, particularly for those involved in Phase 3. As soon as the successful bids have been announced, details will be posted on the TLTP web site. There will also be a Funding Council Circular including descriptions of all the new projects. More detailed coverage will be included in the next TLTP Newsletter.

With the recent announcement of the HEFCE's new Learning and Teaching Strategy, and an increasing emphasis being placed on the importance of effective dissemination and transfer of experience, we will continue to work closely with other programmes in the areas of teaching and learning. It is timely and appropriate that closer working arrangements and greater levels of collaboration should be established between programmes such as TLTP and the Fund for the Development of Teaching and Learning (FDTL) and we will continue our discussions with the relevant co-ordinators to identify more effective ways of working.

Next Issue

A major focus for the next issue will be the announcement of projects funded under TLTP Phase 3. However, we are always pleased to receive articles on any aspect of technology in teaching and learning in higher education. If you would like to discuss the suitability of a particular topic, please do get in touch with us.

We are also keen that the Newsletter should continue to be relevant to the needs of the sector. If you have any ideas or suggestions for how we might improve it or which aspects of it you find most useful, again, please do not hesitate to contact us.

Copy deadline for the next issue: Friday 6th March 1998

Sarah J. Turpin
TLTP National Co-ordinator

NEW CENTRAL ORDERING SERVICE FOR TLTP MATERIALS

A new central ordering service for all TLTP materials has been established within the TLTP Co-ordination Team in Bristol.

In order to provide institutions with greater ease of access to TLTP materials, we are offering a central ordering service, managed by Emma Greenwood, TLTP Projects Officer. Institutions should contact Emma, who will take orders for all TLTP packages. Orders will then be passed directly to the relevant projects, who will be required to fulfil the order within a period of fourteen days. All orders will be followed up to ensure a high standard of service.

Emma has also taken over distribution for a small number of projects previously handled by BUDS, these are shown below. In the first instance email or telephone to receive the necessary pre-shipment documentation.

Project 2	IMPACT: Across the campus
Project 7	IT in Teaching and Learning: A Staff Development Programme
Project 9	STILE: Students' & Teachers' Integrated Learning Environment
Project 13	STEPS: Statistics Consortium
Project 16	QUERCUS: Statistics for Bioscientists.
Project 31	Technology Based Learning in Medicine: Beyond Courseware
Project 33	CKS Consortium: Multimedia Materials in French and German for Scientists and Engineers
Project 38	TLTP Music Consortium
Project 45	Core IT Skills for Teaching and Learning in Higher Education: Tools for the Development of a National Framework
Project 46	The Virtual Teaching Collection
Project 51	GeographyCal: UK Computer assisted Learning Consortium in Geography

The telephone number for the central ordering service is **0117 931 7157.** Or you can email Emma on e.greenwood@hefce.ac.uk. Pricing for the above packages are available on our web site, http://www.tltp.ac.uk/tltp

The new ordering service has been established to make it easier for institutions to acquire TLTP materials. It's aim is to provide an efficient and effective service to the higher education sector.

Emma Greenwood
TLTP Projects Officer
TLTP
Northavon House
Coldharbour Lane
Bristol
BS16 1QD

Order line: 0117 931 7157
Fax: 0117 931 7173
Email: e.greenwood@hefce.ac.uk
URL: http://www.tltp.ac.uk/tltp

TUTORING ON THE WWW

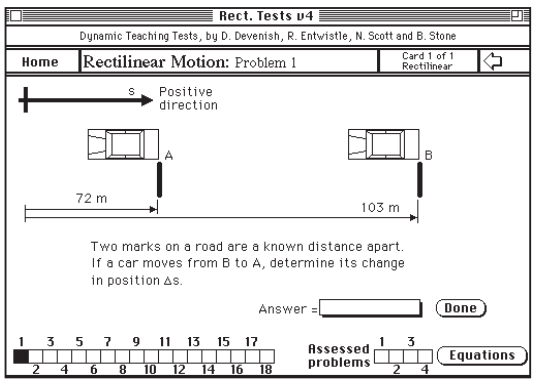


Figure 1. First problem of first set

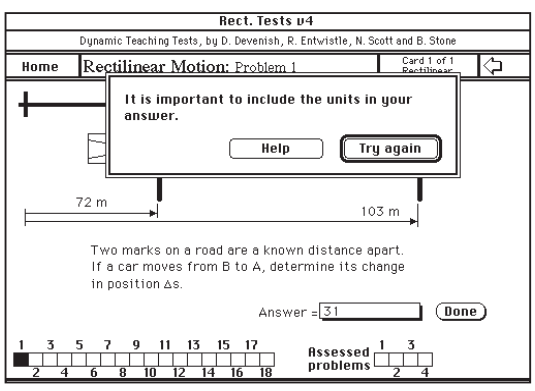


Figure 2. Error message if units omitted

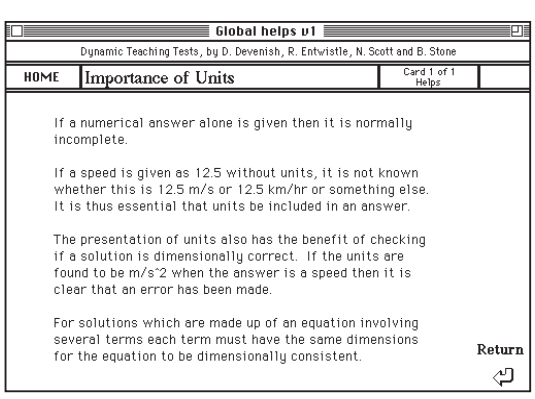


Figure 3. Help card for units

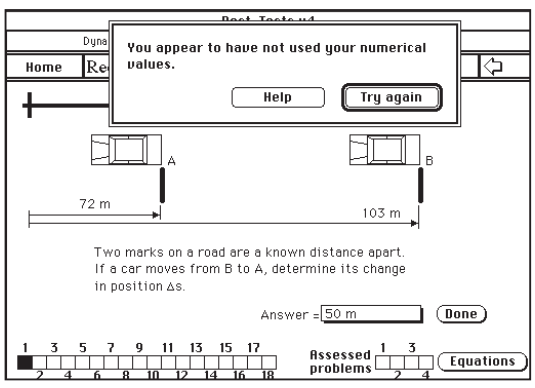


Figure 4. Error message if wrong numbers used

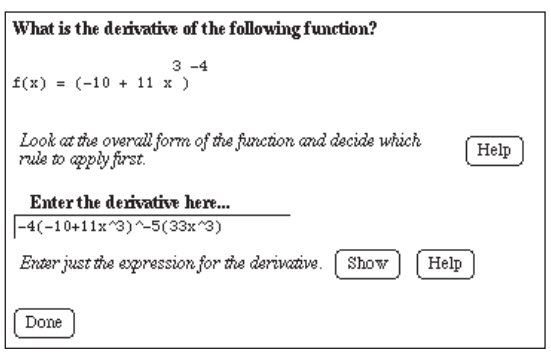


Figure 5 CalMæth poses a simple calculus question

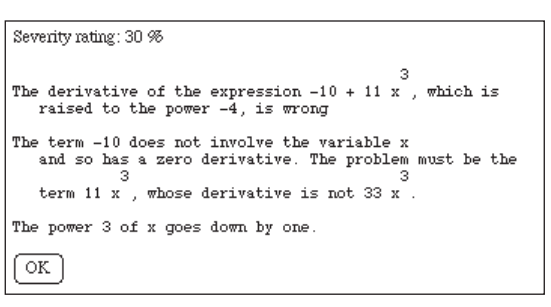


Figure 6 Diagnostic feedback from CalMæth about the attempt in figure 5

In 1995 at the University of Western Australia we introduced an "intelligent computer tutoring system" for the teaching of first year engineering dynamics. We have now had three years experience with the system and have seen pass rates rise to 95%.

The computer assessment is fairly rigid in that it requires each problem set to be answered correctly before the student may attempt some assessed problems. There are usually about eight problems on a topic designed to find any misunderstandings. Feedback about detected specific misunderstandings is available while these first problems are attempted. Then there are two assessed problems which are marked. These marked problems count for 20% of the unit, the remainder comes from a mid year exam (30%) and a final exam (50%). There are deadlines for the assessed problems after which no marks may be obtained, however the problems must still be completed before the next set of questions may be commenced. In this way all students have to answer all problems correctly, which it is hoped will imply a reasonable degree of competence.

The serving computer records most student actions. Each student is given a printed sheet of the problems during a lecture. This sheet has the same words for each problem that the student will be given by the computer but the numbers are not those the student is given when logged in. Each student has a different set of numerical values for the problem; the server generates these numbers randomly within defined limits. The questions have been designed to "trap" common misconceptions which have been determined by a thorough analysis of past exam scripts. For each question, the software generates the correct answer and several possible erroneous answers that would be expected if the anticipated misconceptions were applied. Any student answer within ±2% of any of the answers is assumed to have been derived by the associated method. Then, as necessary, students are given appropriate feed-back. In dynamics around 200 questions are set over the course.

At any time a student may also send a query on-line to staff. All such queries and staff responses are attached to the problem and may be viewed by all other students. Students may also send personal and confidential queries by a private forum.

Finally, the progress of all students is monitored and displayed so that the lecturer always knows the state of the class:- are they all stuck on a particular problem, is anyone not keeping up, which problems have required the most attempts, etc.

The outcome has been an increase in pass rate from around 80% to 95%, with exams that have been moderated to ensure that they have not got easier. The same approach has been taken up within UWA for statics and thermodynamics.

More information about the system can be found at:
http://www.mech.uwa.edu.au/Dynamics/DynamicsHome.html
http://www.mech.uwa.edu.au/Dynamics/Promotion.html

Within Mathematics, the approach has been extended to calculus and statistics, with equations required as answers and with diagnostic feedback available.

CalMæth: Fast, friendly diagnostics in Statistics and Calculus

Calculus and Statistics are among the most difficult first-year courses, and students need lots of practice and instruction. This places a great burden of assignment marking on staff - an expensive business.

Dr Kevin Judd (Mathematics, UWA) has invented a very successful computer-based interactive mathematics tutorial system which is an enhancement of the one used by Scott & Stone. It is unique: students are given personalised assignments and enter mathematical expressions as answers. The system immediately diagnoses errors in these answers, even if they appear in combinations, and it gives clear English feedback to the student.

This development has led to a completely new kind of Mathematics classroom. Students work singly, or in small groups, on their questions, at the computer terminals. The system catches most of the mundane errors, and the tutors are freed to deal with students individually and at a much higher level. So far nearly 1000 students have used this enhanced system, totalling about 30 000 hours of instruction.

The students say they like the system because it "drills" them and 'makes them do the work'. Students also like the way the system gives them immediate feedback and is able to diagnose most common errors in the subject.

The CalMæth system also

- gives the students a clear indication of their achievement in the course;
- greatly reduces the staff marking loads;
- increases the one-to-one interaction between staff and students;
- clearly identifies students having difficulties, and pin-points those difficulties, and;
- ensures a guaranteed level of competency.

CalMæth packages are available for intermediate Calculus and Statistics. You can try them on-line at: **http://CalMaeth.maths.uwa.edu.au/**
For more information,contact: **calmaeth@maths.uwa.edu.au.**

Dr N W Scott and Prof B J Stone
University of Western Australia

The Use of Web Forms to Develop Student Profiles in the Languages

Project Varsetile is involved with a number of Web-based initiatives within the University of Stirling. Examples include HyperNews based discussion groups, development support (education and technical issues) for staff converting courses to Web based presentation, and the development of course based web pages and maintenance of the student home page.

In conjunction with project Varsetile, the French department at Stirling University has for the last three years been profiling their first year cohort. The purpose of the profiling is to examine each student's ability in eleven aspects of French grammar.

To gather the profiling information, students undertake an eighty-question, "diagnostic" test. Each question is on a category of grammar and the categories are randomly distributed amongst the questions. Each question is multiple choice. This test is delivered using a Web form which begins by getting the student to enter their name. The form is shown below:

The students are given 50 minutes to complete the test. To answer a question the appropriate radio button is clicked; to reveal the next question: the form is simply scrolled. When the student is happy with his or her answers s/he clicks on the submit button (at the bottom of the form). In response, a Perl script is run which "marks" the test and the student then, almost instantly, receives an overall score and a score in each of the eleven grammatical categories. The same Perl script ensures that the students can only submit answers once!

The information is also stored in a file and a class profile produced. Each individual student then receives a print out of his or her scores and uses this information, in conjunction with the lecturers, to build a personalised workplan for the *GramEx* software (produced by the TELL consortium).

At the end of the first semester, the students take the same test again to determine their improvement over the semester. For the two years that we have complete data, the class scores have shown a statistically significant improvement.

The departments of German and Spanish are using the same technology to provide diagnostic tests, and develop personalised workplans, for the students on their first year courses.

On a different matter, Varsetile has recently published its second volume of case studies. These can be downloaded from the Web in either Adobe's Portable Document Format (PDF) or postscript. Varsetile's Web site is at: http://annick.stir.ac.uk. Paper copies can be obtained directly from the Project at a cost of £10.00.

Simon Booth, Development Manager, Project Varsetile. TLTP 53.

CRUISEing the Internet at Cranfield University

There can be little doubt that the Internet is of immense value to Cranfield University. Academics have been using it for years to send email and transfer files. New technology has allowed the Internet to develop beyond all expectations, and the multi-media capabilities of the World-Wide Web have greatly enhanced what we can do with this medium. Some of the possibilities include:

- Access to remote databases (often for free).
- Access to material, from papers through to computer programs, which can be used to support teaching and aid research.
- Online discussion services which improve information-sharing and foster national and international collaboration.
- Promotion of our own expertise and services worldwide for very little cost.

However, the flipside of the coin is the hype that has surrounded these rapid developments. The media have focused on the amusing or sinister aspects of the Internet and the result has been that these have been blown out of all proportion and there is a high degree of scepticism regarding the genuine value of networked technology. Couple this with the frustration and difficulties people encounter when trying to use the Internet and the result is that we fail to tap its immense potential. Some of the issues to consider are:

- The fluidity of the Internet, which makes it difficult to keep up-to-date.
- The problem of evaluating material for quality in an environment where anyone can be a publisher.
- The size and complexity of the Internet, along with the amount and variety of search tools, which make it increasingly difficult to locate what you are looking for.
- The time involved in searching for Internet-based resources.

Research carried out by Cranfield University Library Service during 1996/97 into Internet use by academic staff was invaluable in providing a thorough understanding about how the library could support users so that the potential of such technology was tapped effectively[1]. Findings included:

- Internet is seen as valuable for research, for information to support teaching and as a way of marketing expertise.
- There is very little understanding of how to search the Internet effectively, and little time to try and improve searching skills.
- There was little knowledge of the library's collection of Internet links.

The value placed on the Internet and the lack of expertise in using it that we found convinced us that there was a gatekeeper role for the library. The modest collection of links we were maintaining has been expanded so that it now contains well over 100 separate subject areas. It has been named CRUISE (Cranfield University Internet Site Explorer)[2] and promoted vigorously to our users. Subject specialists are searching for potentially useful resources, evaluating them for quality and relevance and adding them to the appropriate section of CRUISE. As the Internet develops, so we continue to wrestle with various issues:

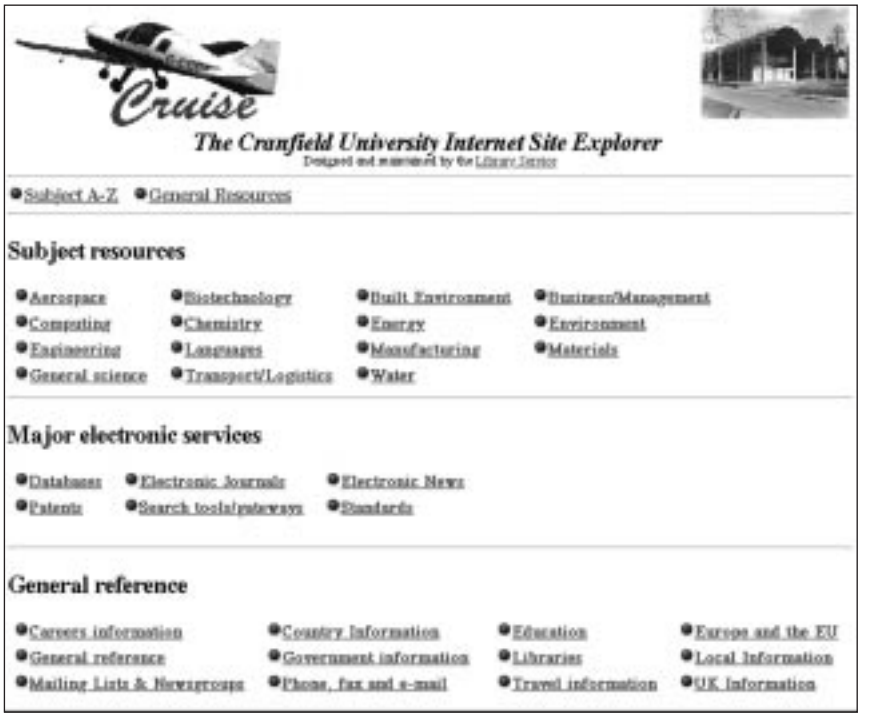
- Are we reinventing the wheel, when national and international gateways exist, or is it important to provide direct access from Cranfield to relevant sources, especially considering our very specific interests?
- Should CRUISE be converted into a database to aid information retrieval, or is this more trouble than it's worth? (At the moment it is searchable using the Harvest indexer, but this is not ideal, as it indexes Web pages as individual documents, which is not really suitable for lists of links).
- How do we integrate CRUISE with the new commercial Internet-based databases and electronic journals? Should CRUISE be all-encompassing, or should it be one part of a larger electronic library?

To help us answer these and other questions, we are now planning research into student use of the Internet, to continue to ensure our services are responding to customer needs, and not being driven by technology.

Simon Bains
Network Information Specialist
Cranfield University Library

[1] Bains, Simon (1997). Internet usage by teaching and research staff at Cranfield University. Unpublished report (available on request).

[2] URL: http://www.cranfield.ac.uk/library/subjects/webinfo.htm



ARTS, HUMANITIES AND SOCIAL SCIENCES

Project No. 36 **TELL Consortium**

News items from the TELL Consortium

a) Batch 2 items and status of Batch 3 (+ items sold out)

Batch 2 items were delivered on schedule at the end of June 1997. These consisted of Italian Encounters, Portuguese Encounters and InterprIt CD-ROMS, as well as GramEx Italian, French and German Online Dictionaries and the French Periodicals Database. Italian and Portuguese Encounters and InterprIt are already scheduled for a reprint, with an unexpectedly high demand for these packages! Batch 3 items, German Encounters, Ca sonne français and GramEx Spanish, are in the final stages of production and due for release at the end of October.

b) Evaluation

i) A 63-page report on the Formative Evaluation of the TELL materials is available at http://www.hull.ac.uk/cti/tell.htm. Summative evaluation, examining in detail examples of the software in use, is currently taking place, with a report due to be published early in 1998. In the meantime, here are a few (unsolicited) comments taken from general reports on the use of CALL in UK HEIs, indicating that these TLTP products are indeed filtering through into the mainstream curriculum:

"The range of software includes the latest interactive CD-ROMs and TELL Consortium materials, and old favourites on the network"

"In addition GramEx and other TELL Consortium packages are employed for remedial work at higher levels" (University of Central Lancashire)

"At more advanced levels, staff have been developing their own materials, largely making use of the TELL TransIt-TIGER Authoring Shell which has proved particularly useful for post-beginners groups"

"The development of the TELL Consortium programs has been particularly welcome and, as more such materials become available, we are optimistic that further progress will be made" (Queen Mary & Westfield College)

ii) In a case study article published in the October issue of the ReCALL Newsletter, entitled 'Swedes go TT!', Dr Phil Holmes describes how the Dept. of Scandinavian Studies at the University of Hull is using the TransIt-TIGER Authoring Shell. With an enthusiasm and resourcefulness which is more common among teachers of the 'less widely taught languages' (simply because there are few ready-made resources available), the department has developed in TT and is using with students a package for advanced learners of Swedish. The success of this undertaking has led the Dept to produce two further packages for second year students of Swedish, and an Old Icelandic version. The next project will be the introduction of TransIt-TIGER Danish into the main teaching programme.

c) New Materials

i) GramDef English

Like its fore-runners GramDef French and GramDef German, GramDef English will allow users to browse hypertext passages in which every link is hot and leads to information about the part of speech and its function in the sentence. There are now two test modes in the program, however. One is the mode which exists in the earlier programs, where users are tested on the information which they explored in the browse mode. The new test mode requires users to select a part of speech and identify all instances of it within the text.

The program is currently undergoing testing and it is hoped to make it available early in 1998.

ii) REAL (Reading & Listening Strategies)

Under this EU-funded project, two reading packages are now being trialled with students. The first, for English-speaking learners of Dutch who are planning to spend a year studying in the Netherlands, is being trialled at the University of Hull, with the help of Wil Hamminga, a final year student from the University of Groningen, who is spending a semester working at the CTI Centre for Modern Languages. The second package, for Dutch students of Business Studies who are planning to work in Britain, is being used at the University of Nijmegen and Arnhem Business School. Provided Brussels approves Year 2 funding, 1998 will see the inclusion of the sound elements, and the development of Greek and Swedish packs. It is hoped that the English versions of REAL will form part of the Consortium's new EFL list of products on the commercial market.

June Thompson

BUSINESS & ECONOMICS

Project No. 64 **Multimedia Marketing Learning Programme**

Menus Help Lecturers.

The Multimedia Marketing Consortium has developed a simple new aid to busy lecturers to help them to easily integrate the Marketing CD ROMs into their teaching programmes … A4 photocopy-able menus.

These laminated A4 sheets provide a complete overview of all the sections contained within all of the ten Marketing CD ROMs. Each section has a tick box which allows lecturers to quickly select (and tick) sections which are deemed relevant to a particular group of students. They can then fill in the dates of issue and required completion, photocopy them and hand them out to students each week, month, semester.

A fifty word summary of each section is also available in the free Instructor's Guide. So lecturers do not have to plough through thirty hours worth of multimedia materials because the menus backed up by the manual put everything at their finger tips instantaneously. Ideas for pre-prepared A4 assignment briefings are also being developed and suggestions are welcome.

For further information contact the Project Director,
Paul Smith at London Guildhall University, 84 Moorgate, London EC2M 6SQ

Email: psmith@lgu.ac.uk
Telephone: (0171) 320 1454
Fax: (0171) 320 1465
URL: www.lgu.ac.uk/lgu/mmm

ENGINEERING

Project No. 20 **INTERACT: Interactive Engineering Teaching and Learning Project**

INTERACT simulations.

The Interact project has produced a number of simulations of engineering domains. The simulations are a resource for use in lectures, laboratories, tutorials and courseware. Those currently available are:

Electrical engineering
Phasor - Electrical signal explained through phasors
Circuit - Linear circuits explained with phasor input/output signals
Periodic - Fourier analysis of periodic signals with reconstruction using phasors.
AF - Adaptive filtering.

Building engineering
Waterhammer - Simulation of water hammer effect.
Airnet - Simulation of vented drainage systems.
Drainet - simulation of building drainage systems.
Heatnet - Unsteady heat flow through walls.

Civil engineering
Seepage - Water flow and flownets round water retaining structures.
Pollute - Simulation of pollution migration through ground water.
Hydrology - Simulation of the hydrology of a river basin.

Aerodynamics
Airfoil - Simulation of an airfoil

THESE SIMULATIONS RUN UNDER UNIX. Evaluation copies for the Solaris and HPUX9 and HPUX10 operating systems are now available.
See http://www-interact.eng.cam.ac.uk for details of how to download the simulations.

Dr Ruth Thomas

Project No. 71 **The Development of CAL Course Material for the Teaching of Corrosion in Engineering (Ecorr)**

Ecorr NEWS

The Ecorr Consortium has released Version 1.0 of Ecorr. The package has a modular structure and adopts a problem solving approach to the teaching of corrosion fundamentals and corrosion control methods. Each module uses a real or a hypothetical case to teach a particular aspect of corrosion engineering. The student is supported by a Glossary and TheoryBase as they work to solve the problems set. The package has been developed using Asymetrix Multimedia ToolBook Version 3.0. It will run on a PC with minimum specifications of 486/66, 8 Mb RAM, 256 colour display and a 4 speed CD-ROM drive (or the full package can be run from a network or installed on a local hard drive). It will run under Windows 3.1, 95 or NT.

A free evaluation copy of Ecorr is available to all qualifying academics. This is the full Ecorr package, with the only limitation being that it can only be run from the CD-ROM.

A Users Support Club has also been set up to provide members with technical support and free updates. For sampling Ecorr a demonstration version (consisting of two modules) can be downloaded from our Web site at URL www.cp.umist.ac.uk/CAL/ECORR.htm.

Dr Robert Cottis

MEDICAL SCIENCES

Project No. 61 **The Behavioural Sciences Consortium**

The Behavioural Science Consortium have recently won two awards and successfully secured funding for two new projects.

1. In April, the British Medical Association awarded the Consortium a Certificate for Educational Merit for the package on "Clinical Decision Making".
2. An overlapping group (involving three members of the consortium) won the British Interactive Multimedia Association Award for Interactive Displays with the package "All about Nocturnal Enuresis". This was presented at an awards dinner in the London Hilton on 16th June 1997. We displayed the program throughout the Multimedia Show at the Business Design Centre, London, 17 - 19th June 1997.
3. The Consortium has been successful in securing funding for two new projects in multimedia, in both cases from the NHS Executive Research and Development Programme. One is for a two year project conducting a randomised, controlled trial of the benefits of the nocturnal enuresis program in Leicestershire Community Clinics (circa £40K); the other is for development and evaluation of a multimedia program, in health centres, about prevention of skin cancer (circa £40K).

Dr Paul Garrud

SCIENCE, MATHEMATICS AND COMPUTING

Project No. 22 **SToMP: Software Teaching of Modular Physics**

A new release of SToMP.

The SToMP project has recently released a new version, with two new modules. The existing 'Waves and Vibrations' and 'Measurement and Uncertainty' modules have been extensively revised in the light of critical academic review, and have also been augmented with additional self and assessed tests. The new version fully supports assessed tests, with software for a minimal database being distributed with the system. This database system also allows full integration of the SToMP system with departmental network security, so that it can be used to control individual access to SToMP.

One of the new modules has been created from the Waves and Vibrations material, by re-organising the linking so that direct access is offered to all the interactive models, animations, videos and other features that might be required for lecture or other demonstration purposes.

The second new module is in Optics, and comprises material that has been developed in Australia (at QUT, Brisbane), at Surrey and the Open University. This module is not yet fully complete, but is offered so that departments can use what has been developed.

Work is continuing on another new module in Astronomy, and in completing the Optics module already released.

Dr Richard A Bacon

Project No. 27 **The Development of Courseware for Chemistry Teaching**

Chemistry Courseware Consortium signs distribution deal

After almost a year of negotiation, the Chemistry Courseware Consortium finally signed a deal at the end of July with the US publisher Houghton-Mifflin Company, who will distribute the software developed by the consortium outside the UK. The CD-ROM (renamed 'The Chemistry Tutor' and adapted for the American market) contains twenty-two modules of computer-assisted learning material and five generic teaching tools for use in first year, undergraduate chemistry courses, and in other science based subjects where a foundation in basic chemistry is required. The software also addresses basic numerical skills which are often lacking in today's student.

The CD will initially be sold in the USA and Canada as student editions (approximately $40) through chains of bookstores which already sell a range of 'General Chemistry' texts. It is envisaged that in the same way that a textbook is recommended by a professor for a course, the CD will be also. US sales staff are addressing this by visiting professors to demonstrate the software. The CD will also be available mail order through a central distribution unit, and worldwide through a series of resellers.

Work has now begun on a second version of 'The Chemistry Tutor' which will include further modules to support areas of the curriculum which were missing from the initial work funded by TLTP. Houghton-Mifflin has provided funding for this work. It is envisaged that the signing of this deal will allow the consortium to continue to operate into the next century.

Adam Drury, Project Manager

Project No. 44 **WISDEN: Wide-ranging Integrated Software Design Education Network**

W.I.S.D.E.N. Project CD-ROM release

The W.I.S.D.E.N. CD-ROM will be distributed to Heads of Computing Departments at all HEI's throughout week beginning 8th December 1997. It will contain most of the learning resources developed by the project team in the areas of Formal Methods, Structured Systems, Object-oriented Systems and Real-time systems.

If you wish to receive a copy directly please email to wisden@shu.ac.uk.

To coincide with the launch of the CD, a new W.I.S.D.E.N. website will go live on 8th December . On the site you will find information about the project and how to get copies of all the learning materials.

Website URL: http://www.cms.shu.ac.uk/wisden

Steve Morris

Project No. 25 **Earth Science Courseware**

Updates

Many of the TLTP courseware modules produced by the UK Earth Science Courseware Consortium have recently been upgraded. In some cases this has involved extending the content otherwise the main change has been to improve the navigation and layout.

The upgraded versions are due for release in December 1997; see our web site for details.

Bill Sowerbutts,
ukescc@man.ac.uk
URL: http://www.man.ac.uk/~ukescc

Project No. 17 **DIAGNOSYS: Basic Mathematical Skills**

DIAGNOSYS upgrades

The web-page for DIAGNOSYS, the expert-system diagnostic maths test, now gives instructions for a free upgrade to v2.4 from v2.3 and v2.31, under 'availability'.

It is improbable that there will be any more minor upgrades to the current major v2. I hope that v3.0, a complete rewrite for Windows 3.1 and 95/NT, will be available for summer 1998 - better predictions may be available from around Easter 1998!

Dr John Appleby

STAFF DEVELOPMENT AND STUDY SKILLS

Project No. 54 **CATS: Computer-aided Assessment of Transferable Skills**

New software package released

The full version of SpreadTask, a spreadsheet assessment program, is now available.

This software assesses simple uses of a spreadsheet such as taught in a first course. Assessment can include features such as the insertion or deletion of rows and columns, the insertion of formulae into cells and the formatting of cell contents.

The software has been designed to be as flexible as possible, allowing it to be used for summative or formative assessment. The results of the assessment can be presented as a spreadsheet of errors of different types. The examiner can tailor this spreadsheet with suitable formulae to generate a summative assessment. A marked version of the candidate's spreadsheet is generated indicating the errors found.

More details, including a downloadable demonstration version and details of how to order, can be found on the project's WWW site at www.sys.uea.ac.uk/cats/.

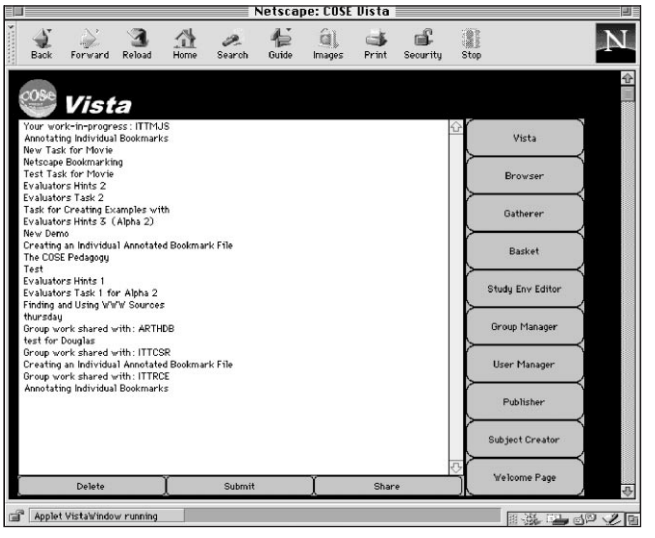
Cost to UK HE and FE is £20 + VAT.

Dr Roy Dowsing

Active Learning with COSE

(Creation of Study Environments)

COSE is a WWW-based system enabling creation and delivery of active, collaborative learning environments. It is based on a pedagogy which recognises that learning is most effective in the context of some task or problem. However, it also recognises that many undergraduates lack the learning skills required to undertake learning based on real-world problems, particularly as the skills needed to deconstruct such problems into component activities are usually missing.



Therefore, the learner is presented with a hierarchy of "learning opportunities" ranging from simple, bounded, tasks through to "real world" projects, enabling learning skills to be acquired gradually.

The COSE Learner Interface, presents the learner with a list of "learning opportunities" which have been assigned to them (or their collaborative group) by tutors. Each consists of a Pageset describing the task in question. Attached to each of these pages are pages of "theory" (notes, relevant information), "hints" (advice, pointers to approach, procedural guidance) and an index to related learning opportunities in COSE, external WWW sources, and paper sources. A page can contain any WWW compatible content, but can also have attached up to two standalone "media objects", separately catalogued in the system and displayable via a button.

An email button provides links to a learner's group(s) and tutors managing the learning opportunities assigned. Learners can create work in any desired format, share it with other learners, and label work completed as viewable by a tutor, who is informed of the fact by email. If desired, learners can create work in COSE format, which can subsequently be published (by a tutor) into the system as a resource. Search facilities allow learners to search the entire system by keyword for resources, and gather them in a "basket" for later use. This cross-discipline searching encourages synthesis in learning.

Additional communications tools and cognitive aids are planned.

Tutors are provided with an interface which facilitates either individual or collaborative creation and management of content, and the publication of finished material for use by learners. The publication mechanisms can be used as a quality control. Pagesets, pages and media objects are described using keywords on creation, and tutors can search the system for relevant published work, save it in their basket and incorporate it (even an individual page or media object) into their own material. Published material cannot be changed, only re-published in a new edition, ensuring that content remains stable.

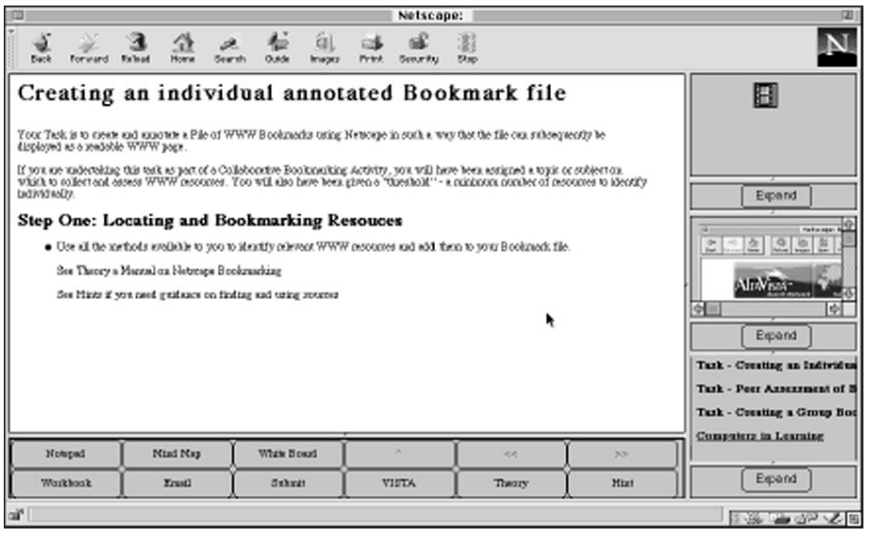
Other facilities provide for the creation and management of individual and collaborative groups of tutors and learners, and the assignment of learning opportunities to learners and groups. The system tracks learner behaviour with a view to assisting assessment of the value of particular content, and possibly learner profiling.

COSE, written in Java and CGI, runs on any standard WWW server. It requires Netscape or MIE 3 or 4 on the client, which should be a PC running Windows 95/NT, or a Power Macintosh.

The COSE project is funded under the JISC Technology Applications Programme.

The COSE team are seeking colleagues interested in evaluating the system.

The COSE Learner Browser

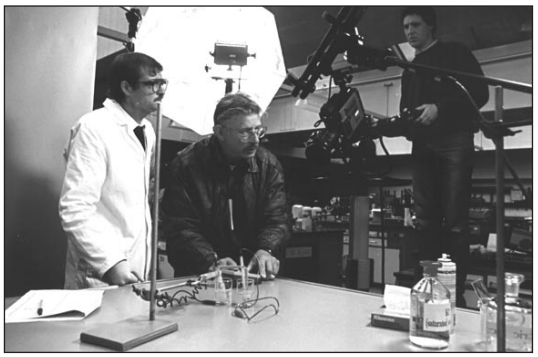


Mark Stiles
Academic Development Manager
IT Services
Staffordshire University

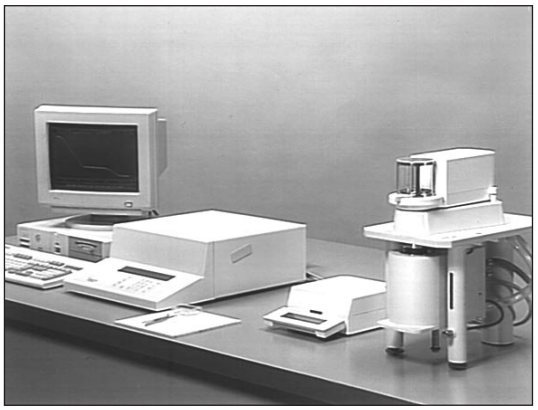
m.j.stiles@staffs.ac.uk
www.staffs.ac.uk/COSE

cose
creation of study environments
via the world wide web

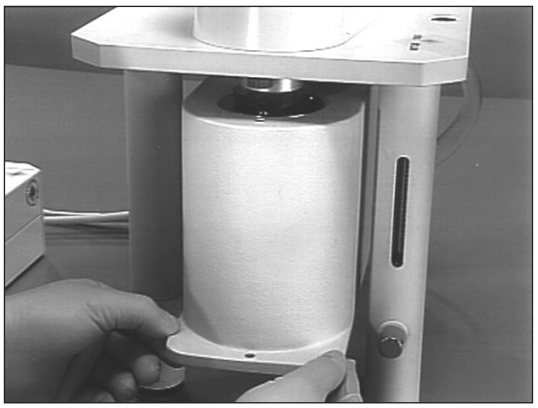
Using Video for Teaching Chemistry: *A Phoenix?*



Filming on location at the University of Leeds



Overall view of the equipment



Close up of the furnace (affording temperatures to 1000˚)

Keying the parameters for a 'run'

Despite the advantages of bringing experiments, which are difficult to demonstrate or cannot be performed for safety reasons, into lectures and the ability to repeat them at will, video in the VHS format has not really fulfilled its potential as a teaching aid over the past 30 years. Some reasons for this are:

- cumbersome access to material, via "forward"/"reverse" controls;
- the cost of making videos;
- the cost of equipment, and;
- the lack of sufficiently high quality material to make it worthwhile schools, colleges and universities investing in the equipment.

The Chemistry Video Consortium, funded by the four UK HE funding bodies under the "Teaching and Learning Technology Programme" and supported by the Royal Society of Chemistry, set out to provide a large amount of high quality video, primarily to facilitate the teaching of skills in practical chemistry. The resulting nineteen 30 minute programmes of the "Basic Laboratory Chemistry" series, which cover 82 techniques and experiments, were offered in VHS tape and laser disc formats. The laser discs, which provide broadcast television quality pictures, can be accessed using bar codes, giving 1 to 2 second access to any clip or frame on a disc. The cost of a laser disc system can be as little as twice that of a good VCR system.

A total of 38 UK university Chemistry Departments have adopted the "Basic Laboratory Chemistry" material. Of these, 33 have opted for laser discs and 8 have bought VHS tapes, some Departments buying both laser discs and tapes. One of the Departments which had bought tapes has ordered discs for 1997/98.

Of the 38 using "Basic Laboratory Chemistry" in 1996/97, 32 have responded to a recent questionnaire about their use of the materials.

The data gathered through this survey confirms that if a sufficient body of high quality material is provided, and there is rapid and reproducible access to clips, then video can indeed fulfil a crucial teaching need. In addition to savings on staff time in providing demonstrations, Departments also save on the use of chemicals and equipment because students have a better appreciation of experiments, and wastage, breakages and damage are reduced. Further potential savings in chemicals and disposal costs are possible because "Basic Laboratory Chemistry" has three programmes devoted to "Microscale" experiments and techniques. The fact that Departments are opting for further "Microscale" material to be included in the "Advanced" series indicates an increasing awareness of the usefulness of "Microscale" techniques.

Whilst sales to universities in the USA have been described as "brisk", penetration into schools and colleges and the UK chemical industry has been slow. It appears that what is needed for schools and colleges is customised packages containing theory, the commentary texts (especially for those with hearing difficulties), glossaries, worked examples, and sets of questions linked to the "A" level syllabus. Industry too might need customised packages.

Looking to the future, it seems clear that video will play a significant role as the IT implications of the Dearing Report are translated into reality. For example, video can now be captured and compressed from broadcast quality sources to deliver VHS quality images to desktop PCs, resulting in more stimulating multimedia packages than traditional "dry" CAL.

Work is in hand to create such packages. For example, aspects of customisation have been demonstrated in pilot Chemistry Video Consortium CD ROM and "Smart Card" packages.

Dr Tony Rest, Chemistry Video Consortium , Project Co-ordinator

For more information about the Chemistry Video Consortium, visit our web pages at:
http://www.soton.ac.uk/~chemweb/ajrvideo
and
http://chemistry.rsc.org/chem_img.htm

Screenshots taken from 'Thermogravimetric Analysis'

Learning by solving examples through data driven Internet Based Intelligent Tutoring Systems

The Byzantium project has successfully produced four Management Accounting and one Financial Accounting tutoring applications for introductory level accounting, along with a Marker software. Blackwell Publishers publish the software and accompanying text (ISBN 0-631-20750-3). The tutoring software was designed under a model of Computer Integrated Learning Environments (CILE) that recognises that the level at which a discipline is taught and learnt is a vital context for designing a tutoring software. In this model, the learning of a subject discipline is divided into three distinct knowledge levels:

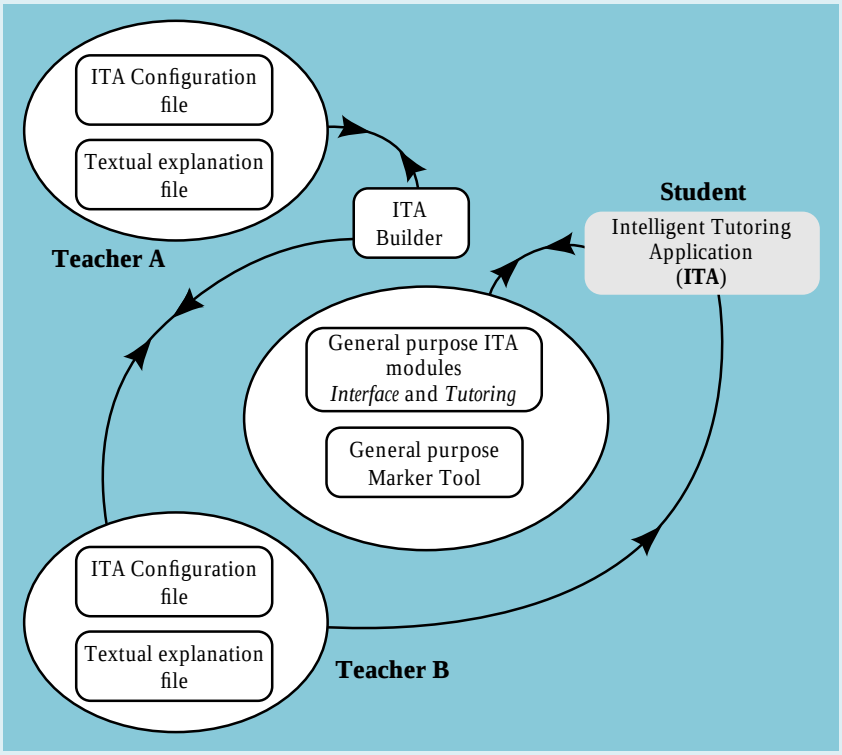
1. At the *introductory application level,* a student forms mental maps of various conceptual objects, each consisting of a small network of interrelated conceptual atoms, and learns how to use the basic tools of the discipline.
2. At the *advanced application level,* the integration of conceptual objects takes place. Vertical integration involves a comparison of the results of multiple use of the same tool whereas horizontal integration employs multiple tools to solve a given problem.
3. The actual *application approximation level* attempts to simulate a simplification of the real world problems. Students learn how to account for behavioural and environmental factors.

The research and implementation output to date has focused on the development of the first level packages. However, it is recognised that on-going developments in the Internet and related fields can greatly assist the next stage of development by providing an infrastructure for distributing development efforts and also for linking the outputs of such distributed efforts.

Extension of Intelligent Tutoring to the Internet

Byzantium's experience of developing diverse tutoring applications has provided the information necessary to formulate a methodology to construct an authoring tool. Due to advances in programming languages (e.g. Java) a generic tutoring application builder for use in producing Intelligent Tutoring Applications (ITA) on the Internet, and maintaining an indexing mechanism for all the ITAs so developed, is now conceivable. An ITA builder would interactively facilitate rapid development of the ITAs by subject teachers of any numeric discipline, at minimal investment. Figure 1 shows a possible workbench for the development of such ITAs. The approach also enables teachers to share and build on each other's work, allowing them to incrementally build more extensive Internet Based Intelligent Tutoring Systems (IBITS), using the ITA building blocks. It also enables teachers to structurally tailor any existing ITA and produce a variation to suit the sequence in which they might wish to introduce the concepts.

Figure 1. ITA Workbench



There is a vast number of potential applications for numeric topics across a wide range of subject disciplines. With the appropriate design tools the Internet provides a very productive platform for collaborative and co-operative efforts by teachers who can rapidly and cost-effectively build up the diverse range of software tutors necessary to cover the large area of the numeric techniques and their applications. The Internet also provides platform independence and enables sharing of design tools between, say, PC users and Unix or Macintosh users.

Ashok Patel
Software Director,
TLTP Byzantium
CAL Research & Software Engineering Centre
De Montfort University

Research papers:
http://byzantium.dmu.ac.uk/byz_publications.html

Supporting Teaching Networks in Scotland

In Scotland, as in the rest of the UK, there is a huge amount of interest in using the web for learning and teaching. However, when it comes to turning this interest into actual use in courses, there are several important and distinctive factors about Scottish Higher Education, including:

- its own funding council (SHEFC);
- the four year honours degree structure, often with large classes in the first year;
- its manageable size, with every institution within easy travelling distance of every other;
- every institution connected to high speed (155 Mbit/s) Metropolitan Area Networks (MANs).

Technical developments in Scotland, such as the MANs, have been matched by changes in support provision, away from general CAL support towards specialist support and training for web and network based resources:

- LTDI have been providing support in the use of IT to enhance learning and teaching since 1994. In the first year network based learning was only a small part of this;
- During its second year, LTDI ran MAN Awareness Days throughout Scotland, highlighting (even before the MANs had been installed) the potential of high speed networks in teaching and learning;
- TALiSMAN has been providing support for the distinctive opportunities offered by the MANs for teaching and learning since they came online in 1996.

Network based learning is now the single most frequently mentioned mode of delivery when we are approached for general CAL support. The challenge is to promote sufficient confidence and competence in the MANs and their application that their day-to-day use becomes natural, and support can then be re-integrated with other CAL support services.

The primary aim of both LTDI and TALiSMAN has been to support and encourage the appropriate use of technology as an integral part of teaching and learning. This has been achieved through activities designed to provide:

- awareness of current issues, current trends and new developments;
- training in skills for creating and exploiting resources;
- implementation support, emphasising the importance of considering appropriate use and successful integration, especially during course design;
- evaluation skills, for identifying successful strategies;
- networks of people with common interests and facilitating communication within these;
- support and training for training and support officers in Scottish universities;
- information about examples of good practice.

TALiSMAN is part of the Scottish Use of MANs Initiative (UMI). UMI has also sought to provide examples of good practice and of collaboration amongst local universities. Clyde Virtual University (http://cvu.strath.ac.uk), MARBLE (http://www.marble.ac.uk/marble) and the Consortium for the Provision of Digital Video and Images on Demand (http://umi.eee.rgu.ac.uk/) were major projects of this type.

Information about our range of activities, including:

awareness days; conferences; on-site workshops and seminars; training courses; online courses; open learning programmes; user support groups; electronic discussion lists; publications; resource collections; implementation support; evaluation support; and case studies; is available from TALiSMAN and LTDI who can be contacted by
telephoning 0131 451 3280
or writing to us at ICBL, Heriot Watt University, Edinburgh EH14 4AS.

Meanwhile the following WWW sites provide appropriate starting points for exploring network based learning within Scottish Higher Education.

LTDI - http://www.icbl.hw.ac.uk/ltdi/
TALiSMAN - http://www.talisman.hw.ac.uk/
UMI - http://www.use-of-mans.ac.uk/

Colin Milligan (TALiSMAN) and Phil Barker (LTDI)

A MULTILINGUAL EXPERIENCE: France, Spain & beyond

Emma Candy, Gill McConnell & Andrew Short

CLIVE

The C.L.I.V.E. (Computer-aided Learning in Veterinary Education) consortium was formed as a TLTP Phase 2 project. At the beginning of the year we moved to the continuation/ self-funding phase with some trepidation. However, we obtained the full support of our consortium members (all of the veterinary teaching institutions in the UK) up to Heads of Veterinary Schools Committee level. So, with sponsorship coming in from various veterinary bodies, including the Royal College of Veterinary Surgeons, The British Small Animal Veterinary Association, Veterinary Defense Society and commercial company Virbac, the future looks bright.

Why translate?

We intended to expand beyond the U.K. via our *Associate Membership Scheme,* so when the opportunity for translation of our materials came up, from two very different quarters, we were pleased to rise to the challenge.

The first impetus for translation originated from our commercial sponsors Virbac Ltd., who sponsored the successful first volume in the CD series *"Interactive Learning in Dermatology".* They subsequently decided to pay for translation from English into French and Spanish.

The second strand came from the European SOCRATES Programme *"Interaction and Co-operation in European Veterinary Education"* (ICEVE), aimed at sharing good and innovative teaching practices among members. This enables us to arrange translation into (and from) other languages in collaboration with the Ecole Nationale Vétérinaire d'Alfort (France) and the Facultat de Veterinària, Universitat Autònoma de Barcelona (Spain). In October, our colleagues from Alfort visited and we were able to translate a couple of templates in two days (buttons, generic messages, etc.) with the subject content to be translated over the next few months.

The translation process

This sounds straightforward, but was fraught with difficulties. When we designed the first CD, we were not thinking about translation. To make use of Authorware features such as hypertext links and searches, contrary to our usual practice, we embedded the text within the program. This meant when making changes to the text, to ensure accuracy, all the text had to be extracted from the displays before translation. Because the CD contains three hours of teaching material with many pop-ups and adaptive feedback, inevitably some text was missed.

Many of our TLTP programmes were designed as templates which allow easy translation with external text and images. The translator can simply take away a text document and change it at their leisure, so the Socrates translators, who are concentrating on this aspect of our work, should have an easier time.

Pasting the text back into the programs revealed the problem of the greater length of French and Spanish phrases - the ratio to English was about 3:2. This extra space requirement had not been allowed for in the original design, and on some screens, it was very difficult to accommodate the extra text. Other difficulties ensued when the French translation was called into question, despite the use of medical translators. The text was eventually checked by a French vet who could spot the anomalies that the original translators had missed. However good the translators are, this sort of checking is essential, and at least as much time must be allowed for a translated version as for the original.

Happily, we are now in a much better position to estimate realistic time scales and to monitor progress than we were with our first foray into translation. Thankfully, our colleagues from the Socrates program will be able to contribute greatly to future trilingual productions. Thus our two strands of international collaboration merge.

What next?

The potential for international collaboration is very good as Martin Sullivan (Glasgow CLIVE representative) discovered at *The 11th Conference of the International Veterinary Radiology Association* (IVRA) held in Jerusalem in August. One of the main aims of the TLTP initiative was that consortia obtained agreements with publishers. Colleagues from Hungary and Finland have packages but now face the problem of getting them published and distributed. Here TLTP consortia might usefully act as brokers for small packages from developers in Europe. Next year we have been invited to a CAL symposium for the five veterinary schools of Germany (April 1998), when we expect to expand further CLIVE's international collaboration.

CLIVE will shortly be publishing a newsletter aimed at UK and international institutions and individuals interested in collaborating with the project or obtaining our programmes. If you wish to receive a copy, contact:

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Edinburgh University, Summerhall
Edinburgh, Scotland, UK

Email: clive@ed.ac.uk
Tel: +44 (0) 131 650 6113
Fax: +44 (0) 131 650 6576

Mathwise Launches New CD and User Group

The UKMCC has been awarded funding to develop a commercial version of Mathwise and to promote use of the Mathwise materials in higher education. In order to do this the consortium has signed an agreement with NAG, a new Project Co-ordinator (Julia Meek, who will be based at Birmingham University) has been appointed, and negotiations with publishers are at an advanced stage. A CD containing the full range of Mathwise modules is now available and, as part of the promotion of Mathwise, a Mathwise User Group (MWUG) is also being launched.

The New Mathwise CD

A list of the modules on the new CD is contained in Table 1. In addition the Courseware Manager, which integrates the modules to provide an enhanced learning environment, has been completely re-written and now provides many new features. Additional modules, and conversions of existing Mac modules to run on the PC, will soon be available. Figure 1 shows sample pages from two of the Mathwise modules.

Table 1: Contents of the Mathwise CD

PC Modules	Mac Modules
Real Numbers and Algebra	
Graphs of Functions	Mathematical Biographies
Inequalities	Real Numbers and Algebra
Linear Equations and Matrices	Graphs of functions
Polynomials, Powers and Logs	Inequalities
Trig Functions	Trig Equations
Standard curves and conics	Concepts in Differentiation
Euclidean Geometry	Rules of Differentiation
Rules of Differentiation	Minima and maxima
Minima and maxima	Complex Analysis II
Concepts in Integration	Solution of liner equations
Techniques of Integration	Fourier Series
Complex Numbers	First order ODEs
Sequences and Series	Eigenvalues and Oscillations
Solution of Linear Equations	Algebraic Eigenvalue Problem
Basic Vector Algebra	
Linear Programming	Differential Equations
Multiple Integrals	Discrete Mathematics
Higher Order DEs	Elec. & Electronic Eng.
Numerical Solution of DEs	Business Studies
Algebraic Structures	Data Fitting
	Mathematical Modelling
Astronomy	
Differential Equations	Mathematical Biographies
Earth Sciences	
Biology	
Discrete Mathematics	
Mechanics	
Coding Theory	
Mathematical Modelling in Sport	

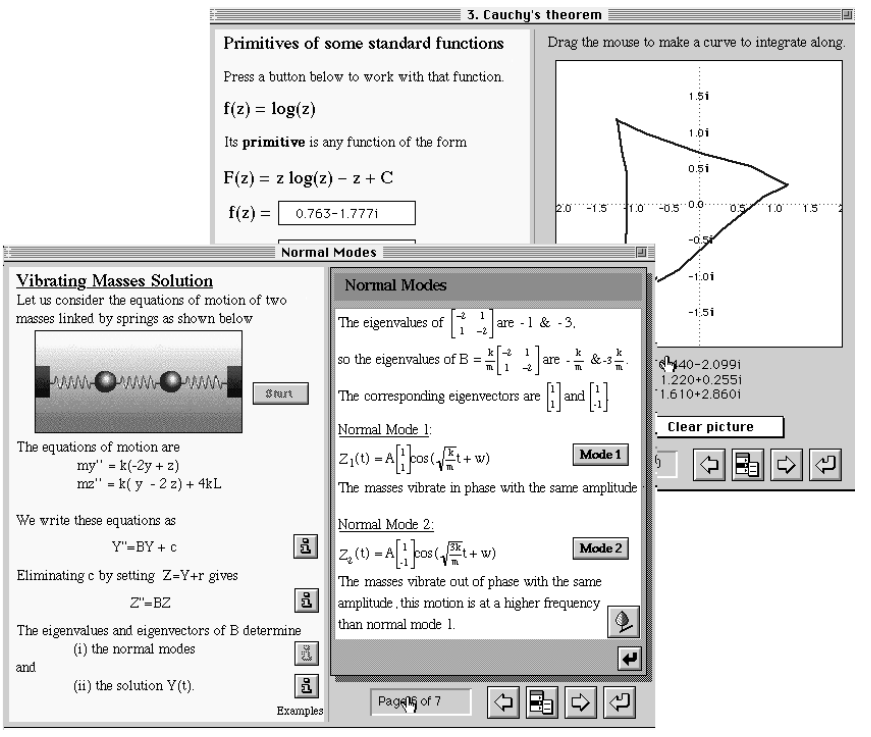


Figure 1: Sample pages from "Complex Variable II" and "Eigenvalues and Oscillations" (for the Macintosh)

The Mathwise User Group (MWUG)

The primary aims of the User Group are to:

- Establish a user community to underpin the long-term development of Mathwise.
- Promote the use of Mathwise as an integrated learning environment for mathematics self paced teaching and learning.
- Support users in the academic community with the implementation of Mathwise.
- Provide a supporting role for the exposure of Mathwise materials.
- Create an organisation that can continue to provide user support for Mathwise in parallel with any commercial development.
- Provide academic feedback to NAG who are developing the commercial version of the CD.

Organisation

Initially a subgroup of the Mathwise executive has been set up to oversee the development of MWUG but it is hoped that eventually the membership will take over the running of the group. Currently, the subgroup is Douglas Quinney (Keele University) and Stephen Hibberd (Nottingham University). Pam Bishop of CTICM has also been invited to join the group. Initially membership is open to any member of staff who wishes. It is intended that after 1 year that a more formal structure be set up under the control of the membership.

Activities

In order to accomplish some of the aims set out above, the MWUG intends to publish a regular Newsletter (probably one a term) providing information on new modules, module availability, short reviews and links to more extensive reviews, such as published articles and WWW pages. To support this we also intend to launch a Web site to provide electronic information containing similar material.

MWUG intends to organise regional workshops which will concentrate on hands-on use of Mathwise but also provide information about how the modules can be integrated into teaching and assessment, how the modules can be modified and extended to satisfy additional demands at local sites. The first such workshop will be at Nottingham University in January 1998; future venues will include Southampton, Heriot-Watt, Bangor and Queen's Belfast. It is also hoped that the feedback such workshops provide can be assimilated into any future developments and then reported back at a 2-day user Conference towards the end of June 1998. Topics which are to be included could involve reports on evaluation, implementation, "best-practice" and support materials.

The 50 modules that are on the TLTP CD cover an extensive area of mathematics but are certainly not exhaustive. To help individual institutions to investigate how Mathwise can satisfy local demands members of the MWUG will be available to visit and give seminars on the use, content and implementation of Mathwise. To this end it is going to play an active part in the liaison with Publishers, providing a forum for both developers of new modules and also for end-users to feed back their own requirements.

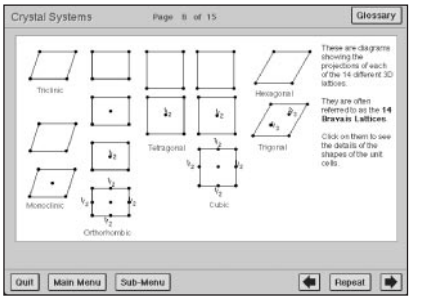
If you would like to become a member of MWUG would you please get in touch with:

Dr Douglas Quinney, University of Keele, Keele, Staffs
D.Quinney@Keele.ac.uk

Pam Bishop, CTICM, University of Birmingham, Edgbaston
CTIMath@birmingham.ac.uk

UNDISCIPLINED COURSEWARE

Courseware produced by the UK Earth Science Courseware Consortium is finding its way into a range of different departments, some quite unexpected.



Part of the Crystallography module

I have in front of me a list of the academic departments in UK universities and colleges to which Earth Science TLTP courseware has been supplied. This shows that a sizeable proportion has gone to places where degrees in subjects other than Earth Science are delivered. This suggests that this batch of courseware, although designed primarily for Earth Science teaching and learning, is being used in other disciplines. Such a situation might be expected for subjects like physics and chemistry, since knowledge of these subjects is required in many other disciplines, but for the Earth Sciences the link is less obvious. What about other disciplines, in the arts for example. Is courseware designed for one discipline suitable for use in others, and is enough being done to explore the possible applications of the courseware outside core disciplines?

A closer look at the places on my list reveals that a few are indeed places where Earth Science is being studied either as the sole subject, or as one of several related subjects, but this is not obvious from the department title: School of the Environment is one example. At others, courses in Earth Science are given as a small part of a degree in a different subject. Examples here include Geography, Mining, Civil Engineering and Environmental Studies departments. The Earth Science courseware module entitled 'Rock Deformation and Geological Structures' finds a ready home in Civil Engineering departments where courses with names like 'Geology for Engineers' are commonplace. Similarly, the 'Visualising Geology in Three Dimensions' module is popular with students of Geography, and the 'Aspects of Earth Resources' module with students of Environmental Science.

Some topics - crystallography is a good example - are being taught in several different disciplines. Thus the Earth Science module on crystallography has found its way into several Chemistry and Physics departments since the module deals with fundamental information without an obvious geological bias. Phase diagrams are similar. Phase diagrams are widely used in the Earth Sciences, but also in other disciplines like Materials Science. Could one courseware module on the subject be suitable for several disciplines? In theory, yes. In practice there needs to be some tailoring to each discipline. Indeed, separate courseware modules on phase diagrams have been produced by two TLTP projects (Earth Science and Materials Science). Although there is a lot of common ground, the subject is approached from different viewpoints, for users with different background knowledge, and the examples given in each are drawn from the two different disciplines. The two versions are not mutually exclusive and students from one discipline can get something out of the version produced for another.

When designing the Earth Science courseware attempts were made to produce material that was not too parochial, and so it is very encouraging to see the wide range of places where it is ending up. To date the most surprising designation for this material is a Department of Textiles. Is there within the study of textiles a whole new area for Earth Science that we know nothing about?

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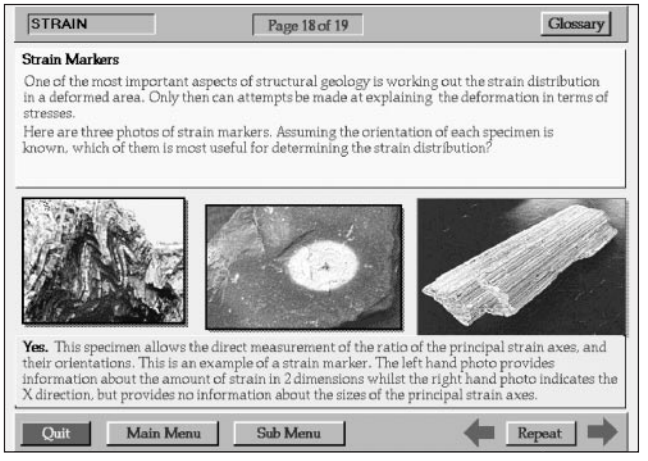
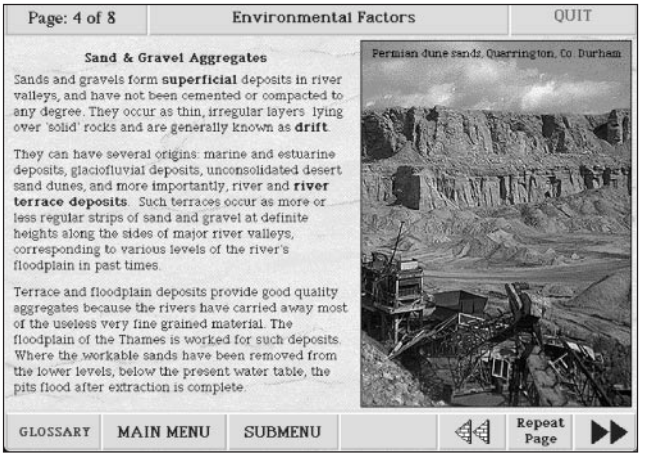
Fax: 0161 275 3947
Email: ukescc@man.ac.uk
http://www.man.ac.uk/~ukescc



Part of the Rock Deformation and Geological Structures module



Part of the Aspects of Earth Resources module

The National Learning Network for Remote Sensing

Remote Sensing is a subject that is taught across a wide range of degrees (mainly geography and environmental science) at undergraduate and postgraduate levels. It is a subject that is based on the latest technology and demands knowledge of topics such as image processing and interpretation, detector systems and satellite orbits as well as an appreciation of a wide range of applications. There is a need for teachers to constantly upgrade their knowledge and skills to ensure that their courses maintain the highest of standards and continue to be up to date.

This UMI project is based around a development team comprising staff from the Universities of Paisley, Edinburgh and Dundee. The project is producing Web-based interactive, multi-media short lessons or 'modules' over a broad syllabus, covering both the physical principles of remote sensing and their application, such as in land use, meteorology, ocean and coastal studies, etc. These modules can then be incorporated into existing courses in all Scottish universities, providing students with access to the latest information and offering them a wider range of topics than can perhaps be adequately covered in their own institution. In addition, communication tools, searchable FAQs, bulletin boards, 'internet cafés', video conferenced seminars and 'virtual laboratories' are also being constructed, all of which aim to significantly enhance the students' learning experience.

These materials are being subjected to evaluation by a broader consortium of staff and students across the country. The over-riding philosophy in the development of the materials is that of maximum flexibility. Individual course leaders should be able to select the number and decide the order of modules and the additional components that they wish to include in their own courses. Each university will, for example, have its own remote sensing course home pages with appropriate links to the modules and other teaching/learning resources.

The interactive element ensures that the modules are focussed directly on active learning rather than passive reading of text or scanning of diagrams. The student using such materials will be able to explore data and see the effects of varying parameters as well as working through a series of quiz type questions. A large number of relevant Java applets have been specifically written for this project and others have been adapted from related work.

Project management is an interesting issue since each of the three full-time project workers is based at a different university. This is where the provision of video conferencing facilities has been vital, allowing weekly planning and progress meetings. Other communication tools, including email, bulletin boards, a customised IRC facility and audio conferencing have also been used to varying effect.

For more information please contact:
Dr. Iain MacLaren, Dept of Electronic Engineering & Physics, University of Paisley, Paisley PA1 2BE, Scotland (Email: Iain.Maclaren@paisley.ac.uk) or visit our public web pages at http://euromet.paisley.ac.uk/

Introducing the eQuip Team

eQuip is funded by HEFCE and has been set up to improve the quality of provision for disabled students in higher education.

The eQuip team has three part-time members, each responsible for an area of the country: Mike Adams (Midlands), Liz Sutherland (South of England) and Rosemary Turner (North of England). The team aims to make extensive contact with universities and colleges through visits, regional networks, conferences, training days, and by telephone and email.

Initially eQuip will be supporting the 31 projects funded under the Council's current special initiative to improve provision for disabled students. However, during 1998 the team will expand its work to offer support and advice to all HEIs funded by HEFCE.

Why another initiative?

Previous HEFCE initiatives, as well as work by other organisations such as Skill, have already achieved a great deal in developing disability provision, so why is eQuip needed?

'Evaluations have shown that the gains from projects are much greater where staff have developed networks and shared information and experiences', says Rosemary Turner of the eQuip team. 'One of the notable characteristics of disability provision is that people are willing to collaborate, and as a team we want to make sure that continues. We will encourage links between project institutions and non-project institutions, and look for examples of good practice. Then the next step will be to make sure that everyone has access to that information'.

Existing information, and lessons learned from others, can be a good starting point for universities and colleges with little experience of providing for disabled students. However, as Rosemary Turner also observes, 'Changing the whole culture of an institution is very hard, and will take time… [Institutions] need to develop appropriate procedures and policies to establish a starting point for realistic improvements'.

A fuller article focussing in particular upon some of the ways in which learning technology is improving opportunities for disabled students, will appear in the next Newsletter.

Contacting the eQuip team:

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01203 536369

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Mike Adams
m.adams@coventry.ac.uk

Liz Sutherland
l.sutherland@open.ac.uk

TEACHING AND LEARNING TECHNOLOGY

SUPPORT NETWORK

A PICTURE TELLS A THOUSAND WORDS?

Designing accessible Web resources

Advances in multimedia have provided us with a great deal of flexibility in the ways in which we deliver learning resources. Graphics, audio, and video can all be harnessed for conveying complex information. The growing popularity and accessibility of the WWW has provided yet more opportunities, bringing multimedia resource development within the reach of most lecturers.

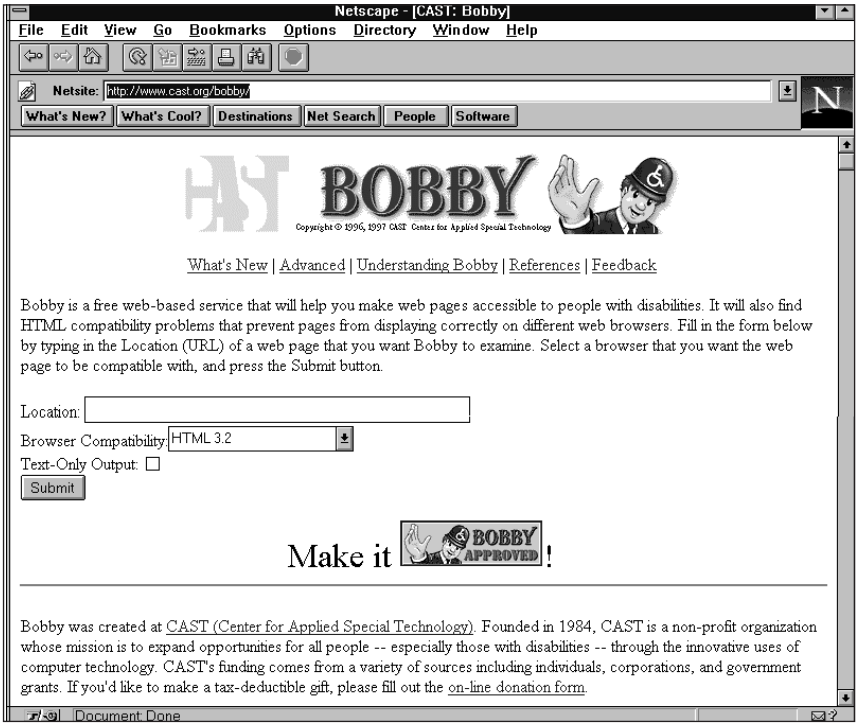
You would think that all this would make learning resources more accessible to people with disabilities, and indeed there are many advantages to Web based materials: they are already in electronic form and can be manipulated by enabling technologies such as speech synthesisers or screen enlargers, they can be accessed at a distance at the students own pace, technology can facilitate communication. In fact, multi-(ple)-media means that the possibility exists for materials to be delivered in whatever medium suits a particular individual.

However, since the Web grew so quickly there was initially little available information on good design principles, and more particularly on how to ensure that Web based materials are as accessible as possible to people with disabilities. We are not necessarily talking about vast changes to the way things are done: a bit of common sense and a few general principles, such as making sure there are text alternatives to graphically based links, giving links informative names, providing text-only versions of any particularly complex pages, can go a long way to making your Web resources much more accessible.

This is not the place to enter into detail about the issues involved and in any case there are already a number of good sources of information for those wishing to follow this up. Links to some of these can be found at

http://www.bangor.ac.uk/cal/html/tltsnuwb/sndesgui.htm

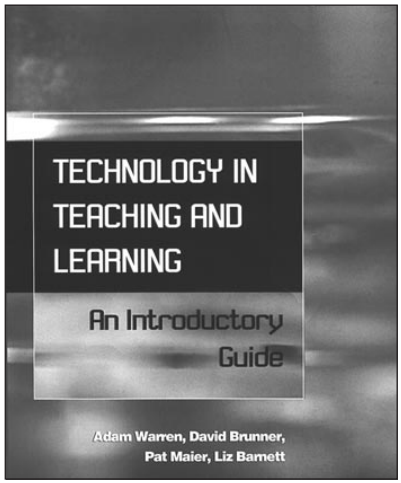
Most of the guidelines which apply to increasing accessibility for people with disabilities are actually good general design principles and will increase the value and impact of your electronic materials for all users, who - after all - have different learning styles and may work better or worse with certain types for materials regardless of any “disability”.

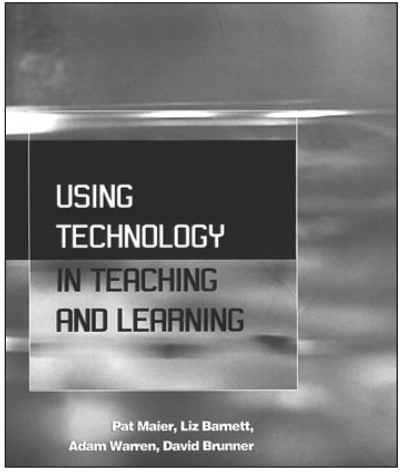


Bobby is a free, web-based service that can be asked to check and report upon the accessibility of web pages

Most of the guidelines which apply to increasing accessibility for people with disabilities are actually good general design principles and will increase the value and impact of your electronic materials for all users, who - after all - have different learning styles and may work better or worse with certain types for materials regardless of any “disability”.

Debbie Sapsed, TLTSN Centre
University of Wales, Bangor





'Technology in Teaching and Learning: *a guide for academics*'

THE BOOKS OF THE GUIDE ARE RELEASED

'Technology in Teaching and Learning: a guide for academics' has now sold out at the University of Southampton. The books from the guide are now being published by Kogan Page and should be out at the end of October.

Their full references are:

Maier Pat, Barnett Liz, Warren Adam, Brunner David, (1997)
Using Technology in Teaching and Learning, Kogan Page, London.
This book looks at the educational application of technology.

Warren Adam, Brunner David, Maier Pat, Barnett Liz (1997)
Technology in Teaching and Learning: a guide, Kogan Page, London.
This book is a guide to understanding the technology.

Both books cross reference one another and can be used independently or together.

The video that was part of the original pack will continue to be sold by the University of Southampton. It gives an overview of 4 kinds of technology used in education: computer based learning: resource based learning: computer mediated communications: and the World Wide Web. It is an ideal primer for discussions on the use of IT in education. A powerpoint presentation and accompanying materials will support this video. It is ideal for educational developers or staff responsible for introducing IT into their department.
The supporting material for the video will be available in February.

If you are interested in either the video, the supporting material or both then please contact

Pat Maier at the University of Southampton,
Email: pjm@ecs.soton.ac.uk.

REVIEW

Shaping Our Future

Higher Education institutions find themselves at an interesting period in their development. Along with the major changes happening in the area of funding and student numbers, the growth of networking poses some interesting challenges, threats and opportunities. At a period when the opportunities for students to choose their pathway through higher education are increasing and competition is growing to attract the best students, universities are also in a much better position to collaborate. This is especially true in the West of Scotland where the high speed network of the Metropolitan Area Network (MAN) is now in place and collaborative ventures such as Clyde Virtual University and Clydenet are having an impact. So a delicate course has to be steered between joint ventures which could erode the competitiveness of some institutions and isolationism which, while retaining the competitive edge, diminishes the opportunities for cost savings and true advancement in quality education.

As part of its commitment to the dissemination of information and to encouraging collaboration among institutions, the Glasgow Centre of the Teaching and Learning Technology Support Network (TLTSN) organised a one day conference, Shaping Our Future, on 19th June 1997 at the University of Glasgow.

The conference was open to staff from the HE institutions in the West of Scotland and attracted remarkable interest, with some 150 attending. The keynote speech was given by Professor Rick Trainor, Vice Principal of the University of Glasgow.

The focus of the day was on cooperation and collaboration between the West of Scotland Higher Education institutions on the future of IT in teaching and learning. The nine TLTSN Centres made presentations on a variety of themes both technical and institutional. Among the topics were:

- Using and creating video in teaching
- The Internet for Teaching and Learning: delivery mechanisms and infrastructure
- Choosing the right learning technology:barriers and drivers

and

- Campus wide learning technology dissemination.

Each session stimulated discussion on the future possibilities for the six West of Scotland institutions. Over twenty poster sessions from the majority of Scottish CTI centres and from significant learning technology projects in our area illustrated the possibilities of IT in teaching and learning and the assistance which could be provided to teaching staff.

Two panel sessions were held. One comprised service providers working with HE in the area such as CTI, Learning Technology Dissemination Initiative (LTDI), Teaching and Learning in Scottish Metropolitan Area Networks (TALiSMAN), TLTP, Clyde Virtual University and Clydenet. The other which closed the day comprised a representative of each of the HE institutions and included the Vice Principals of the University of Paisley, and the Royal Scottish Academy of Music and Drama and senior staff from Glasgow Caledonian, the University of Glasgow, Glasgow School of Art and Strathclyde University. At this session each representative gave an account of the situation at their institution and what the possibilities were for development and collaboration in the future.

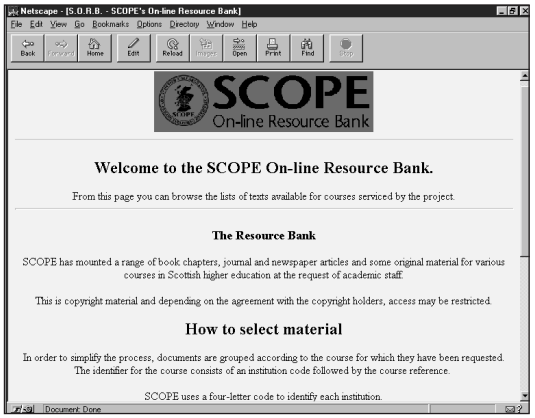
Delegates gained a clearer understanding of the present situation in HE institutions in the West of Scotland and discussed how their institutions could share infrastructure for support as well as hardware. One of the successes was that the conference attracted a wide range of staff, many of whom were only beginning to consider the possibilities of using IT in their teaching and who were enthused by the possibility of cross institutional collaboration.

Robin Shaw
TLTSN Centre
University of Glasgow

ON-DEMAND AND ELECTRONIC RESERVE SERVICES: ARE THEY WORTHWHILE?

The major impetus to the development of on-demand and electronic reserve (OD/ER) services in the UK has been through the Electronic Libraries (eLib) programme. Some dozen projects have been addressing the need to find new and effective ways of providing key recommended reading to students. Copyright cleared extracts are digitised and stored in resource banks to deliver, whenever required, either printed course packs or single texts, usually via the Web. One of the key characteristics of 'on-demand' is the ability to customise products: reading material can be tailored to the needs of a specific course by a lecturer - or to individual need, where delivery is online direct to a student.

While there is some overlap in the eLib on-demand projects there are also quite different approaches. They vary in scale: some concentrate particularly on technical issues and some are subject specific. One deals with European texts and another with multimedia. Now a study commissioned by eLib[1] has reviewed the impact of on-demand and electronic reserve (i.e. electronic 'short loan' systems) on teaching, students and libraries in the UK. The work was carried out by researchers at Liverpool John Moores, South Bank and Stirling Universities using a combination of desk research, site visits and systems modelling.



Surveys of traditional library short loan systems show widespread dissatisfaction among students, academics and librarians themselves. A synthesis of the evaluation findings of the eLib OD/ER projects identified several necessary conditions for the successful adoption of such services. In particular, there must be a critical mass of quality digitised material readily available if academics are to be encouraged to adopt OD/ER and to take account of its potential in course design.

Where online delivery is required, there must be an adequate IT infrastructure and appropriate support for both students and staff. To date there has been no large scale delivery of student texts and the resource requirements for this need further investigation - not least with regard to printing facilities.

It is clear that the technology is available to do all that is required. With regard to digitisation, text format has generally been preferred by eLib projects over image, and PDF seems to be winning in popularity, perceived as a new standard. A substantial drawback however, is the cost and time required for scanning, optical character recognition and proof-reading. Some real progress has been made in negotiating electronic copyright clearances with publishers, and determining royalty rates. The JISC/ Publishers Association working parties considering payment mechanisms, fair dealing and a draft model licence have added to this. However, until publishers and authors mandate a 'one-stop shop' for electronic permissions, copyright clearance will remain inefficient, costly and uncertain.

The study concluded that there could be significant advantages in the OD/ER approach, providing copyright clearance procedures can be streamlined and the costs of digitisation shared among institutions. (Of course, as more electronic text becomes available direct from publishers the digitisation costs will be reduced. However in the case of books, this is likely to be surprisingly slow). eLib has recently issued a call for proposals to develop a resource bank of suitable materials which could be used at any subscribing institution in the UK: the proposed service would also facilitate copyright clearance and digitisation of new texts - watch this space!

[1] The impact of on-demand publishing and electronic reserve on students, teaching and libraries in higher education in the UK. Bristol, JISC, in press

Carolyn Rowlinson
ELib SCOPE Project, University of Stirling

eLib on the web:
http://www.ukoln.ac.uk/services/elib/

UPDATE

FUND FOR THE DEVELOPMENT OF TEACHING AND LEARNING (FDTL)

What is the FDTL?

The Fund for the Development of Teaching and Learning (FDTL) was launched by the HEFCE and DENI in December 1995 to support projects aimed at stimulating developments in teaching and learning and to encourage the dissemination of good teaching and learning practice across the HE sector.

Good practice is identified through the quality assessment process: bids can only be made by those institutions that demonstrate high quality in their educational provision. FDTL is the first initiative to link quality assessment results to the allocation of funds to the HE sector. FDTL is currently in its second phase and a total of 63 projects, representing 23 subjects, have been funded. An overall total of just under £14 million has been allocated over four years.

What subjects does it cover?

The 44 projects funded in phase one covered the 15 subjects assessed between Summer 1993 and Spring 1995 - Law, History, Chemistry, Mechanical Engineering, Applied Social Work, Business & Management Studies, Computer Studies, Architecture, English, Environmental Studies, Geography, Geology, Music, Social Policy & Administration and Anthropology.

The 19 projects funded in phase two covered the eight subjects assessed between Spring 1995 and Autumn 1996 - Chemical Engineering, French, German, Iberian Language & Studies, Italian, Linguistics, Russian & Eastern European Languages & Studies and Sociology.

How is the programme co-ordinated?

The FDTL programme is co-ordinated by a team of four - Carole Baume, David Baume, Graham Gibbs and Ranald Macdonald - within a job share arrangement. The team are based in the Centre for Higher Education Practice (CHEP) at the Open University. The FDTL Co-ordination Team's roles include:

- Providing educational development support for individual projects and for project staff
- Supporting the management of individual projects
- Encouraging co-ordination and connections across projects
- Collecting and disseminating information on FDTL projects and FDTL as a whole
- Advising the HEFCE/DENI
- Facilitating the management of change in learning and teaching through the FDTL programme.

Co-ordination methods include:

- Visits to projects
- An annual conference for the project teams
- Participating in project events and meetings
- Advice and feedback on questions and issues raised by projects.
- Workshops and written briefings on themes common across projects, such as project management, dissemination and evaluation.

What next for FDTL?

It is expected that funding for phase three will follow the assessment process ending in September 1998 - funding for the 16 subjects covered by phase three will thus commence in October 1999. However, the timing and shape of phase three will be strongly influenced by the evaluation of the FDTL programme in phases one and two, and by the development of the HEFCE's Learning and Teaching Strategy.

How can I find out more about FDTL?

Contact us, and ask for a copy of our newsletter:

FDTL National Coordination Team
Centre for Higher Education Practice
The Open University
Walton Hall, MILTON KEYNES, MK7 6AA

Tel: 01908 858434
Fax: 01908 858438
Email: fdtl@open.ac.uk

And read the FDTL Update in the next TLTP Newsletter, which will describe some of the projects and their work.

fdTL

FUND *for the* DEVELOPMENT *of* TEACHING *and* LEARNING
COORDINATION

UPDATE

Joint Information Systems Committee Sets up:

JISC ASSIST

Background

The summary of responses to the JISC Issues paper noted that **"a strong message from the JISC Issues paper was that the opportunities presented by IT are outstripping the ability of the sector to assimilate and exploit them. More guidance and education is required, as is a greater degree of awareness of the benefits and pitfalls of technological opportunities. The barriers, including lack of network access, to take up must be better understood".** The Strategy states JISC's commitment to address these issues by putting in place an awareness unit. JISC ASSIST is the result. Although ASSIST stands for the "Activities, Services and Special Initiative Support Team" it seems likely that the meaning of the acronym will be forgotten as (for once) the acronym has some real meaning!

Dr Anne Mumford, known in the community for her work with the Advisory Group On Computer Graphics (AGOCG) will head JISC ASSIST. Anne will work closely with Norman Wiseman, JISC Head of Programmes.

The setting up of JISC ASSIST is particularly timely given the recent Dearing report which notes: "the innovative exploitation of Communications and Information Technology (C&IT) holds out much promise for improving the quality, flexibility and effectiveness of higher education. The potential benefits will extend to, and affect, the practice of learning and teaching and research. C&IT is also… needed to support high quality, efficient management in higher education institutions" (para 13.1). JISC ASSIST will be an important element in JISC's response to the Dearing report.

MISSION OF JISC ASSIST

To close the gap between the availability of Communications and Information Technology products and services and the Higher Education community's ability to deploy them.

OBJECTIVES

The objectives of JISC ASSIST are to:

- Support and encourage those charged with a C&IT strategic brief in UK HE institutions to meet the objectives of their information strategy.
- Ensure that UK Higher Education Institutions are fully aware of the activities and services provided by JISC and understand their strategic importance.
- Channel feedback to JISC from the community to help inform JISC's discussions and planning of future work.

ACTION PLAN

- JISC ASSIST will identify key areas of concern each year and focus on these through briefing papers and workshops. The key technology areas in year 1 are to be collaborative working, security, student computing, lecture room services. The workshops will provide a means of engaging with the community and providing feedback to JISC.
- To help promote JISC and other HEFC initiatives to the community, JISC ASSIST will concentrate on a limited number of subjects each year. In the first year these are to be social sciences and art & design.
- JISC ASSIST will contact all sites individually and set up meetings with those senior management charged with responsibility for C&IT. Briefings are to be conducted by people with senior management experience knowledgeable about JISC activities.
- Conduct an audit of current training, awareness and dissemination activities within JISC programmes, services and initiatives. Promote these and identify gaps.

LINKS WITH TLTP AND TLTSN

It is essential that JISC ASSIST links closely with all initiatives and aims to work with these and not to reinvent wheels or duplicate work. Anne Mumford will liaise closely with those co-ordinating programme areas including TLTP and the TLTSN.

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Fax: 01509 223989
Email: assist@jisc.ac.uk

LEARNING TECHNOLOGY DISSEMINATION INITIATIVE

A Fourth Year for LTDI

The Learning Technology Dissemination Initiative (LTDI) was set up in August 1994 with an expected life-span of three years. However, against the background of the Dearing committee report's comments on Communication and Information Technology and the positive result of the external evaluation of LTDI's earlier activities, SHEFC decided to extend our funding for a further year.

Scope of Year Four

Year four of the LTDI is slightly different from the previous three years. There is to be a shift of emphasis away from subject specific support and a stronger emphasis on passing on the experiences gained during the life of LTDI, with the aim of developing effective implementation support capabilities at a local, institutional level. Accordingly, this year's team have all worked with LTDI in the past, but now will be focussing on general aspects of the use of learning technology as well as their own specialist subject areas.

We shall continue to offer an advice service to academic staff: to inform, assist, and where appropriate to provide detailed support throughout the process of integrating information technology into their courses.

The main activities for the forthcoming year will be:

- **A course on Supporting Learning Technology Implementations:**
  An opportunity for a small number of members of staff from SHEFC funded institutions to be trained in supporting the implementation of Communications and Information Technology for the enhancement of learning.
- **An Evaluation Facility:**
  Which will be set up in collaboration with other bodies throughout the country, to provide advice on evaluating the effectiveness of learning technology implementations.
- **Conferences, workshops and seminars:**
  We are planning two major conferences, one on the role of learning technology in assessment (in January) and the other on evaluating learning technology implementations (in May). In addition we will continue to provide workshops and seminars tailored to the needs of individual departments and institutions.
- **Publications and On-line Information:**
  We will continue to publish and distribute booklets and leaflets on the use of learning technology. We are also developing our website into an integrated on-line resource, giving access to much of the material in our publications, background material used in their preparation and facilitating communication between people interested in the use of learning technology.

For further details look at our web pages:
http://www.icbl.hw.ac.uk/ltdi/
or contact us by email at ltdi@icbl.hw.ac.uk
or by phone on 0131 451 3280.

Phil Barker,
Implementation Support Consultant,
Learning Technology Dissemination Initiative (LTDI)

Use of MANs Initiative (UMI)

Using Scotland's MANS

Computers can do things that books can't: they can show moving pictures and animations, they can ask questions and say whether and why the answer is correct, and they can link information together conveniently.

All over the world people are creating teaching packages to make use of these capabilities, and Scotland is no exception: many Scottish academics have been involved in TLTP projects and in other initiatives to create and evaluate software for use in teaching and learning.

Scotland's computing infrastructure offers yet further opportunities to developers of educational software, since all the HEIs in Scotland are connected to one or other of Scotland's four Metropolitan Area Networks (MANs). The MANs use ATM technology, and they operate at 155 Mbps (mega bits per second), which is fast: as a comparison, the new link installed from the UK to the USA operates at 45 Mbps. The Scottish MANs are in turn connected together at the same high speed. This effectively creates a nation-wide MAN - or, to look at it another way, perhaps a nation-wide LAN, since Scottish users find that a computer at the other end of the country can respond to requests just as quickly as a computer in the next room.

update

One way of using this high bandwidth has been to develop teaching materials for use with the World Wide Web, with each package being made available on a single powerful server for access by students and teachers anywhere in the country. It isn't necessary to create CD ROMs and then distribute them: the network is powerful enough to distribute the materials on demand to users all over the country.

The Use of MANs Initiative (UMI), which was set up by the Scottish Higher Education Funding Council (SHEFC), funded about 40 projects which produced teaching materials for use over the MANs. UMI also funded the installation of hardware to support the production and delivery of the materials: video servers, streaming audio servers, and servers connected directly to the ATM network were bought and developed. How well these servers will perform when usage starts to increase is not yet clear: at the moment, although students from all over the country could access these materials, in practice it still tends to be students on the same MAN who do so. As the materials become embedded in courses and as teachers at more and more institutions become aware of the facilities available, we can expect the inter-MAN traffic to increase, and also the load on individual servers to increase. Network traffic is monitored closely to see what the effect of increased accesses will be: powerful though the network is, it's not infinitely so!

UMI has also funded the installation of ATM based videoconferencing facilities at all HEIs throughout Scotland, and this is the first academic year that these facilities will be bookable by all academic staff for meetings, tutorials and other teaching sessions. The quality of the video and audio is near-broadcast standard, and this makes an enormous difference to the success of meetings held in them. Eight sites can take part in the same conference (so long as they have booked the facilities in time!), and the audio is 'mixed', meaning that the sound from every studio is audible to participants in all the other studios, throughout a meeting. This feature makes meetings much more realistic: it enables murmurs of support, giggles, or other comments to be heard, so that speakers have an idea of the reaction they are causing. Medical departments are interested in the very high quality of the video since this makes them think of the possibility of remote diagnoses based on movement (perhaps a consultant looking at a beating heart on screen), and of teaching subjects such as anatomy which require very detailed images. The next stage may well be for similar equipment to be installed in operating theatres or anatomy laboratories.

Jean Ritchie
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