IS Services Annual Report 1999-2000

Introduction

1999/2000 in IS Services was dominated by several main items, one of these was the Year 2000, another was the reorganisation resulting from the retirement of the Assistant Director and a third was the planning for the replacement Student Administration System

Michaelmas term was spent in finalising the preparations for the rollover to the Year 2000. As is apparent now, these preparations worked well and no significant events arose. Many small problems were fixed without loss of data or service in College. Following the start of the year, as an experiment, some other institutions attempted to use systems that had not been converted and found that major problems would have arisen had remedial action not been taken.

Michael Doherty, the Assistant Director and manager of the Computer Systems Group retired during the year. Pending a review of the management structures within IS Services, the Assistant Director responsibilities were reallocated to the other management staff and an internal appointment was made as manager of the Computer Systems Group. This resulted in a series of consequential vacancies and appointments.

For a number of years, it has been recognised that a total reorganisation of the automated student administration system was required. A proposal was drawn up and funding acquired to start the project in the latter part of the year.

Issues arising from 1998/99

Following on the IS Services Annual Report for 1998/99, a number of issues were raised for the future and some of these were addressed during the year:

"A review of the ISPDG, Information Systems Policy Development Group, report was initiated by the Information Policy Committee. This review will be augmented by two documents:

· A strategic analysis of the information services for College. This will analyse the existing systems, identify the replacement and outline a rolling pattern of upgrades for the coming years.

· An analysis of the availability of appropriate computer equipment for staff and students and its refreshment on an appropriate cycle."

The review was prepared and has been presented to the Finance Committee and Board.

The paper addresses several proposals for increased access to IT resources for students. There was also an increase in the number of student computers by the addition of rooms in College, the hospital at Tallaght and St. James's.

A number of standard PCs were provided to academic departments so that they can run central administrative functions on these machines. Eventually, there will be at least one machine per department that is centrally funded and maintained.

A review has been undertaken of all the administrative systems in College along with possible replacement dates. This provides a strategy that will identify major expenditure in systems over the coming years.

Security continues to be a major issue; on a weekly basis people are removed from the College computer rooms that have no connection to College. There were several incidents regarding the abuse of College machines with complaints coming in from Irish and foreign users about inappropriate behaviour on the College machines.

The "Love-Bug" virus was a major security incident worldwide and its effects were felt in College with multiple outbreaks of the virus and several users losing all their data. Due to general vigilance, use of anti viral software and the early warnings from IS Services, College was much less affected than many other institutions.

Features of 1999/2000

Staffing Issues

The retirement of the Assistant Director, Michael Doherty, after more than 30 years in College caused major upsets, in that he had been core to many services in College over the years. Whilst he was replaced quite quickly, it takes a long time to recover from the knock-on affects of such a departure. The change has resulted in a long series of consequential vacancies being filled by internal candidates.

In general, the staff retention policy has succeeded and turnover was relatively low in the year, with five staff leaving. It is fairly significant that some of the groups saw absolutely no change in staff for the year. A number of long-term contract positions were converted into permanent positions and filled internally. This change encourages staff to commit to longer-term careers in College.

One major staffing problem is the difficulty in recruiting suitably skilled staff. The opportunities for graduates in the IT area are so great that it has been exceedingly difficult to obtain suitably trained staff. This is a well-known problem across the whole of the IT sector in Ireland. A number of vacancies in the applications development area have been unfilled for several years, specifically because it has not been possible to recruit suitable candidates. Work is ongoing with the Staff Office on the restructuring of posts in order to alleviate this problem

The manager of the User Support area has taken up the position of the Project manager in the Student Administration System project. This leaves a vacancy for another manager, and work is underway to replace him.

College Developments

The enormous number of building projects had an impact on networking services during the year. Several breaks in service occurred when the underground cables had to be moved before work was started on some buildings. In other cases, contractors severed cables accidentally and whole sections of College were isolated from others. In most cases, the policy of installing several cable runs to buildings proved successful and network services were restored using alternative fibres.

The level of building work has also meant that staff have had to be dedicated to ensuring that services are implemented in the new buildings. In addition, a lot of management time is spent at the various building committees to ensure that College standards are implemented in all new buildings.

Security

As identified in last year's report, security issues continue to play a big part in the work of IS Services. Throughout the year there was a steady flow of incidents, many of these involving non-College people trying to use the College's computer facilities. Often these people were assisted by authorised users of College services.

The hacking incident in summer 1999 had longer-term consequences when work that was

scheduled to be undertaken during the long vacation had to be deferred until the Michaelmas term. For example, delaying the replacement of the email server from September to November gave rise to long delays in delivery of emails.

Each of these security incidents takes a considerable effort to analyse so as to ensure that appropriate evidence is gathered should the Gardai be involved with any possible prosecution. The extra work involved in these incidents produces no net gain for students and staff, other than preserving information and equipment for legitimate College users.

In the spring, the "Love Bug" virus was unleashed on the world and duly arrived in College. Whilst a number of machines were affected, the virus detection software, the skill base of the users and the vigilance of the Virus team in IS Services helped minimise the damage to valuable user data.

As part of the normal security enhancement, a new virus checking system was instituted which automates the process of updating local machines as new viruses appear. This means that users no longer have to manually install any upgrades; rather they are downloaded automatically from the network.

External Environment

Currency issues in the form of the weakness of the Euro relative to the US dollar meant that some products and services cost much more than had been budgeted for at the start of the year. In some instances however, there were commensurate advances in the technology, so PC prices tended to decrease even in Euro terms. Software is tending to become much more expensive and is frequently costed in US dollars. Several expensive software packages became even more expensive as the Euro value decreased.

Organisation of IS Services

User Support

The User Support section of IS Services provides help in a number of ways through the Helpdesk:

- Telephone on extension 2000, used mostly by staff
- In person at Aras on Phiarsaigh, mostly used by students
- Email, by all users
- Web, by all users

The number of incidents that were reported by people physically presenting themselves at the helpdesk decreased during the year with a commensurate increase in the number of electronically reported incidents. Undergraduate students find it much more satisfactory to report problems by email than by visiting the Helpdesk personally.

In general, there was a decrease in the walk-in usage of the helpdesk by undergraduates and this could be explained by:

- More robust configuration of the student computers
- Incoming students with a higher level of computer literacy
- Attendance at Freshmen computer induction courses
- Enhanced Helpdesk support via email and web

In contrast to the decrease of walk-in numbers, the number of telephone and email/web queries increased from 6,331 to 7,686, which reflects the increasing dependence on IT in many areas and the greater confidence in using electronic means for reporting problems.

Late in the year a new telephone system was installed which allows calls to be queued and provides usage statistics so that the number of staff handling telephones can be varied depending on the pattern of arrival of calls. This system should answer some of the issues that were raised in the annual user satisfaction survey, which identified problems with the telephone Helpdesk.

The use of software to remotely manage and maintain PCs on the network has increased, which means that IS Services staff may not actually have to visit a problem machine, but can do the diagnostic and remedial work from their desk. Clearly there are advantages for the users, as they may not have to wait while a person travels from one end of the College to the other to fix a minor problem. This management software can also install the latest versions of software automatically thus ensuring that users PCs have the latest versions of software installed. This is especially critical in the case of security patches and anti-viral software.

Staff and student training in many aspects of IT continues to be provided by IS Services. Whilst many students are now arriving in College with a much greater degree of computer literacy, induction courses were provided to all incoming students in order to familiarise them with the way that computer systems work in College.

A pilot scheme was introduced to provide basic computer skills for all staff. Several sessions were arranged so that staff that would not normally use computers could learn about the possibilities of information technology.

The number of training courses provided by IS Services to College staff doubled during the year and it is envisaged that there will be further extension in the training courses available next year.

IS Services continues to be an examination/certification body for the European Computer Driving License (ECDL) scheme and increasing numbers of staff are taking advantage of the online training courses and testing services.

Student Facilities

During the year, two new student computer rooms were opened, one in 1 College Green and one in the Health Sciences Faculty in Tallaght. Whilst there is adequate networking to 1 College Green, the network connection to Tallaght proved to be a greater challenge.

Initially it had been proposed to install a private microwave link to Tallaght, but this was both difficult and expensive due to the lack of direct line of sight. A number of telecoms companies were requested to quote for a connection to Tallaght and eircom made a successful bid for an ATM link. This link provides an easy path to increasing capacity between Tallaght and the main campus, thus it will be relatively simple to upgrade the connection as the demand increases.

A pilot deployment of laptop computers has been in progress in the Stearne Library in St. James's for the last few years, The laptops have proved to be fragile, unreliable and expensive to maintain and the service has now been discontinued. A number of fixed PCs have been installed in the library instead; these have been providing a much better service with less involvement of Library and IS Services staff.
As well as the PCs in the library, a number of "stand-up" PCs have been installed in the corridor outside the library. These can be used on a casual basis, but are more likely to be used for short sessions than the "sit-down" machines in the library.

The concept of "stand-up" PCs has been used in the East End of College as well as Pearse

Street and these machines are heavily used. There are many requests that more be installed in open spaces in College. It is expected that a pilot installation will be made in the Arts Building Foyer.

As physical space is at such a premium, IS Services will endeavour to find suitable spaces around College, that have adequate security and are not a safety risk for the installation of PCs.

Clearly, extra PCs, especially in diverse locations, require extra staff time to check and maintain the systems in working order. This supervision is most efficiently provided in large rooms with many PCs.

One problem for both users and service providers, such as IS Services, is the increasing complexity of computer and networking services. A major step was taken during the summer with the installation of email access via the web. This means that any College user can now read and send email with just a web browser. No extra software needs to be installed, or learned, by the user. This should have major user impact as people migrate away from existing packages. Use of the "Web Mail" system will also allow great flexibility for staff and students as they travel the world, as they will be able to handle their mail as if they were in College from any remote location.

It is policy to provide state-of-the-art computers in all student computer rooms and approximately one third of the machines are replaced each year. In past years it had been practice to purchase these machines as late in the summer as possible, in order to take advantage of the price decrease and the technology advances. Often, this meant that the computer rooms were not available for the start of term. A different policy was undertaken this year and the machines were purchased ahead of time and were all installed and working in the teaching rooms before the start of term. No significant cost differences or advances in technology were observed.

Staff Facilities

There is a wide, and diverse, range of computer equipment installed in College. This coupled with several different operating systems means that it is more costly to develop new applications that must be supported on these platforms. It also means that it takes longer to implement systems on a range of platforms.

Some of the hardware is very old and cannot support modern applications and current versions of browsers. In some cases, great effort and time has had to be spent to ensure that systems run on old browsers.

As a partial solution to this problem, an allocation was made by the Finance Committee to provide a single PC and printer to all academic departments over a 3-4 year period. This PC will be used to support central administrative functions and will allow the more rapid development and deployment of information services. In normal circumstances, this PC will probably be located in departmental secretary's office.

All academic departmental secretaries offices were surveyed and 16 PCs and printers were distributed at the end of the year. 10 of these were in stalled in Arts Departments, 4 in Health Sciences Departments and 2 in Science Departments. These were installed by IS Services. This programme will continue in future years, with the machines being replaced in about a four year cycle.

College Networks and Facilities

The internal network in College has been upgraded several times since it was first installed in 1988. As part of the continuous upgrade process, an EU tender was initiated to upgrade the network to gigabit Ethernet standards. Once the procurement process is complete, the core

network will provide a high-speed reliable and resilient service for the next few years. The new network will be designed to be easily upgradeable as new standards and speeds are developed.

The current ATM network will be phased out. Currently, new network connections are being installed which support 100Mb/second. In some cases it will be possible to install points at 1Gb/second. Whilst ATM is the current standard for connecting remote sites to College and to connect to the Internet, ATM has been superseded by the simpler and faster gigabit Ethernet technology for local area networking.

For the last five years, a single PC supplier has been used by IS Services and all purchases were made from this supplier. The Computer Shop supplied machines from this supplier as well. The uniformity of this single source has paid dividends through the relationship that has been built up with the supplier. PCs now arrive into College pre-configured with the standard College desktop and with networking already set up so that the user activates the machine by plugging it into the appropriate sockets. This process saves at least a half days work per new PC. Quantifiable time savings are also achieved for the users in this process.

In conformance with College procurement policies, a formal tender process was undertaken to appoint three suppliers of PCs to all users in College. Three suppliers were appointed and all users now purchase PCs directly from these suppliers. Following some start-up difficulties, this process is now working well. Relations are being fostered with these suppliers to ensure that the advantages accrued from a close relationship are passed onto all College purchasers of PCs.

One of the consequences of the PC purchasing policy is that the Computer Shop is now excluded from any PC purchasing. This has meant that the commercial viability of the shop is in question and a review will be undertaken as to how the services provided by the shop can be maintained.

The sale of Apple computers has long been one of the mainstays of the Shop; indeed one of the stimulants in founding the computer shop was the acquisition of a dealership from Apple. Notice was given in summer 2000, that Apple was withdrawing this dealership and that College users would have to purchase Apple machines directly from other retailers. Maintenance costs for Apple systems will become much more expensive in the future as a result of this decision and the total cost of ownership of Apple systems will increase commensurately.

High Performance Computing

The organisational structure of the HPC activities in College comprises:

- HPC Development Committee and
- HPC Co-ordination Committee

Both of these committees were active in the development of the service during the year. The Director of the HPC Centre implemented a major reorganisation and enhancement of the service provided by the IBM SP supercomputer in Belfast in order to enhance access by College users.

The Director of the HPC Centre developed the business programme and several large research projects were funded on the basis of the presence of the HPC facility in College.

Internet Developments

During the year, there were several upgrades in the Internet connectivity to College. These upgrades were matched by commensurate upgrades in international connectivity through HEAnet. Indeed, HEAnet managed to match the increasing demands throughout the academic

year with appropriate upgrades and a downgrade during the long vacation. This means that cost saving due to the lower demands in the long vacation can be offset against the greater demands during term time.

The Internet is a key tool in many teaching and research areas in College and is going to have a much greater impact in the future. During the year, all staff and postgraduate students have unrestricted access to the Internet as well as about 75% of undergraduate students. Internet resources are becoming a central resource in an increasing number of undergraduate courses in a wide range of disciplines.

Library and Administrative Developments

Issues regarding Year 2000 dominated the start of the academic year and much work went into ensuring that all administrative systems worked satisfactorily. Special action was taken to close down systems for the rollover weekend and to ensure that they were restored in a controlled manner in the first week of 2000. Some minor problems were encountered, but these were rectified very quickly. The extensive preparation that had been invested in the previous years paid dividends in avoiding problems.

Planning work on the replacement of several major systems in College was initiated. The most important of these is the replacement of the Student Administration System. The system currently in use is a locally developed system, which has been in operation for twelve years. Ongoing maintenance of this system was becoming problematical with more and more investment required. Following College practice, it was agreed that the system should be replaced by a Student Administration system to be purchased and maintained by an external supplier. A draft budget was drawn up for the replacement system and funding obtained from College. A senior project manager was appointed to manage the process, and the programme to replace the system was initiated late in the year.

Problems associated with the Payroll and Personnel packages had been identified, with associated risks in running a system that has a very small Irish user base. This resulted in a decision to replace the payroll and personnel system in the early part of 2001. Detailed specification work was undertaken with the Treasurer's Office and the Staff Office on this system and it is now being introduced on a phased basis.

A pilot Management Information System was implemented on a subset of the student information. This system, or Data Warehouse, provides access to detailed information on all students to the appropriate staff. Different levels of authority allow different views of the data, so tutors have access to their tutorial chamber etc. It is expected that this information will be made available to all students and staff in College in the future. It is also planned to use this mechanism to provide access to a wider range of College databases and information resources.

As part of the effort in streamlining administrative functions, a system to handle Flexi-Time amongst staff was specified and identified. This required much coordination between the various departments arising from the range of different time keeping systems in use. The package that was chosen will allow easy integration with the new payroll system and should eliminate some duplication of data entry and thus improve efficiency and accuracy.

The central database system in use in most administrative functions is the Oracle database and this has been in use in College for twelve years. Due to the pressures of development work, the versions of the database in use had fallen behind the most modern versions. Whilst running older versions of the software was not a problem per se, there were potential support risks if things went wrong. There were also problems where newer applications required the latest version of the database. A decision was made to upgrade the databases to currently supported versions and to maintain these at current levels where possible. This work has started and will be a time consuming exercise that will show little or no direct benefit to the user, but is required to maintain a stable system.
A list of the main administrative and library systems is included in Appendix 11, this list outlines the expected replacement dates for the various systems in use in College. This list will

be updated on an annual basis to reflect the current systems and their replacement dates.

Conclusions

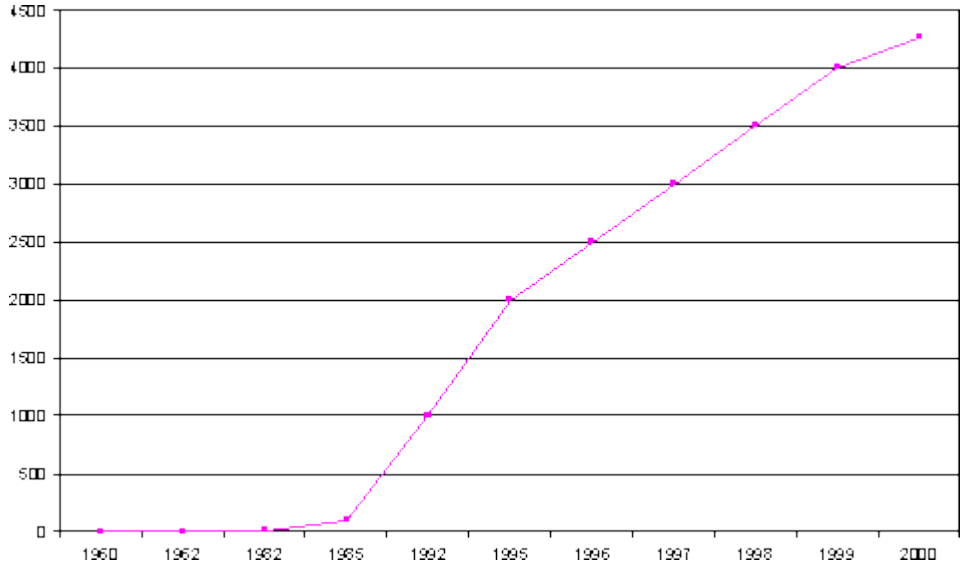
The review of the ISPDG and the strategy plan for the coming years lay out a framework for services that will enhance the learning and work experience for all users in College.

Much work is now required to ensure that College has access to state of the art systems that provide all users with the information that they require in order to do their own work unhindered by access problems.

A whole range of new challenges opens up ahead, the concepts of mobile devices, wireless access and universal use of the Internet provide scope to advance the major activities of the university both on research and teaching.

Appendix Statistical Information 1995 to Date

1. Estimated Number of Computers in College



2. Changes in funding and staff numbers

	Non-Pay	Pay	Total	Staff Count
1995/96	1,190,634	1,113,710	2,304,343	48
1996/97	1,635,410	1,286,457	2,921,867	52.5
1997/98	1,470,176	1,362,741	2,832,917	59
1998/99	1,391427	1,574,475	3,087,730	63.5
1999/00	1,613,876	1,867,816	3,481,692	62.5

3. Number of Public Access Computers and Laser Printers

	Number of Computers	Number of Printers
30th September 1995	223	18
30th September 1996	247	19
30th September 1997	367	56 (trials using small printers)
30th September 1998	379	29
30th September 1999	408	38
30th September 2000	494	38

There is a range of other computers available to students in individual academic departments.

4. Internet Connection speed

Date	TCD Internet Speed
October 1992	64
October 1993	128
October 1994	128
October 1995	128
October 1996	512
October 1997	2048
October 1998	2048
October 1999	5120
October 2000	8224

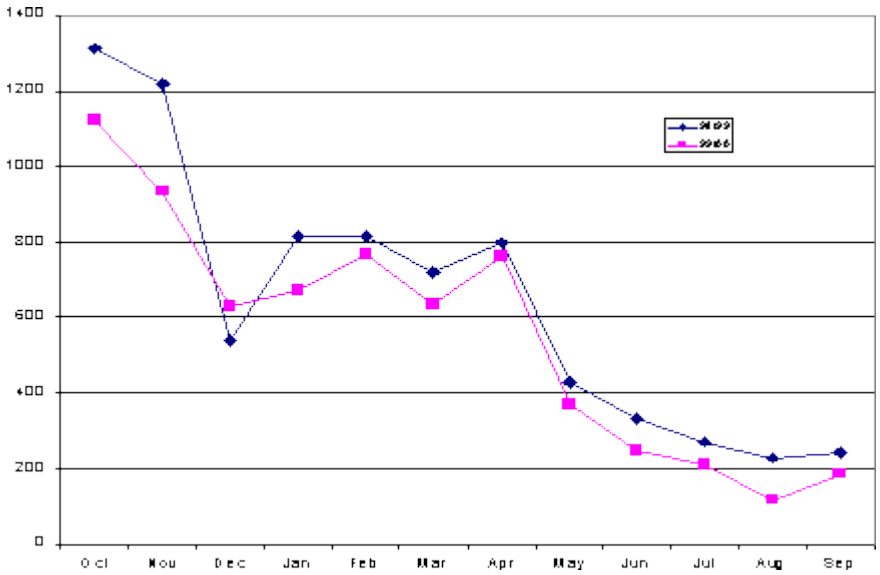
5. Documents Served from College Web

Year	Number of Pages
1996/97	3,142,559
1997/98	8,646,290
1998/99	15,059,531
1999/00	71,785,983
As many documents consist of multiple elements, these measures may not be meaningful in the future.	

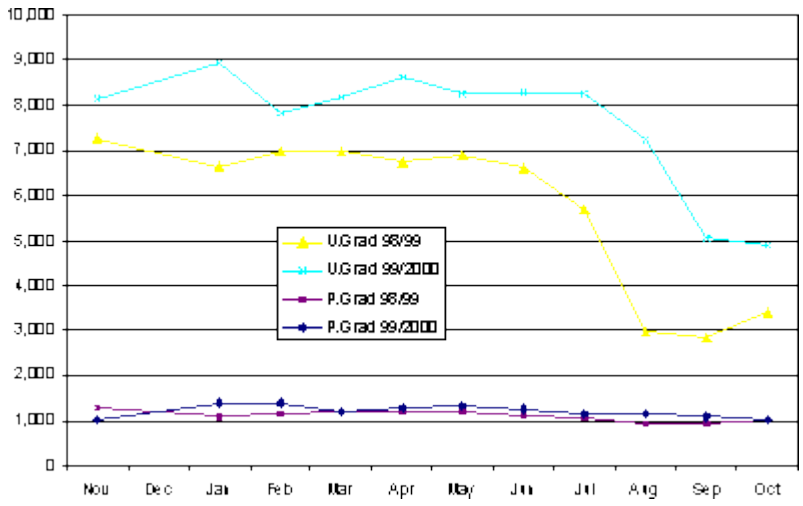
6. Documents Retrieved by Proxy Servers

Year	Number of Pages
1998/99	197,857,969
1999/00	333,983,923

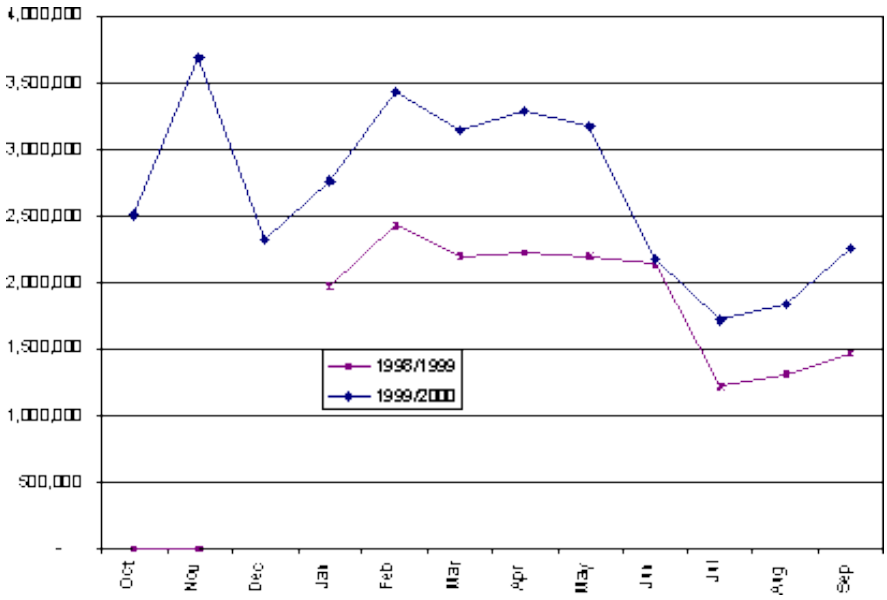
7. Number of Helpdesk Incidents



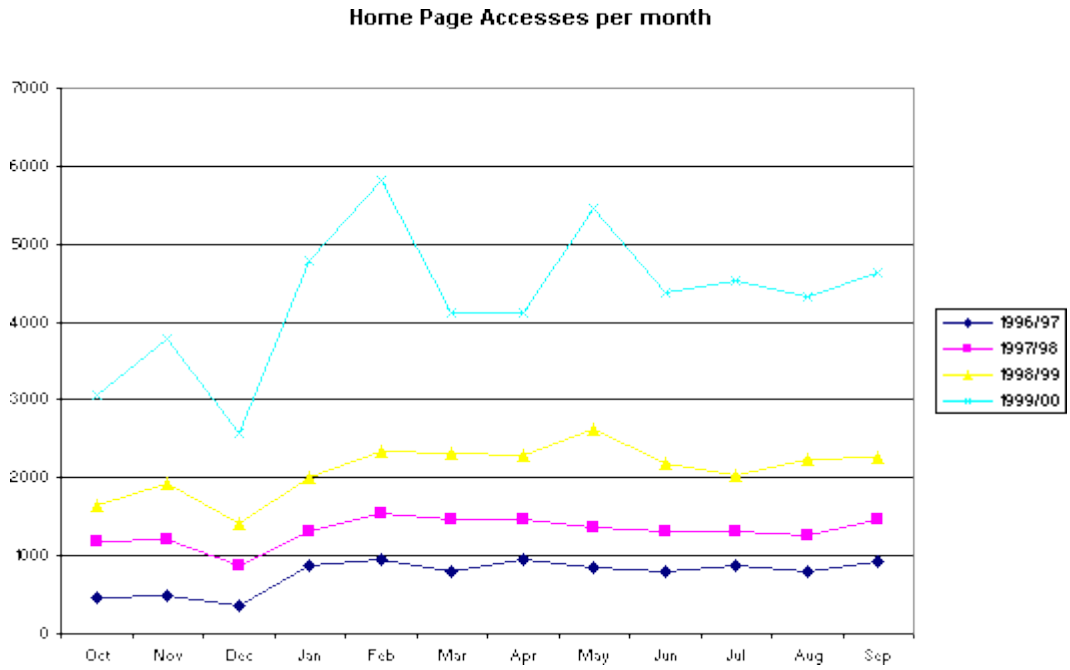
8. Numbers of Staff and Students using email



9. Count of emails to and through TCD



10. Number of Accesses to TCD Home Page



Appendix 11: College Applications, including Age and Replacement Date

D = Development time

M = Maintenance