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ICT support at the British Open University for student projects at a distance

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ABSTRACT

In recent years the British Open University has been providing increasing ICT support to distance learners carrying out projects within the Faculty of Technology and elsewhere in the University. This paper reports briefly on three generic support tools:

1. A CD-ROM providing general guidance on planning, carrying out, and writing up a final-year undergraduate technology project;

2. The 'Electronic Information Search Guide', designed as a user-friendly front-end to a variety of websites, bibliographic data bases, electronic journals, and other information sources; and

3. ROUTES (Resources for Open University TEachers and Students), a Library service providing access to selected quality-assessed Internet resources for Open University courses, searchable by course or keyword.

By means of such tools, distance learners can enjoy resources for project work similar (or in some cases, even superior) to those of their face-to-face counterparts, including on-line access to the full text of many journals. This paper reports the current state of (1) and (3), and work in progress on (2). The CD-ROM (1) was designed initially for the comparatively small numbers of students (up to 100 per year) carrying out a final year, 600-hour undergraduate project. It is now offered to some other students taking projects, and is also being developed - as is the Search Guide (2) - in support of a new, 300-hour project course planned to attract over 1000 students per year. ROUTES (3) currently provides course-specific WWW links for around 100 courses throughout the University, and is expanding rapidly.

1. INTRODUCTION

Distance learners have traditionally been at a disadvantage compared with face-to-face students when carrying out project work in technology, in particular as far as general project support and access to libraries is concerned. Over the last few years, however, the British Open University has made a considerable investment in ICT support for such students.

2. THE TECHNOLOGY PROJECT SUPPORT CD-ROM

The Project Support CD-ROM was designed to provide support to students of the Faculty of Technology's 600-hour final-year project. (See: *http://technology.open.ac.uk/t402/*.) It was first supplied to students in 1999. Before then, outline guidance had been distributed only in printed form, and had been kept to a minimum.
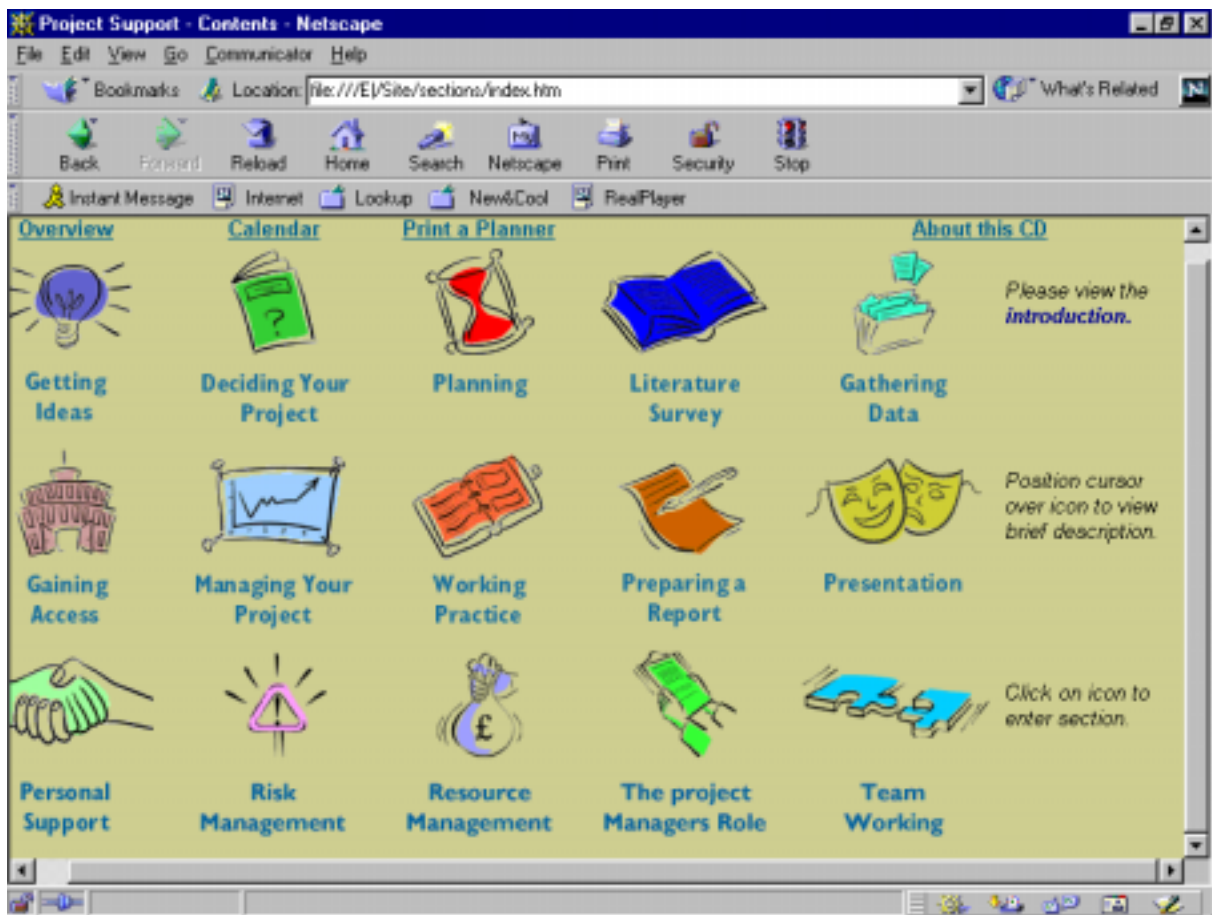

Figure 1

Figure 1 shows the contents screen of the CD-ROM. The CD is designed as a resource pack, and there is far more material provided than any individual student will need for a given

project - particularly as project titles can range over the whole area of Faculty activity, from technology policy and environmental studies to mechatronics or telecommunications. Students are encouraged to plan carefully how to use the CD, and the structure of the data is designed to make this as easy as possible. For example, clicking on any of the major sections (represented by the icons) on the contents screen leads to a display in the format of Figure 2.
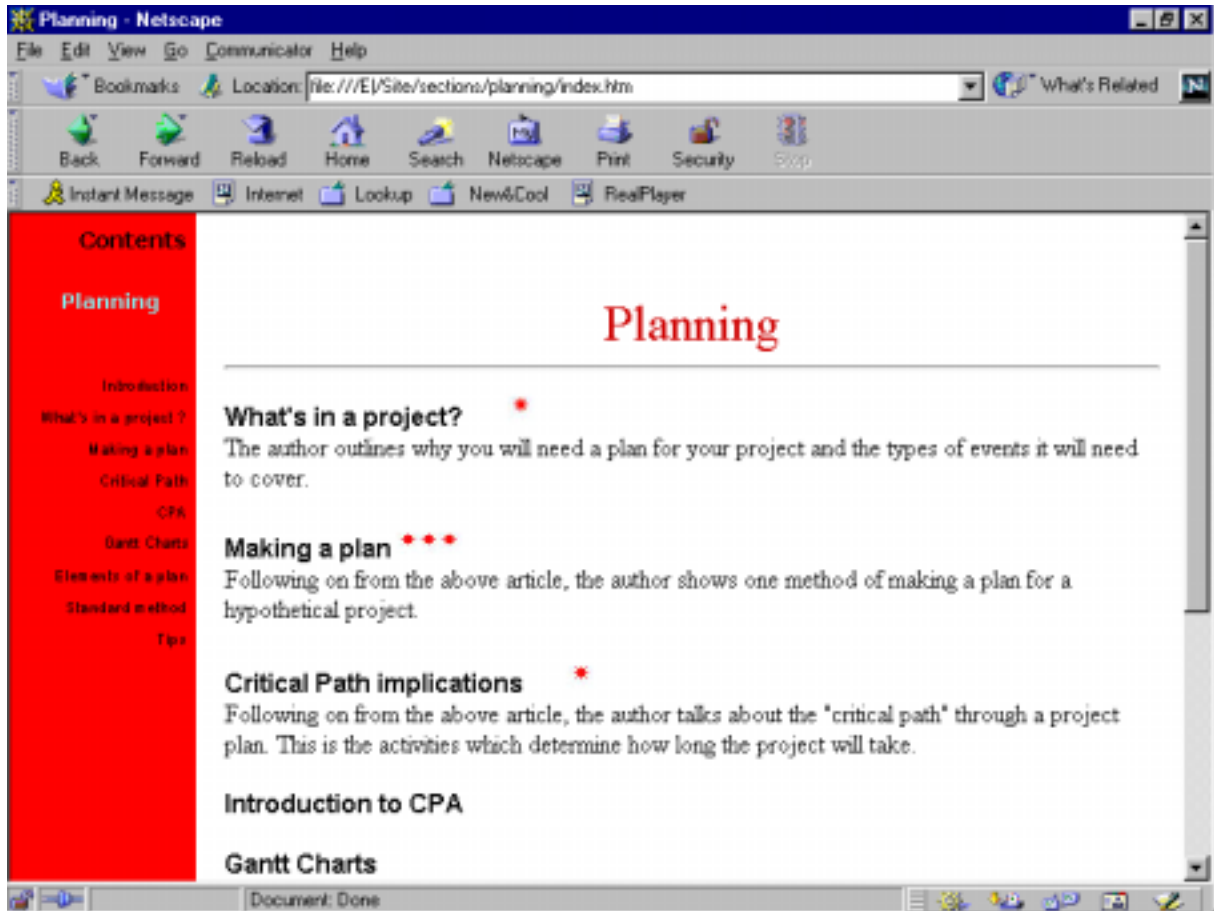

Figure 2

The navigation bar on the left gives links to each individual article, while the main portion of the display gives a brief outline of the contents of the section. The navigation bar remains visible whenever the user is working within a document in this section.

Student reaction was encouraging when a survey was carried out at the end of 1999. All but one of the 41 respondents (66% response rate) had used the CD-ROM resource, a significant proportion of them supplementing their home computer by also using a work-based PC. Moreover, the articles appeared to be used by students in the way designed by the Course

Team. As noted above, students were expected to select articles according to their needs, so for any individual section, it was not expected that large proportions of students would read all the articles. The response to this aspect of the CD-ROM was as follows:

Section	Proportion of respondents who read most or all of the articles on the CD-ROM
Getting Ideas	20%
Deciding your project	39%
Planning	40%
Literature	24%
Gathering data	28%
Managing your project	46%
Preparing a report	44%
Presentation	50%

The CD-ROM 'articles' include text, animations and audio. For example, an animated introduction to critical path analysis is included, as well as an off-line demonstration of the use of an on-line data base – with an audio commentary to guide the user through the complexities of the search. Overall, and encouragingly, 73% of respondents found the CD-ROM articles they read 'useful' or 'very useful'.

Following its successful introduction into T402 *Technology Project* (aimed primarily at the comparatively few Open University students – currently up to 100 per year – wishing an MEng qualification and ultimately Chartered Engineer status), the CD-ROM has also been used to support the project component of T306 *Managing Complexity: a Systems Approach*. Parts are also being re-used or adapted to support the 300 hour, TM420-6 *Information Technology & Computing Project.* This course, designed for the 1000 or more students per year aiming for a bachelors' qualification and registration at intermediate level by one of the British Engineering Institutions, is new for 2002; further information is at:
http://telematics.open.ac.uk/cor/tm420-6/)

3. THE ELECTRONIC SEARCH GUIDE

For a number of years now, a printed guide to information searches has been produced as a resource for students of various Open University technology courses involving project work. The text covers topics such as: information management and search techniques; libraries and how to use them; printed and electronic sources of information; the WWW and how to exploit it effectively. Over the years the size of this guide has increased significantly (it is now 127 pages) and the annual updating and reprinting has become increasingly time-consuming and expensive. At the same time, an increasing proportion of the resources described were becoming available on the Web, the OU was subscribing to newly available content of academic value (such as electronic journals), and the great majority of technology students now had the necessary Internet access. A decision was therefore taken to convert the guide into a hypertext resource, which will be accessible either on CD-ROM or on-line. Figure 3 shows the contents screen of the new *e-Guide*.
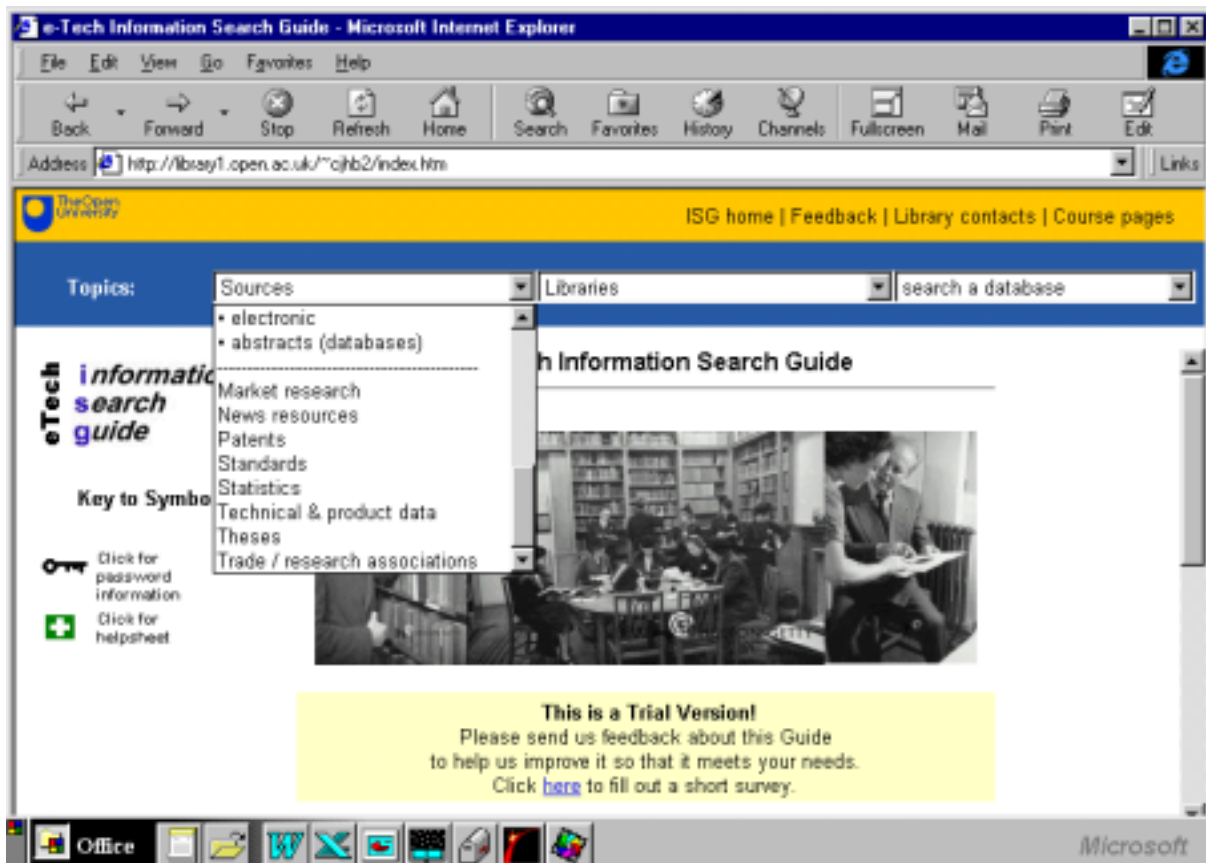

Figure 3

The basic structure consists of three drop-down menus, of which part of one is shown in the Figure. These menus enable a student to proceed with a minimum of mouse clicks to a wide range of on-line electronic journals, library catalogues, bibliographic data bases, and so on – or to authoritative information on how to get the best out of such facilities. Information on gaining passwords to the individual external sites is included, as are help files. A significant advantage of the hypertext approach over the printed text is that the presentation looks much less daunting to students, and it is far easier to locate a desired resource.

From the content point of view, it is already clear that distance-learning students will now have literature searching and electronic library facilities which approach (and in some ways are even superior to) those of conventional students. Via the *e-Guide*, for example, Open University students carrying out projects will have immediate access to all IEE and IEEE journals in pdf format (claimed to be one third of the world literature in this area); to the 1000 journals of *ScienceDirect*; and to many other sources. Of course, searching such data bases from home via a modem is far from ideal, since not all commercial 'front ends' are designed with such restrictions in mind, and the time taken to locate the article or information required can be quite frustrating and involve the downloading of unnecessary graphics or advertising. However, this modest potential irritation has to be set against the fact that OU students often live remote from any academic library, and for many of them a research trip to the nearest equivalent resource could well take the best part of a day!

The OU Library is also producing a generic, web-based course on Information Skills, using interactive activities – for example, to take students through the process of planning and carrying out searches. This material will link to the subject-specific approach discussed here.

4. ROUTES

The ROUTES (*Resources for Open University Teachers and Students http://routes.open.ac.uk/*) initiative has led to the construction of a database of high-quality Internet resources on course-related topics relevant to Open University students. ROUTES started as a pilot service, but is now fully embedded into Library activities and promoted to course teams as part of the university-wide Learner Support package. The three-year project (1997-2000) came under the umbrella of the Open University's Library's Network Access Programme, and was funded by the University's Learning Technologies and Teaching Office.

ROUTES is not designed specifically for the support of students following project courses, but is rather a portal to the WWW arranged primarily by course topic. It is likely to prove particularly useful for students taking the new *IT & Computing Project*, however, since the latter requires students to choose a project topic closely linked to one of the level 3 courses in IT and Computing that they should already have completed before embarking on the project.

Figure 4

The ROUTES database is a collaborative development, involving both academics and librarians. Academics use their subject knowledge to select and evaluate suitable Internet resources for OU courses and students. Librarians bring their critical information analysis and management skills to select, catalogue and classify quality resources according to the criteria of factual content, currency, authorship, relevance, ease of use, copyright, and stability of the website. The ROUTES database is created by the ROADS (Resource Organisation And Discovery in Subject-based services) open source database management system (*http://www.ilrt.bris.ac.uk/roads/*). Students search and browse the database by keywords,

course codes and course titles, and are provided with lists of resources arranged by course title and subject heading. Records contain details of the title of the resource, owner and creator, a brief description, and web address (URL). When a record is deemed relevant by the students, they can opt to connect directly from the record to the appropriate web resource on the Internet. The database has a simple and easy-to-use interface, shown as Figure 4, with few graphics in order to maintain performance of the service and to be easily accessible to students working remotely at home with a computer, telephone and modem. There are currently over 2000 resources in ROUTES and over 100 courses use the system (a maximum of 40 sources per course to ease workload). The average number of accesses to the database is 7,000 per week.

5. CONCLUSION

This paper has briefly presented three new ICT-based resources for students carrying out technology projects at the British Open University. Although the three projects are independent, they share a number of features:

- they represent a continuing shift within the Open University from a linear, and often rather prescriptive approach, to a resource-based one – in each of the three case studies presented here, students are offered a range of resources, and an important part of the learning is to get to grips with the management of such resources

- students are provided with a number of tools to assist them in this approach; the CD-ROM and the *e-Guide* in particular provide a wealth of easily-accessed advisory material

- although exploiting the opportunities made possible by the information and communication technologies, all three projects draw heavily on traditional expertise in project management, librarianship and other skills associated with conventional project support in an academic environment

- they offer students an opportunity to gain a reasonably high degree of 'information literacy' (see Appendix) as part of their project work

In each case, the CD-ROM or web-page presentation has greatly reduced the apparent complexity of the material to students, without being excessively prescriptive.

6. ACKNOWLEDGMENTS

The author gratefully acknowledges the work of the T402 and TM420-6 Course Teams, and the various Open University Library staff involved in the *e-Guide*, *ROUTES* and *Information Literacy* projects. Section 4 is largely edited, with permission, from the text of O'Sullivan *et al* (2000).

7. REFERENCES

Hunter-Brown, C., 2000, *Technology Information Search Guide*, Open University, Milton Keynes, UK

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O'Sullivan, U., Ramsden, A. and Needham, G., 2000, *Resources for Open University Teachers and Students (ROUTES) Project Report*, Open University Library, Open University, Milton Keynes, UK

Turpie D., Ramsden A., Davies A. and Heffernan P.A., 2000, *Resources for Open University Teachers and Students (ROUTES) Evaluation Report*, Open University Library, Open University, Milton Keynes, UK

8. RELATED URLs

All accessed in February 2001

> *http://routes.open.ac.uk/*
> *http://technology.open.ac.uk/t402/*
> *http://telematics.open.ac.uk/cor/tm420-6/*
> *http://www.ilrt.bris.ac.uk/roads/*

APPENDIX: INFORMATION LITERACY

Much has been said and written in recent years about the need for 'computer literacy'. Yet computer literacy is only half the story. The information and communication technologies are making available ever-increasing amounts of information to individuals, and skills in 'information literacy' are also needed in order to exploit this information effectively.

Information literacy, a concept rapidly gaining importance in the academic world, includes:

- an understanding of the ways of structuring and organising information, and the nature of information systems such as databases, libraries and the Internet

- the ability to make a reasoned assessment of the quality of information obtained from various sources

- the ability to make effective searches of library catalogues, electronic databases and the World Wide Web

- the ability to organise the information obtained in a useful and productive way

- the ability to cite references in an appropriate way, and to produce a bibliography in a standard, accepted form

- an understanding of the concepts of plagiarism, copyright, and other ethical and legal issues, including problematic aspects of information in electronic form

While the materials described in this paper were not designed explicitly to teach information literacy in a structured way, they are important additions to a student's 'tool box' in this area.