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C&IT SKILLS: CURRENT SITUATIONS, AVENUES OF POSSIBILITY, EMERGING SOLUTIONS



CITSCAPES Project CASE STUDY REPORT



**UNIVERSITY OF
STIRLING**

UNIVERSITY OF STIRLING

A CITSCAPES Publication

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1. Executive Summary

The following issues emerge as central features in the development of teaching and learning in communications and information technology (C&IT) for this case study HE institute:

1.1. Character of Institution

University of Stirling was founded by Royal Charter in 1967 and supports nearly 8000 students. It is a mainly residential, campus-based University set two miles from the centre of Stirling with other smaller campuses in Inverness and Stornoway. The University is research-led, but with a commitment to widening access and to innovative teaching methods. Academic departments are organised into four faculties: Arts, Human Sciences, Management and Natural Sciences. In the CITSCAPES Survey, we classified this institution as a ‘medium size’, ‘pre-1992 university’. Stirling University achieved a high middle ranking position in the ‘FT 100 University League Table 2000’.

1.2. Models of C&IT Provision

University of Stirling has no compulsory C&IT skills training at present. Two level 1 credit-bearing undergraduate introductory C&IT courses are offered by the Department of Computer Science and Mathematics; these basic introductory courses are available to all undergraduates in Stirling's modularised system. Non-credit bearing training includes the ‘Ultimate Survival Guide’ (a voluntary course covering both IT and Library skills presented in the introductory week and attended by over 80% of students), self teach online training guides, training on specialist software for disabled students, tutor led student training sessions, a drop-in service and library information induction. Training is given by a variety of providers of which Information Services plays a key role. Other providers are the Computer Science Department and the Centre for Research and Development in Learning Technologies (CRDLT). Information Services

recently noted that the nature of existing provision is neither totally centralised nor entirely devolved.

1.3. Strategic Perspectives

The *University of Stirling* is largely still following the strategic objectives set out in the Strategic Plan of 1997, which was updated in June 2000. In it, the institution realises that although economic, pedagogical and practical considerations may limit the wholesale deployment of C&IT, advances in this area will be dependent upon the goodwill and enthusiasm of many different players. Information Services and the Division of Academic Innovation and Continuing Education (DAICE) (through the CLI or Coalition for Learning Innovation) will therefore continue to work closely with the four faculties in identifying and promoting the measured use of modern technologies in underpinning innovative teaching and learning. More recently, the university has recognised the need for a strategic investment plan for future provision of C&IT, and this is likely to be incorporated into future Strategic Plans. A new Deputy Principal for Teaching and Learning has been appointed and will commence his post in August 2001. However, the overall strategic perspective on C&IT induction at institution level can be characterised as under development and currently devolved to individual departments (including Information Services).

1.4. Emerging Directions

At *Stirling University*, Information Services, with the Computing Science and Mathematics Department are currently engaging the academic community at Stirling in debate over the shape of future C&IT induction and training. As part of this debate, it is hoped that a consensus can be achieved over whether or not attendance at the C&IT basic induction session should be compulsory, and whether or not students should be required to complete a formal assessment demonstrating an ability to make use of the university's communications and information technology. Secondly, discussions are currently underway at senior management level to assess possible implications of development, in terms of support, practical guidance and resourcing as C&IT becomes

more firmly embedded in teaching and learning. Hence, the transitional nature of the present situation is emphasised as widespread debate at all levels within the University. In order for these discussions to bear fruit, resourcing issues, financial consolidation, and a long-term plan are being addressed and established.

1.5. Perspective

At *Stirling University* the need for integrated support services and effort to merge library and information technology divisions into a seamless service is the main goal for the future.

'the University is committed to creating an integrated support base to ensure that all staff and students are empowered to make appropriate use of C&IT in teaching and learning'.

(Institutional Strategic Plan, June 2001)

2. Introduction

2.1. General Overview of the HEI

2.1.1. Location and Brief History of Institution

Founded by Royal Charter in 1967 on the historic Airthrey Estate, close to Bridge of Allan and two miles from the centre of Stirling the campus-based University of Stirling is set in beautiful parkland and with its own loch, represents one of the most attractive campuses in Scotland. Some students in Nursing and Midwifery study at Stirling's other campuses – Highland (in Inverness) and Western Isles (in Stornoway) (*University Profile, 2000*). A tiny fourth site also exists at Macrahanish, (near Campbeltown) where aquaculture is supported. A previous site based at Falkirk has now closed and courses transferred to the main Stirling campus.

The University of Stirling is currently ranked 5th of the 13 Scottish universities (Good University Guide 1999) and 16th of 97 UK universities for awarding First and Upper Second Class degrees (Times Higher Education Supplement 1999). In its brief history, the university has twice experienced financial difficulties, the most recent occurring during the early 1990s. Now, management tends to be rather cautious in expenditure/budgeting, but is keen to encourage steady growth rather than rapid change.

Since 1994, Stirling has been under the leadership of Principal Andrew Miller whose primary achievement has been to affirm and strengthen the identity of Stirling University as a learning 'community'. However, Stirling has also sought to maintain and develop its growing reputation for research as well as teaching, paying particular attention in the discipline areas of Education, Applied Social Sciences, and Film and Media Studies.

2.1.2. Brief Mission Statement/Goals

“The Mission statement of the university is to pursue research and scholarship at an international level of excellence and to provide flexible and innovative programmes of teaching and learning in an attractive and vibrant environment.”

(University of Stirling, Profile 2000).

Although the university has a good research profile, with many departments rated as 4,5 or 5* in the most recent RAE, considerable status is accorded to teaching practices at all levels. In the recent Scottish HE Funding Council’s (SHEFC) TQA exercise, top rankings of “excellent” or “highly satisfactory” were awarded to Stirling in 19 of the 20 areas assessed.

The university identifies its approach as being particularly student-centred, aiming to provide students with top quality teaching and adopts a community-orientated, friendly, and welcoming approach. The student-centred ethos is also evident in the encouragement of high levels of student participation in the management decision-making process. The Student Association is extensive, with many activities and support services provided by students for students. The presence of student representatives and liaison officers up to the highest levels of management also confirms senior management perceptions of the student body as providing an additional valuable ‘middle management’ strata.

The somewhat isolated, residential nature of the main campus may also contribute to the ideal of a true academic ‘community’, as students and staff have opportunities to integrate and participate at many additional levels. For instance, lecturers also occupy roles as wardens and counsellors for students residing on campus. In addition, many aspects of research focus upon educational development and pedagogical issues in Higher Education. Academic ‘innovation’ in these areas form a central core of the Stirling mission statement.

2.1.3. Student Profile

Stirling is a relatively small university, but over the past seven years has seen a significant increase in the number of full-time undergraduate students enrolled, spearheaded by nursing education. Stirling University was awarded the NHS contract as provider of (pre and post) registration nursing education for the Forth Valley and Highland and Islands Region. Regarding further potential expansion, it would appear that the campus size, location and primarily residential nature of attendance act as limits, restricting campus-based numbers to around 5000 or so f/t students. However, as indicated in Table 1, approximately 8000 students are enrolled overall when part-time, post-graduate, distance learning and those based at other sites are also included. In particular, the number of students enrolling on part-time and collaborative courses are increasing, as are those accessing education via ‘distance learning’.

	Undergraduate	Postgraduate	Totals
Full Time	5637	767	6404
Part Time	771	639	1410
ALL STUDENTS	6408	1406	7814

Table 1: Student registrations by mode of study (based on academic year 1999-2000)

Conversely, the demand for residential accommodation, typically taken up by young full-time undergraduate students may be dropping. Changes in the student funding structure perhaps means this mode of attendance is no longer financially viable for many students and their families. Hence, it may be argued that Stirling, having primarily promoted itself as a campus-based community, may find that, in order to maintain student numbers, more varied and indirect forms of learning will be required.

However, this direction is not the only possibility.

Table 2 indicates current student profiles in terms of geographical origin.

Region	Full-time 1 st year undergraduates in percent (%)	All students in percent (%)
Scotland	65	66.4
Rest of UK	27	20
Other EU	4	6.5
International	4	7.1

Table 2: Student profile by geographic origin (based on academic year 1999-2000).

In summary, factors such as the non-urban location and residential nature of the site tend to limit potential growth. On the other hand, current trends suggest expansion may still take place, but in a different form: moving in the direction of even greater variation in modes of delivery. Distance-learning modes, part-time courses; technical, vocational and postgraduate courses all continue to expand.

2.1.4. Organisational/Academic Structure

The academic departments are grouped into four faculties: Arts, Human Sciences, Management and Natural Sciences. The largest undergraduate faculty is Management, with Management and Organisation the largest department and perhaps retail studies as the leading subject area. Science/technology are less prominent, as neither engineering nor medicine are offered and computer science forms a relatively small department. Academically, the most prestigious subject areas are Education, Applied Social Science and Film and Media Studies (all rated 5 or 5* in the 1996 RAE).

The University also has a number of cross-faculty and single faculty non-departmental institutes and centres as well as smaller intra-departmental units. The Division of Academic Innovation and Continuing Education (DAICE) is outside of the faculty scheme. It is a large organisation with a broad remit covering both continuing education and innovation in academic teaching, including delivery mechanisms and access to higher education to all sections of the community. Many current projects

(within both DAICE and the Institute of Education) focus on the impact of C&IT upon higher education practices ¹.

Although not a faculty, DAICE offers a number of non-degree courses (e.g. for Continuing Professional Development), and aims to significantly widen access to undergraduate degree programmes by increasing the flexibility by which students can both enter, and complete, their degree.

2.1.5. Special Features: Institutional Features

Innovative methods of teaching and learning are far from recent ideas now being given lip-service at Stirling: From its inception, modular flexible degree programmes have been offered, allowing extensive choice and flexibility. Among undergraduate students, combined honours degrees remain popular and common choices. Stirling was also the first university in the UK to divide the academic year into two semesters rather than three terms. The first semester lasts from mid-September to Christmas, the second from mid-February to the end of May.

There is a long history of C&IT-based innovation in teaching in Stirling. The University housed a number of projects funded under the CTI programmes, including the CTI Centre for Sociology, Politics and Social Policy (SocINFO). Later, one of the most successful TLTP institutional projects, VARSETILE, was based in Stirling as a collaborative venture involving Information Services and academic departments. The Centre for Research and Development in Learning Technology (CRDLT)², although formally faculty-based, is an outgrowth of these activities.

In summary, the most distinctive features of this HE institute are: possession of a unique identity as a campus-based small university, located in a rural setting; and adopting a community-based, student-centred, flexible approach to learning and teaching. It has a

¹ See <http://www.stir.ac.uk/departments/daice/> and <http://www.stir.ac.uk/departments/humansciences/education/> for details of projects and research in this area.

² <http://www.stir.ac.uk/crdlt/about.htm>

long history of innovation in HE provision, implementing systems uniquely suited to its needs, including early modularisation and semesterisation.

2.1.6. Special Features: Student Characteristics

A substantial proportion of students attend on a part-time basis (18%), mainly students drawn from older age-groups, an unusual pattern for an older university (i.e. pre-1992). Some of this is due to an excellent provision of Access programmes locally, and the existence of long-term collaborations with local FE colleges. However, as the majority of students attend full-time and live on campus, atypical age-group, gender and socio-economic patterns may exist in comparison to student profiles at other universities. For instance, a substantial minority (14%) come from overseas although full-time undergraduates are still predominantly UK residents, age 18-21, with more women attending than men. This tendency may be common in HE more generally, but the skewing of course subjects towards nursing & humanities and away from engineering & medicine may suggest the gender ratio here is also somewhat atypically young and female.

Current estimates indicate that 2.5% of all undergraduate students make use of additional support due to physical impairment (particularly wheelchair users and students with visual impairments). Stirling also promotes itself as a university that is willing to go to great lengths to accommodate students with various types and degree of disability and has a number of well-established links with organisations, schools and companies which particularly support disabled people.

2.2. General Overview of C&IT Induction

2.2.1. Brief History

Stirling was among the first UK universities to attempt to bring together computing, networking, media, and library facilities into a single integrated Information Service (IS), providing a centralised support service for teaching staff, researchers and students. For a small university, this structure was identified as a more cost-effective strategy (particularly in terms of manpower) than separate services or devolved support structures. However, it is also the case that a great deal of evolution can take place at departmental level and even at an individual level, as a fairly small university is less-constrained in many ways and can afford staff a great deal of autonomy and flexibility. Hence, the degree of integration and cohesion of different areas within IS has varied extensively over the years and other C&IT training and support services have emerged and evolved at differing rates in other departments.

One of the key forces in the past that allowed IS to become a more clearly defined central unit was the geography of computer labs and offices. The lab space was growing and occupied a significant enough area to become clearly delineated geographically as a separate, cross-faculty facility in its own right. In parallel, IS emerged as a cross-faculty unit and began the process of being defined as a centralised service. Dedicated support staff were allocated to the labs (initially 2 people f/t) thus network maintenance, software training and IT support were all provided by the same body of staff.

Although academic departments in a small university are highly interdependent, there nevertheless exists a great deal more freedom to develop innovative pedagogical practices. In general it is not so much a 'top-down' form of management that exists at Stirling, but a more 'hands-off' style. As a means of creating a suitable environment for innovation at all levels, a bottom-up approach to problem-solving is encouraged. In short, although it would appear that for a considerable time, a single identifiable body, one central IS unit, provides C&IT training within a tight net of other information support services, the picture is far more complex and varied than this structure suggests. Stirling prides itself in both quality teaching and in educational innovation, thus over the

years numerous individuals, both in academic departments and within IS, have pursued various delivery modes and developed a variety of tailored C&IT training programmes.

With specific regard to the history of C&IT training services, this provision was originally aimed at supporting staff rather than students, primarily with network issues – Stirling having had an extensive intranet for a considerable time due to its policy of innovation and its tight campus-based structure. Student needs were primarily met via training sessions in information search strategies and an induction to library facilities provided by members of library staff. Thus, the roots of student and staff training services historically lie in different domains. Although both strands are considered part of IS, at least on paper, as information technologists and librarians do not share a common geographical location, a clear distinction was perceived to exist between these two main bodies of academic support staff

One feature which was central to the original IS structure was the IT Helpdesk. This form of support requires few academic-related staff, with a more administrative form of support assistance. It was designed to provide hardware and software support for staff and also to act as a general fault-reporting service. Students were encouraged to report hardware problems, but generally redirected elsewhere for operating advice or software support. Hence, the role of information technologists was similarly to attend to staff needs, with students being guided into other academic and service domains for assistance on C&IT.

IS started to provide a “Basic Skills in IT” module specifically for students eight years ago (Session 1992/3). The course was spread over the first half of a semester and available to all students on a voluntary and fee-paying basis. At the time, there was some contention about the content of the module that IS proposed and that already being provided for students by the department of Computer Sciences as credit bearing modules. The charge levied to students was nominal (£15) and seen primarily as a way to avoid further criticism by making an increase in the IS share in ‘top-sliced’ university funds unnecessary. However, the charge was notoriously difficult to collect and may never have been cost-effective method (only a deterrent) as around only 400 students per annum were typically taking up this option. It would appear that charging was probably an expensive and counter-productive idea. It is of note that the Psychology

Department 'required' its students all to undertake this module³ and accordingly, the Psychology Department also paid the C&IT fee on students' behalf.

In more recent years IS has seen two significant structural reorganisations. In 1997/8, following a critical review of IT advisory services, these were fundamentally restructured. These changes had an impact on C&IT induction. More recently, following the departure of a key senior member of staff in summer 2000, a more extensive re-structure has been carried out. Its main aim has been to integrate better the user services provided by IS, primarily by creating closer links between the various strands and functional roles existing within IS.

With regard to C&IT training specifically, the appointment of a new Director of IS in 1997 resulted in the following three major changes:

- 1) The fee levied for student training in C&IT was removed. This was seen as a minor alteration however, as the amounts collected did not form a significant budget contribution.
- 2) The mode of delivery was reduced from multiple sessions over half a semester to a single induction period timetabled for delivery to new students during 'freshers' week. This shift in emphasis 'lowered the sights' of student C&IT training. It also concentrated all teaching activities related to the acquisition of information skills into one timeframe as it was presented alongside the provision of essential programme information, library induction and campus orientation.
- 3) IS sought to initiate greater inter-departmental communication on issues related to the changing nature of the learning environment and to identify advisors whose function was to report departmental C&IT needs to IS. It was identified that the emerging set of developments in the use of C&IT in HE generally required that a mechanism be created to ensure adequate discussion of key issues was taking place across the board. It was also believed that once priorities had been discussed and the role of IS more firmly identified,

³ However, it was not technically made a compulsory subject, progression still being permitted.

this would lead to clarification on the level of resourcing required to respond to the following key factors:

The changing nature of the learning environment

- ❑ Protocol on Student Records Information, (utility and security)
- ❑ C&IT training for staff
- ❑ C&IT training for students

2.2.2. IS/Managerial Structure

The present managerial structure is still evolving and has existed for only 6 months. Within IS, the formal team structure reflects three functions: Technological Support, User Support and Administration. Technological Support (which includes both traditional IT functions and collection management functions in the Library) is regarded as specialist and responsible for a well-defined support area. User Support teams provide unified support across the whole spectrum of IS functions. The Directorate provides cross-IS support as the administration team. However, it should be noted that although members of staff are allocated to a “Home Team” they may additionally play essential roles in other teams.

The Information Services team receives input from an Advisory Committee (ISAC) which meets thrice annually. Computer user groups and other forms of user feedback loops also exist via Faculty Boards, Student Representatives and Student Surveys carried out by library staff and the C&IT training team. However, in line with the ideology that IS staff have much creative potential to offer, developments in provision primarily emerge at grass-roots level rather than being based on top-down strategic management principles.

One interesting feature to note is the location of student C&IT training within a “User” Team rather than a “Technology” team. This is significant in that the majority of roles within the Academic Liaison Team (which provides much of the training resource) are library-orientated and with a historic student training orientation. By contrast, historically information technology training and support concentrated on staff needs (the

Basic Skills course being something of an exception). Two to three years ago a small programme was set up for students to log on themselves rather than having to go through IS services at all or to have to use the ‘fault-finding/staff’ helpdesk for allocation of a user ID/password. This further reduced the need for information technologists direct involvement with students. Connections between staff and student support continue to be quite loose, with the technology branch of IS continuing to provide the majority of staff training and support. For students, primary contacts are thus probably perceived as library-orientated first and technology-based second.

2.2.3. Unique Features

As noted earlier, of particular relevance to the use of C&IT in learning and teaching is the relatively high proportion of people with disabilities who are attracted to study at Stirling University. IS carries out an individual needs assessment for all students who seek special support services. A software application profile is created which ‘follows students around’ to any terminal within the campus. Wherever and whenever the student logs on, the particular software configurations they personally require to access the system are instantly accessible. For example, a blind user may log on at any terminal and the voice-operated system used to interact with the computer will automatically be activated. Stirling is currently acting as a test bed for such facilities, although little research is carried out in this field – these facilities are seen primarily as a student-service rather than a research-led interest area.

3. Current Situation

3.1. Nature of Provision

At Stirling there is no compulsory induction or training course in C&IT, nor is a 'baseline' level of competence required of students. However, it has recently become essential that, to make effective use of the library, students are taught how to obtain and use a network user name and password (the library catalogue is now primarily accessed via 'webpac' and networked computers).

It is likewise considered essential that distance-learning students and remote users possess a certain level of skill in the use of C&IT, although specific entry requirements have not been explicitly stated.

Members of academic staff also have high expectations concerning undergraduate student C&IT skills and many now provide a proportion of their teaching materials online and expect students to be able to communicate with them via e-mail.

Student C&IT induction and training is predominantly provided by one centralised unit (Information Services), largely through the Ultimate Survival Guide (see section 3.1.1). However, it is also possible to identify two other main providers of student induction and training:

- Information Services
- The Computer Science Department
- The Centre for R&D in Learning Technologies (CRDLT)

Information Services recently noted that the nature of existing provision is neither totally centralised nor entirely devolved: numerous overlaps and gaps exist and efficiency in resourcing is of some concern.

The following have been identified as factors contributing to patchy and inadequate provision:

- it cannot (yet) be assumed that student knowledge on entry is sufficient

- the voluntary rather than compulsory way C&IT skills are being taught
- the separation that exists between subject-specific teaching and C&IT
- the lack of a coherent continuous C&IT programme
- some students may be missing it entirely

Closely related to the issue of C&IT skills training being non-compulsory, at Stirling C&IT induction and training carries no credits for the vast majority of students. However, some 1st year undergraduate introductory C&IT courses are credit-bearing – those offered by the Department of Computer Science and Mathematics. One is a basic introductory course, taught in the form of a half unit module (17L6: Information Technology Skills) and the other is marginally more complex and counts as a full unit module (3131: Computing Science I: Skills and Applications)⁴. These units are not restricted to computing or maths students but are available to all undergraduates, in line with Stirling’s highly modularised approach.

Postgraduate, distance-learning, continuing professional development courses etc. require more customised forms of C&IT induction and training, both in terms of content and pedagogical approach. The Coalition for Learning Innovation (CLI) and CRDLT offer some support for staff in these areas (particularly in the use of WebCT) although there are overlaps in training, with more basic ‘survival guides’ also being provided by Information Services.

Similarly, students with special requirements as a result of disability draw upon different resources and receive alternative forms of training (particularly in the use of specialised user profiles and software). Information Services play a central role in this provision, although additional input is also provided by Student Services and at a departmental level.

Existing disabled students who are already familiar with the specialised software packages are also enlisted, trained and paid to act as tutors for new disabled students. This service appears to be particularly useful for students with visual impairments as the

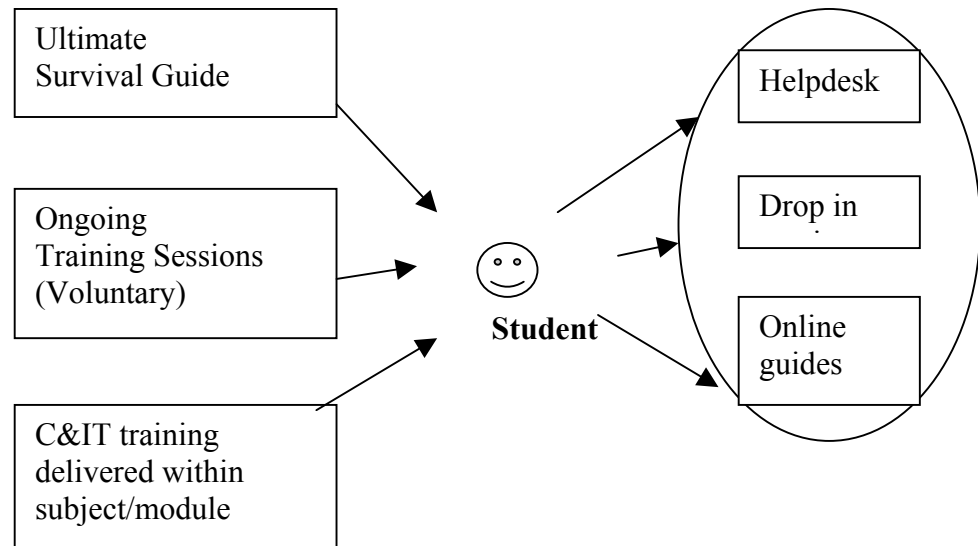
⁴ See module ‘Skills and Application’: <http://www.cs.stir.ac.uk/~agh/3131/intro.html> and module ‘Information Technology Skills’: <http://www.cs.stir.ac.uk/courses/17L6/>

keyboard and human-computer interaction skills required seem complex and are more difficult for a sighted person to teach. In addition, a training period extending over a significant period of time is more appropriate given the amount of information being acquired.

In general terms, as the majority of mainstream students are offered C&IT induction and training via the methods provided by the centralised Information Services (IS), only the structure and content of this provision will be outlined. Six main forms of delivery and support of C&IT induction and training, providing a balance of formal training sessions supported by a variety of 'back-up' measures to address student needs on a more individual basis.

- ❑ The Ultimate Survival Guide
- ❑ Student Training Sessions
- ❑ IS Contributions to credit-bearing departmental course
- ❑ Student Drop-In Service
- ❑ The Helpdesk
- ❑ Online Training Guides

The relationship between these services can be represented graphically as follows:



3.1.1. The Ultimate Survival Guide

The Ultimate Survival Guide is an induction service for first year undergraduate students, which was introduced in the present academic year (2000-2001). A new induction package was required at this time primarily as a result of the library catalogue becoming available on the web over the previous summer. (In this instance it was also offered to all students, as none were necessarily familiar with the modified network system). The key feature of The Ultimate Survival Guide is that it combines C&IT induction with an introduction to library, information seeking skills and with general information on other sources of student support.

As the Ultimate Survival Guide is accessible via the internet, all students enrolling at Stirling are generally directed to its web-pages by their course tutors as part of the induction process.⁵

⁵ <http://www.stir.ac.uk/infoserv/students/>

3.1.2. Student Training Sessions

Information Services provides training sessions for students on the use of specific software applications. These short courses are available flexibly, throughout the university year, depending on demand. Training is provided in sets of nine, two hour long lab-based sessions, currently on the use of the following applications:

- ❑ Using PowerPoint 97 to create spreadsheets
- ❑ Using Excel 97 to create spreadsheets, charts and graphics
- ❑ Effective essay production with Word 97
- ❑ Preparing to word process your dissertation

3.1.3. Student Drop-In Service

When not used for training purposes the central computer lab is open to students on a drop-in basis. Students can also reserve a computer for up to two hours per day in one of the centrally managed labs. Two members of the Information Services Training Team are on hand at the beginning of the autumn semester in the context of the Ultimate Survival Guide to answer any computer-related problems/questions or to provide help on the use of lab software.

3.1.4. On-line Training Guides

To assist students make use of the software available on campus, the following list of self-teach training guides, all produced by the University of Stirling, are made available online. Links to other free online IT guides outwith the University are also provided.

- ❑ Introduction to Windows NT
- ❑ Introduction to Word97
- ❑ Saving Documents
- ❑ Home Folders
- ❑ Netscape E-mail

- Searching the internet
- Printing

3.1.5. The Helpdesk

The Helpdesk does not provide assistance or training advice, but serves as the first point of contact for students if they discover that computer software, lab equipment or the University network is not working as it should. Calls enter a logging system and a support team will locate and remedy the fault before contacting the student with an update. In short, the function of the Helpdesk is as a fault-notification system, although often the Helpdesk assistants can remedy the problem by providing the user with some training or instruction. Students are discouraged from using the Helpdesk in this way and redirected to the Drop-in Service or Training Team.

See also <http://www.is.stir.ac.uk/les/about.htm#ithelp>

3.1.6. Contributions to Departmental Modules

Many departments provide general induction to their course programmes. This often involves information on C&IT, although this is not a general feature. Credit bearing modules from the Computing Science and Mathematics Department are available to students studying other programmes, as a direct result of the modularity of Stirling's degree programme. Undoubtedly, a number of students use this flexibility to enhance their C&IT knowledge.

A number of departments provide specialist C&IT modules, for example the School of Modern Languages (based on its advanced multi-media laboratory) and the Film and Media Studies Department. These give students an opportunity to study advanced C&IT in a subject context.

For many other departments, Information Services staff contribute to normal course programmes, offering training beyond that of the USG in information, IT and Library skills tailored to a subject-specific context.

3.2. Implementation

3.2.1. Factors Shaping A New Approach

The current position regarding C&IT induction at Stirling is still in the process of change. A very different approach (USG) was adopted for the first time this year, and a new more integrated approach to induction was adopted by Information Services. A number of factors contributed to change, including, most generally:

- Incremental technological changes – a gradual increase in reliance on information technology in mode of delivery of educational materials and in methods of communication between teaching staff and students.
- A gradual increase in the proportion of students preferring other modes of attendance to the traditional full-time campus-based undergraduate model, resulting in far greater reliance on communications and information technology.

More unique factors altering implementation include:

- A recent change in Information Services senior management staff, leading to an open environment in which new ideas and approaches in all areas of IT support services were encouraged, including student C&IT induction.
- Recent major technological changes to the library through increased use of electronic resources and web access to the catalogue.
- Preceding both of the above significant events was the important development of a collaborative working relationship between two key IS personnel, which created a firm link between the library division and IT division. This partnership led to the proposal of the new integrated approach to library and C&IT induction and following approval, to the formulation, and development of materials, joint delivery and ongoing refinement of the USG for all new students. Arguably, this was the most important factor in the success of the revised approach.

Other key factors impinging upon the manner in which C&IT induction has been implemented at Stirling include

- **Semesterisation:** Stirling's long history of semesterisation. This structure impacts upon on the time available for IT induction because teaching via short modules

means the academic year “starts with a bang”. When a module lasts only 15 weeks (including assessment) to lose even one or two weeks lecture slots becomes more significant. In short there is no typical slow start as is found in the old three-term system and more pressure to deliver a brief limited training rather than a longer more in-depth general induction course. At Stirling, activities during the ‘freshers’ week are presented in a highly structured manner, with students being provided with an individualised timetable to guide them through the series of inductions to academic, social and sporting activities available. The inclusion of a C&IT induction among them is therefore an effective way of maximising the small timeframe available at the start of term.

- **Remote Site:** Although not considered a major influence in determining student C&IT induction, indirectly, the unusual nature of the remote sites located at Inverness and Stornoway may contribute to the perceived need for close library and IT support service linkages more generally. At both, the campus is hospital-based and teaching is primarily of pre and post-registration nursing. However, the university is also responsible for running a NHS library for the use of hospital as well as university staff. As this task falls to Information Services, a high priority is given to ensuring library staff are adequately supported and that all staff and students at Inverness are provided with sufficient C&IT support to access the main campus facilities. Hence, the traditional boundaries perceived to exist between library and IT staff and support services tend to become quite blurred for such a unique remote site.

3.2.2. Method of Delivery

The format of the Ultimate Survival Guide (USG) is quite different to previous years – the two-hour session starting with members of IS staff giving an hour-long presentation. This incorporates a basic library induction (including library basics such as how to borrow, Webpac, the library web pages, virtual tour of the library...) with the IT elements necessary to prepare students for network use. The session then splits down into groups of manageable numbers of students for a hands-on session in one of the central computer labs. The practical exercises carried out in the labs includes carrying

out the main IT elements covered in the presentation (getting username/password, how to use Netscape Communicator and Internet Explorer) as well as practising use of Webpac, the library catalogue. The session content is also replicated on-line for people requiring refreshers/late arrivals etc.

This 'mixed' method of delivery incorporating both a traditional lecture-style presentation with a small tutor-led but largely self-taught practical allows a high number of students to be accommodated with minimal levels of staffing and use of lab-time. The aim of a short duration session being primarily to ensure that all students possess a very basic level of skill as soon as they arrive – enough to “survive” before going on to further develop their own individual C&IT skills according to their needs, interests and particular course requirements. Included in the induction session are directions on what other resources are available both on-line and in taught courses in study skills as well as in the use of a variety of specialist software packages throughout the semester. Difficulties were identified as primarily organisational in nature, for instance maintaining order with large numbers of students being divided into smaller groups and en-masse movements to computer labs. With the same small training team organising and delivering all lectures and leading labs, some restructuring of the timeframe may be required to reduce the intensity of the teaching role.

3.2.3. Mode of Attendance

In its first year of delivery, attendance by students at the C&IT induction sessions was extremely high, a somewhat surprising feature given the voluntary, non-credit bearing nature of the sessions 78% of the main undergraduate intake attended, as well as 79% of diploma nurses and 74% of part-time students.⁶ Information Services suggest this may be due to the means by which the 'Ultimate Survival Guide' was publicised to the new student population: all students were mailed a flyer with details and were each allocated to a session by surname prior to arrival at Stirling. The timing of sessions were also written into the students' Registry document entitled 'The First Week' which students are given to guide them to all of their appointments for the first week. Thus, it may be

⁶ Issue, (Information Services Newsletter at Stirling University). Nov 2000, Vol 33

that students did not realise their attendance at the C&IT induction was *not* compulsory. Certainly, the sessions are slotted between compulsory registration sessions and lectures and the materials emphasise how “essential” the guide is for survival. Allocation by name to attend at a particular time and place may also have resulted in the sessions being perceived as compulsory. The careful timing and presentation of materials in this way is seen as contributing to the success of the sessions, and, as the voluntary nature of attendance is not made evident to students, attendance on the Ultimate Survival Guide has been very high (85% overall).

3.2.4. Student Assessment and Feedback System

No formal assessment process is included in the C&IT induction sessions. However, some student practice and feedback mechanisms built in to the sessions could easily become part of formal testing in the future. At present, students are asked to carry out a number of practical exercises to test their own skills, including sending an e-mail with any relevant comments to members of the IS training team. This has formed a useful method of obtaining student feedback, with students often adding a critique of the C&IT induction session, what they found useful and how it could be improved. In general, those who made comments were positive and the USG appears to have been favourably received. Suggestions from students also revealed whether or not the mode of delivery was too fast, too slow and whether or not they found the content appropriate. The IS training team intend to use this feedback loop to further develop the induction sessions and also intend to include a more standardised feedback format for students to use in future, permitting more extensive and precise data analysis.

Two additional assessments are also being developed to extend monitoring of students’ C&IT profiles over time.

- 1) The first form of assessment aims to establish students’ C&IT skills on arrival, and is a brief self-report questionnaire. It includes general indicators of C&IT familiarity such as whether or not students have their own computers; what C&IT qualifications, if any, they possess and which platforms and packages they use. Students are also

asked for a subjective scaling of ‘how comfortable’ they are using C&IT for a list of different purposes (e.g. spreadsheets, presentations, internet searching, library etc).

- 2) The second questionnaire aims to provide a six-month follow-up of the USG, requesting students to indicate in hindsight how useful the induction session had been and whether the content and level was appropriate to meet their needs over their first university term.

It is intended that both sets of data will be analysed and the results used to inform practice and further develop the C&IT induction sessions. Over the course of time, monitoring changes in student entry level profiles, particularly the degree of variation between students, should prove useful in predicting future trends.

3.2.4. Providers and Partnerships

Within Information Services, the team responsible for training has long been very small and, resource-limited with its original focus on staff development. In recent years, Stirling has not had a strong academic interest in science or computing, so the role of IS has revolved around infrastructure, maintenance and staff support. With the exception of invited contributions to academic courses, there have been few direct connections to teaching. In the past some rivalry was perceived to exist between Information Services (IS) and Computer Sciences (CS), with the latter defending its academic status and role in delivering ‘education’ rather than ‘training’.

Many of the library and information technologists within IS now clearly have significant teaching and research roles and work with each other and with CS academic staff, particularly in the areas of collaborative evidence-based strategic planning and resource hunting; indeed, this element of 17L6 is provided by Information Services. Hence, such interdepartmental competition is mostly relegated to ancient history. CS is keen to promote its own accredited C&IT introductory courses to students (a half-module or a full module) and already succeeds in attracting approximately 10 % of the annual intake of first-year undergraduates, at least in part because of the additional funds it would receive under the University’s funding model. This was the origin of a historic CS claim that duplication of provision and perhaps an element of ‘unfair’

competition exists in the topslicing of funding for a centralised IS-run C&IT training course.

3.2.5. Implementation Debate

Information Services and the Computing Science and Mathematics Department are currently engaging the academic community at Stirling in debate over the shape of future C&IT induction and training. As part of this debate, it is hoped that a consensus opinion might be reached regarding whether or not attendance at the basic induction session should be compulsory, and whether or not students should be required to complete a formal assessment demonstrating an ability to make use of the university's communications and information technology.

The appropriate identity of providers of such training in the future and the level of course difficulty and content are likewise topics, which Information Services have highlighted as issues requiring open academic debate. It must be borne in mind that the Department of Computing Science and Mathematics already provides introductory C&IT courses which are credit-bearing (and hence assessed) for any student wishing to acquire these skills. In particular, the increase in students undertaking vocational or CPD courses whose content is often additionally governed by professional bodies appears to pose a problem when the acquisition of C&IT skills is omitted from the course timeframe.

One of the most significant areas highlighted for debate lies in whether or not the current trend towards a centralised service providing generic C&IT skills has now extended as far as possible. All students at Stirling now have the opportunity to acquire a low-level basic generic ability to interact with technologically-based learning materials. Beyond that, the complexities required to meet a vast range of student needs and modes of delivery may now require the development of an array of more tailored services and specialist providers. At Stirling, it is recognised that transferable skills in C &IT are mainly acquired via ongoing subject-based learning, although neither staff nor students may delineate precisely what, when and how this teaching occurs. IS is concerned that the patchiness of provision and lack of a coherent approach to C&IT

training and support beyond the level of basic induction as looming problems requiring greater attention at departmental and faculty level, aimed at the effective implementation of a more consistent approach.

3.4. Strategy

3.4.1. University Targets

The last fully revised University of Stirling Strategic Plan was published in June 1997, and in recognition that the university is largely still in pursuit of the strategic objectives identified at that juncture, the most recent Strategic Plan. (June 2000), was documented in the form of a rolling strategic plan, indicating progress to date, with a four year horizon as requested by the Funding Council. Although C&IT induction is given a fairly important level of priority at Stirling and systematic provision is made for this, C&IT induction is not incorporated in strategic documents. It is however clearly documented in the University Strategic Plan that

“The University is sensitive to the economic, pedagogical and practical considerations which can limit the wholesale deployment of C&IT...and recognises that advances in this area will be dependent upon the goodwill and enthusiasm of many different players. Information Services and DAICE (through the CLI or Coalition for Learning Innovation) will therefore continue to work closely with the four faculties in identifying and promoting the cautious use of modern technologies in underpinning innovative teaching and learning.”

(University of Stirling Strategic Plan, 2000, p9)

More recently, the University has recognised the need for a strategic investment plan for future provision of C&IT, and this is likely to be incorporated into future Strategic Plans. A new Principal will arrive in September 2001, and this may lead to further changes.

3.4.2. Teaching and Learning Programmes

Key objectives for Stirling’s teaching and learning programme focus on further extending the flexibility of academic structures. Milestones include effecting a two-fold increase in full-time students taking evening units, substantial integration of full-time and part-time undergraduate options; and the recent introduction of a bi-annual intake (i.e. a new intake of students at the start of Semester B).

Diversification is also emphasised in the range of programmes being offered, to include expansion of Continuing Professional Development programmes CPD (e.g. Teaching Qualification (Further Education) and extension of undergraduate subject areas (e.g. in Tourism and Public Management). These objectives correspond closely with recent related to Government social inclusion policies of widening access to HE and the promotion of Lifelong Learning. Even prior to SHEFC prioritising access and flexibility in higher education, Stirling had been working toward a number of objectives in this area, and stands now with the most extensive part-time degree programme provision in Scotland. Continuing professional development is also an increasing feature of provision.

3.4.3. New Technologies

Stirling is particularly aware of the potential impact of new technologies on traditional teaching and learning paradigms. However, caution also underpins strategic planning in this area and the potential dangers to quality and appropriateness of on-line provision in HE are being given careful consideration. It may be that the presence of high expectations (in staff and students) that C&IT will play a significant role in learning, however, will pressurise all HEIs to replace traditional teaching and learning methods and move closer to a model of mixed-mode provision.

3.4.4. Identified Challenges

Stirling, like other Scottish Universities, has been experiencing a fall in undergraduate applications from the rest of the UK (although overall applications are buoyant), and notable shifts in the make-up of the population of applicants toward a greater percentage of Scottish (and locally) domiciled students. In view of the new funding arrangements for Scottish students, this proportion is likely to increase in future, a trend which may have particular implications for a campus-based institution with extensive provision in terms of student residential accommodation. A twin-track approach is emerging, one focussing full-time students on the benefits of living away from home and the second

emphasising flexibility in academic structures, with an enhanced range of specific initiatives aimed at non-traditional entrants.

3.4.5. Reflective Practice

The presence of a university-wide alliance at Stirling in CLI designed to promote the creation of a grassroots network for teaching and learning support, particularly facilitating and promoting innovation and good practice has resulted in extensive debate of the role of C&IT in teaching and learning at Stirling. Online discussion groups facilitated by DAICE provide a forum for academic debate as well as acting as a link to additional references and community-wide sources of further information.

The role of the CLI is not restricted to the promotion of C&IT however. A primary objective identified for the CLI is critical evaluation – to establish that such advances are maintaining and improving the quality of the learning experience for both staff and students. In terms of student C&IT induction and training, the role of the CLI therefore tends to be mainly as a catalyst for debate, research and dissemination of information on good practice on the use of C&IT for teaching and learning.⁷

⁷ See <http://www.stir.ac.uk/departments/daice/cli/> for more details of the ethos, organisation and activities of the CLI.

4. Emerging Directions

4.1. *Locus of Control*

The future shape of C&IT in general, and online learning in particular have been identified as discussion priorities by the Academic Council in the Strategy for Teaching and Learning. In keeping with Stirling's aims to promote academic innovation, the responsibility for future developments in this area has clearly been identified as lying essentially within Departments and Faculties (although obviously they are expected to give an account of developments in their strategic planning and departmental reviews). The implications of development, in terms of support, practical guidance and resourcing does require senior-level management decisions and discussion of these issues is currently taking place among Deputy Principals, Deans of Faculty, the Director of IS and Chief Adviser.

Meetings have been taking place since December 2000 to focus greater attention on the underlying aims and outcomes implied should C&IT become more firmly embedded in teaching and learning, subsequent outputs and conditions required to effectively promote learning. Hence, the transitional nature of the present situation is emphasised as widespread debate at all levels within the University is underway.

Despite strategic intentions to promote flexibility in mode of delivery and clear willingness to engage in collaborative e-based ventures, management feel it appropriate to highlight a few cautionary notes for staff, to emphasise that "*we are not currently planning to transform into a virtual university*". Thus, while great value is placed on the innovative plans of individual members of staff and every freedom to contribute is being afforded, senior management continue to highlight a conservative approach and emphasise that excellence in teaching practice is the standard by which to evaluate greater use of C&IT.

4.2. Resource Issues

In previous years, planning for Information Services has been based on the production of a comprehensive service plan, taking a high-level strategic view of developments over a five-year period. Prior to submission to the Policy Planning and Resources Committee (PPRC), discussion of the Plan would historically take place at three levels: Deans of Faculty; Information Services (Advisory) Committee and by user groups. Production of the plan has been against a background of formulaic resource allocation, which has had the result of reducing the funding levels at a time when demand for services is growing. This has led to tensions, and a different approach described below is being adopted for the future.

4.3. Innovative Planning Process

Due primarily to the need for IS to make significant savings in 1999/00 and beyond, a new approach to strategic planning was adopted. The PPRC identified three alternative ‘outline scenarios’ for further budgeting reductions to be achieved.

□ Option 1: Consolidation

Manage on the resources which the University allocation model provides (implying steady decline).

□ Option 2: Evolutionary Change:

Plan using the Service Plan methodology, for incremental change, using present services as a base (attractive but unaffordable).

□ Option 3: Plan for where we will need to be

Look ahead ten years to the optimal IS organisation and then plan how to get there (attractive, but could be construed as a blank cheque).

There was sufficient attraction to the third option, for the PPRC to endorse an intensive discussion and scenario planning by all staff with a significant interest in the future direction and structure of IS. As wide-ranging a consultation was carried out, with 25-30 staff attending 2 “away-days” in January 2000 which incorporated the findings of

similar exercises being carried out at other universities debating the same issues around the world.

4.4. Temporal Perspective

A significant impact is achieved in aiming to develop a ten-year perspective in addition to the more traditional four or five-year strategic plan. For example, many of the phenomena currently emerging in the manner in which new technologies are becoming embedded in HE seem to become more clearly identifiable as ‘transitional’ difficulties. A ten-year plan results in a clearer vision of the emergent stable states most likely to occur, once the short-term ‘teething’ problems have been debated and resolved.

4.5. Modelling the Future

This innovative and creative approach to decision-making highlights a number of assumptions about the future shape of C&IT in HE upon which proposals for development can be made. A key set of environmental and technological factors affecting Stirling are already emerging to shape the direction in which C&IT Services is moving. IS aims to develop concrete plans to create a new identity to match University needs in (approximately) the year 2010. The main features of the new proposals rest on the following five assumptions.

□ **Future of technology:**

Process of simplification to the user will have resulted in the form of a ‘black box’ rather than a toolkit (following a similar path to the car).

□ **Future of libraries:**

At the heart of campus, a library will no longer be primarily a repository of books and instead be regarded as a dynamic gateway to information

□ **Interdependence of HEs:**

Closer external partnerships, networked centres and alliances between HE institutes will be established. (Moving away from independence to collaboration, to include greater sharing of information, resources and costs).

□ **Teaching and learning with C&IT**

Closer internal partnerships: IS will have a larger role in identifying and addressing common pedagogical issues in C&IT use within the university.

□ **Function of Information Services:**

Its main focus will have shifted away from technology to service provision (e.g. teaching and learning with C&IT rather than how to do C&IT).

4.6. Evidence-Based Practice

As a fairly small campus-based university keen to promote high levels of participation and commitment to the creation of a learning community, changes at Stirling have often been the result of the vision and work of single individuals. Thus the Director of IS as an individual can play a significant role in shaping the future goals in C&IT provision at Stirling. He would characterise this as achieving a balance between the ‘bulk’ processing of students for C&IT training and the need for more individualised forms of ‘personal development plans’. This is of special note in relation to one of the key forces highlighted in this study a determining C&IT induction and training: Stirling’s continuing interest in expanding its ‘widening access’ programme is also important. There is therefore even greater likelihood that future students arriving at Stirling will display an even greater range of C&IT skills. To address the needs of such a diverse population group the Director’s vision appears to involve these key strands. However, although individual enterprise is important, Stirling’s success stems from the creation of a collaborative team spirit to drive developments forward, so any agreed change will be embedded in institutional practice and will involve many others.

4.7. Influential Models

In contrast to the Glasgow University 'Baseline' model, where a normative basic level of achievement on or immediately after entry is required, Stirling has adopted a more flexible approach. Initial skills training is provided, but in line with senior management's focus on educational need, there is more emphasis on 'Embedded-Skills' with individualisation at Departmental or Faculty level. An additional strand builds upon the current 'Drop-In' service, allowing students to advance their knowledge of C&IT at their own pace, in line with their personal interests and development needs.

From this model to maintain a seamless approach from the student's perspective, as well as avoiding duplication of services and costs, it needs the current strategic cross-faculty approach and development of a clear organisational structure. It is therefore clear that even were the vast majority of C&IT teaching and learning to become more 'embedded' within module contents (i.e. taught by devolved rather than centralised services) IS would still be required to run an excellent support infrastructure (hardware, labs). It would still need sufficient funding allocation to provide baseline IT training courses, greater staff training needs and to meet course standardisation and TQA assessment requirements.

5. Key Features/Concluding Remarks

5.1. *Integrated Information Teaching and Learning Support Services*

The need for integrated support services and effort to merge library and information technology divisions into a seamless service has a long history of development at Stirling. Yet even now, it would appear that on the ground, rather than on paper, few personnel succeed in overcoming the physical divide between respective departments and buildings on a regular day-to-day basis to engage in collaborative ventures or in the osmotic exchange of information and ideas. This underlines the slow pace of cultural change, particularly when the two groups remain separated physically. The wish at all levels for greater exchange is there, and change is now well under way. The achievement of a joint C&IT training team comprising both library and IT specialists which has collaborated effectively to formulate and develop its own unique combined induction programme (The new Ultimate Survival Guide) is therefore a particularly unusual and significant achievement.

From a student perspective it is of interest to note that when asked to locate the key source of information technology training and assistance, students focus upon the library. Yet the main resources for students (C&IT drop-in centre, helpdesk, and IT support staff) are not even located within the same building as the library. This note also highlights the importance of obtaining user feedback from students, which at Stirling is recognised as a valuable tool, with student surveys on-going and representatives invited to participate, at a variety of management levels, in identifying emerging obstacles and solutions.

As emphasised in general by the Policy Planning and Resources Committee (2000), *“learners, as customers, will not be attracted to our learning environment if we continue to take the fragmented approach to its development as at current”* (p5). To overcome this perceived disorganisation, it has been suggested that Information Services take the lead in planning a “joined up” overview of all learning support services and that a “one-stop shop” be created for both learners and teachers. This holistic approach would operate in a similar manner to the model adopted at

Birmingham with an IS-based Learning Resources Accommodation Team. If, as is currently emerging as the preferred solution, all C&IT facilities and related personnel can be co-located, support costs are minimised and availability of facilities maximised at the same time. The centrally located Library building having also been identified as the most obvious place to be transformed into a central learning ‘hub’.

5.2. *Irony of Geography*

It is an intriguing irony to note that even within a small closely-knit campus-based university, the nature of the barriers to effective integration of communications and information technology appear to be primarily of a concrete, physical nature.

The boundaries acting as development control parameters appear to be occurring primarily around the edges of buildings or departmental corridors. Duplication of services, costs, gaps in provision and fragmented services can be seen to be associated with physical barriers to communication and exchange of information. In terms of increasingly technologically-based distance-learning, mixed-mode and remote-site relationships, it is of particular interest to note that academic staff working on-line and on-campus may not yet have found comfortable, effective avenues for non-traditional modes of communication. The challenge appears to be how to re-create the more traditional academic community, which would appear to operate on a less rule-governed system or by ‘popping next door for a wee chat’.

The final emergent direction at Stirling is therefore in line with the technologically based metaphor of creating a ‘server’ to support traditional university needs rather than the creation of a virtual learning environment. A centrally-managed and located Information Services Centre of sufficient size to house all key C&IT induction, training and infrastructure support staff (including library personnel) in closer proximity may be the key to promote and maintain an integrated C&IT teaching and learning support service in the future at Stirling.

6. Appendices/Resources

For Student Handbooks and Publicity Materials please explore the new Information Services web site

<http://www.is.stir.ac.uk/>

- Self-guided library/IT tour
- Undergraduate Prospectus
- Info handout for part-time students
- University Library

For Reports, Minutes and Memoranda, please explore the new Information Services web site for official publications

<http://www.is.stir.ac.uk/>

Official Statistics

From CITSCAPES Survey Questionnaire C

How many students take part in your C&IT cours(s)/programme(s)?

	1998/99	1999/00	2000/01
Undergraduate Students	?	1710	2099
Postgraduate Students	?	PA	PA

Induction for new students: The Ultimate Survival Guide

<http://www.stir.ac.uk/infoserv/students/>

This site includes:

- Library Survival Guide
- IT Survival Guide
- Student Survival Guide

citscapes



C&IT SKILLS: CURRENT SITUATIONS, AVENUES OF POSSIBILITY, EMERGING SOLUTIONS

The Stirling Model:

See PowerPoint file Appendix A.

The Stirling Information Services Structure:

See PowerPoint file Appendix B
