Association of Colleges

The ILT Capability of the College Sector

A research report from AoC NILTA
June 2008

Leadership in lifelong learning

Association of Colleges
2 – 5 Stedham Place
London WC1A 1HU

www.aoc.co.uk

Telephone 020 7034 9900
Fax 020 7034 9950

Association of Colleges

Introduction

AoC (the Association of Colleges) is the representative body for colleges of further education, including general FE colleges, sixth form colleges and specialist colleges in England, Wales (through our association with *fforwm)* and Northern Ireland (through our association with ANIC). AoC was established in 1996 by the colleges themselves to provide a voice for further education at national and regional levels. Some 98% of the 450-plus general FE colleges, sixth form colleges and specialist colleges in the three countries are in membership. These colleges are the largest providers of post-16 general and vocational education and training in the UK. They serve over 4 million of the 6 million learners participating in post-statutory education and training, offering lifelong learning opportunities for school leavers and adults over a vast range of academic and vocational qualifications. Levels of study range from the basic skills needed to remedy disadvantage, through to professional qualifications and higher education degrees. In 2003, Ofsted reported that over 90% of lessons were satisfactory or better and the LSC's Learner Satisfaction Survey showed that 94% of learners were at least satisfied with their teaching experience at college.

The key role played by the sector and its 250,000 staff in raising the level of skills and competitiveness of the nation's workforce make colleges central to the Government's national and regional agenda for economic prosperity and social inclusion. AoC services to member college corporations include information, professional development and support in all aspects of institutional management, governance, curriculum development, quality, employment, business development and funding. AoC also works in close partnership with the government and all other key national and regional agencies to assist policy development, continuously to improve quality and to secure the best possible provision for post-16 education and training.

AoC NILTA

AoC NILTA has developed from being a wholly owned subsidiary company owned by AoC to being a separate and distinctive team of technology experts working within the AoC. The purpose and direction of the team reflects the importance that technology plays in delivering education policy within the College sector and the role that a representative membership organisation (AoC) can play in the facilitation of the development and delivery of technology services in colleges.

Contents

1.0 Executive Summary

AoC NILTA has undertaken research into 'The IT Capability of Colleges' as part of a series of responses to the proposed reforms of the 14 - 19 curricula which demand Colleges interface with new IT systems developed by Government and Executive Agencies. The scope of the research is to assess the current IT capability of Colleges and the implications for College systems resulting from the need to automate the transfer of data between college systems and systems of external agencies and institutions.

The research report concludes that the 'typical' College has made significant investment in IT platforms and software systems and are planning to continue this investment in new technology. Yet, the purchasing autonomy of Colleges has resulted in the development of a diverse estate of systems fit for the purpose of managing data under current operating conditions. It is a conclusion of this report that College systems are capable of capturing the data required to pass to the Agency Systems; however, in the majority of cases this data exists in disparate systems with little or no physical integration.

Therefore, although there is the *potential* for colleges to operate a fully automated and efficient system to aid the implementation of the educational reform programme, the reality is that in the majority of cases they have not had the need to develop systems to pass data between institutions in the way that the new reforms demand.

Many of the new curriculum initiatives being implemented rely on student data being passed to external institutions, which will in turn depend on the ability of each institution to manage data and integrate it internally before sharing it with other institutions. The sharing of data then requires interoperability between IT systems in schools, Colleges and Local Authorities. There would be significant impact on Diplomas, implementation of QCF units and Apprenticeships if the efficient sharing of data fails to happen. This report highlights concerns over the lack of standards and guidance for institutions and software vendors. In the vacuum of any preferred solutions it is also a concern for colleges that locally developed systems might increase the administrative burden on Colleges having to interface with different external systems.

AoC recommendations for a solution to the lack of integration and interoperability are:

Short Term

- Allocate ring fenced funding for the development of college systems to integrate data such that it is in a format that is capable of being transmitted to external organisations.

- Allocate ring fenced funding for the development of standard consortia systems such that any systems developed, or under development, are capable of interfacing with College Systems.

Long Term

- Invest in secure national integration standards such that data can be passed easily and securely between the developed systems.
- Develop application software to enable colleges with bespoke systems to produce a standard interface to comply with the standards.

2.0 Background

The College sector is facing a period of significant change, with a series of initiatives, for example Framework for Excellence and Self Regulation, set to transform, and almost certainly increase the data requirements on colleges and place an increasing call on IT capability for data capture, storage, analysis and reporting. The drive to implement innovative changes in curriculum delivery and assessment, as well as an opportunity for colleges to become awarding organisations will also put further demands for systems delivery and processing capability. The Diploma and Qualifications and Credit Framework both require a technical solution to the aggregation of unitised results in some cases from different colleges and awarding bodies, and other types of organisations such as the schools and college consortia arrangement. These projects alone may require some colleges to make significant investments in upgrading their IT infrastructure to cope with the new system for the recording of assessment for the complex modular elements of the new qualification. These initiatives are already being rolled out and this document seeks to investigate the technological capability of colleges and then relate the results of the investigation to the data requirements stemming from the policy initiatives in order to make informed generalisations about the impact of the policy on the management of college information systems.

3.0 Aims and Objectives

The research aims to discover the extent to which the College sector is prepared for a large increase in processing capacity and network traffic on its systems resulting from the series of initiatives which rely on a stable and capable IT platform

The objectives will be:

1. To categorise colleges' current IT capability across a range of systems and determine numbers of colleges in each category;
2. To establish the range of technologies currently deployed by colleges;
3. To establish the planned investment in IT infrastructure by colleges in the short term;

4. To analyse the system requirements generated by policy initiatives and identify the size of the gap between the requirements of the systems and the capability of colleges to run them efficiently.

4.0 Methodology

Secondary research was conducted in order to summarise the work that has been conducted into ILT capability to date. Desk research was undertaken to review government, non government reports and papers and independent academic sources and work produced by sector representatives.

In-depth interviews were then conducted with the technical directors of three colleges representing a spread of IT systems and technological approaches to the deployment of IT to run MIS and academic systems within a college. The results of these interviews were used to formulate a research survey tool which would be administered via the internet using the survey development tool "SurveyMonkey". When developed, the questionnaire was piloted with the respondents of the in-depth interviews and questions refined from feedback obtained. The survey was then distributed to the entire database of colleges on the AoC database via an email containing the link to the survey site. The survey was launched on 15th May 2008 and the report was closed off on 3rd June.

5.0 Results

The results of secondary and primary research are set out below.

5.1 Secondary Research

The work produced by Becta into 'e maturity' has provided a useful definition of the term which will be used throughout this report in order to assess the ILT capability of colleges. It is important too that 'e – maturity' is defined as being: 'the capacity of a college to make strategic and effective use of technology to improve educational outcomes.' ['Making a difference with technology for learning: evidence for college leaders', Becta, October 2006, p.3].

5.2 Primary Research

Having reviewed existing research and published data on the current capabilities of colleges, it became clear that although there is an overall perspective to be discerned in the work of government and non – government agencies that only a relatively small number of Colleges are capable of utilising technology to enhance their performance in terms of quality of provision or business efficiency, there was little explanation as to why this was the case. This prompted the investigation into the actual infrastructure and systems used by colleges as well as the use of those systems to improve business efficiency and quality of provision.

5.2.1 Results from interviews

Three interviews were conducted with second and third tier managers responsible for curriculum planning and ILT. The results indicated that it would be important to ask specific questions on IT infrastructure including software systems and to investigate the types of systems in use by colleges for running business and academic functions. In particular the interviews pointed to the possibility of a lack of integration of college IT systems being a barrier to achieving the business efficiency gains and improvements in the quality of provision that are promoted as being attainable through the use of technology.

5.2.2 Survey Results

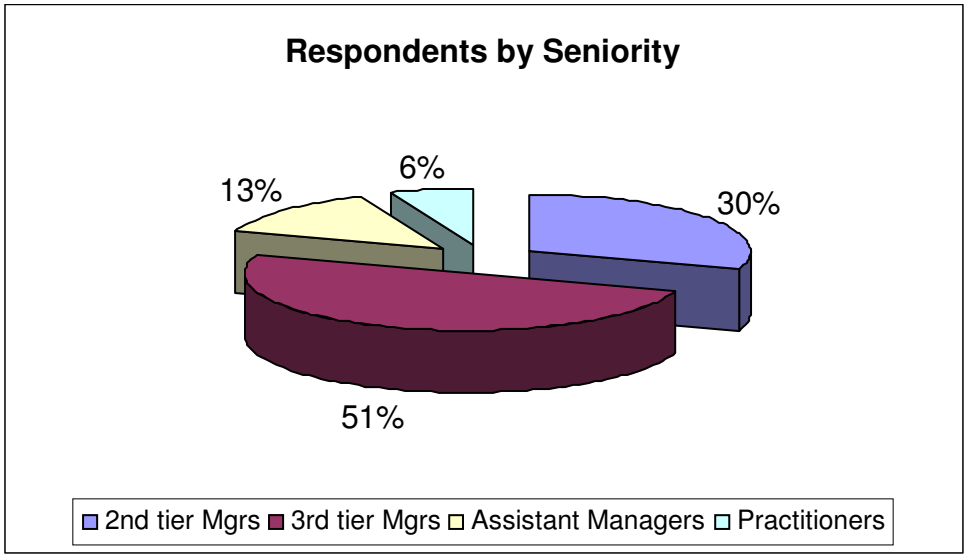
The first action taken once the survey results were collated was to clean the data; this was done using a set of data cleaning rules in order to achieve consistency and to reduce error. The data cleaning exercise was done as in many cases the responses to the survey contained duplicated and incomplete responses, some of which were unusable.

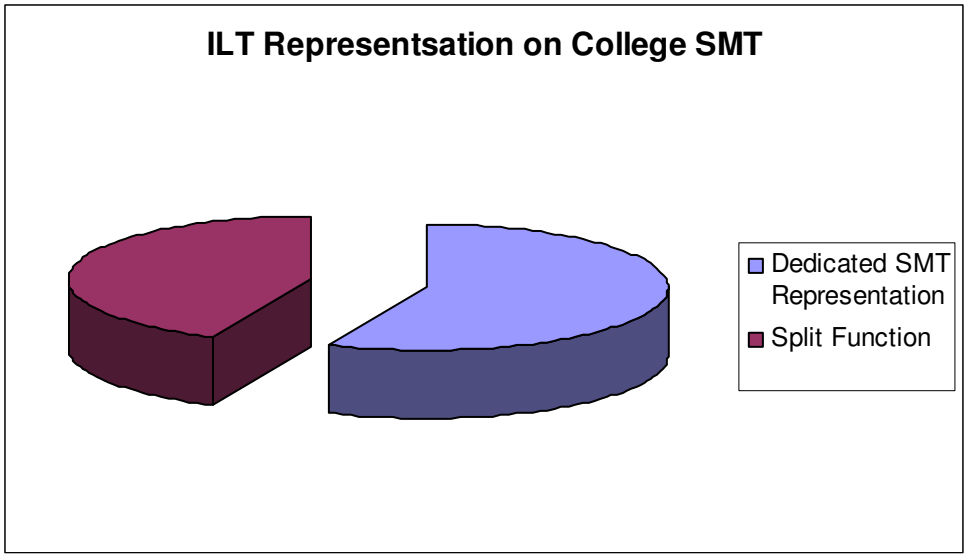
At the time of conducting the survey, and after cleaning the data, there were a total of 127 responses to the survey out of a total of 427 colleges on the AoC database giving a 30% response rate.

5.2.2.1 Respondent Data

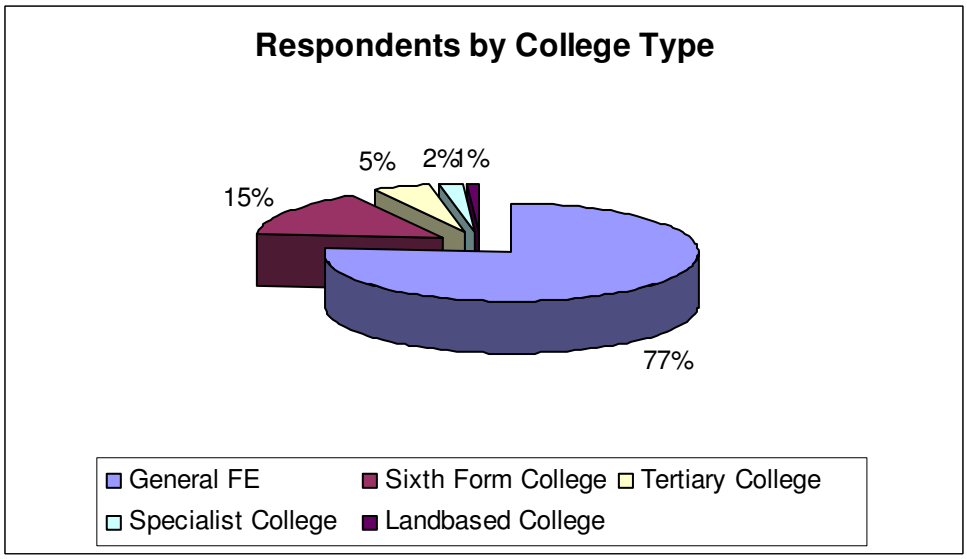
This section gives the results of the survey relating to the respondents and the types of institutions they belong to.

The majority of respondents were 3rd tier managers with responsibility for technology. It was clear from the data cleaning exercise that some Colleges had to have two people to complete the survey and the most senior role was taken. It seems that there is some ambiguity of role in colleges with job titles of those responsible for ILT varying and in some cases the role is split.

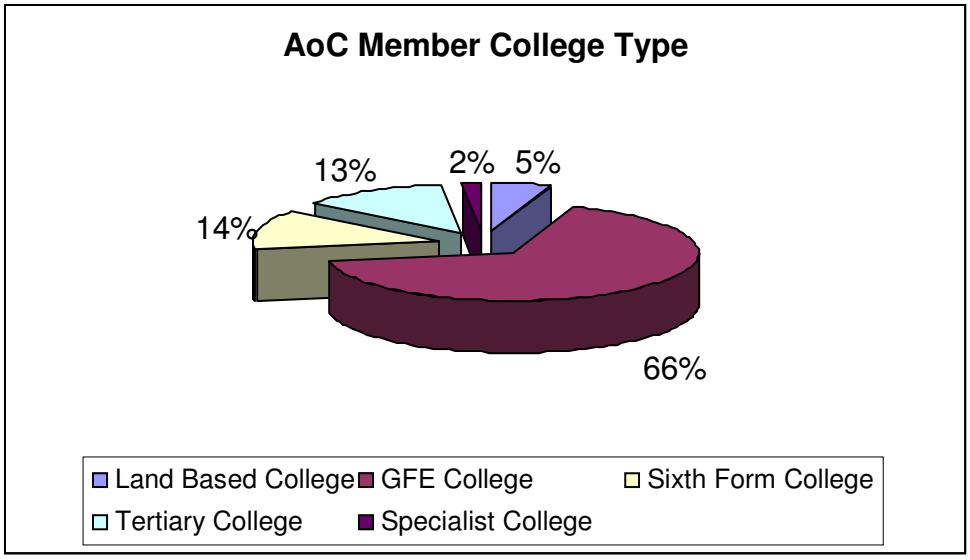




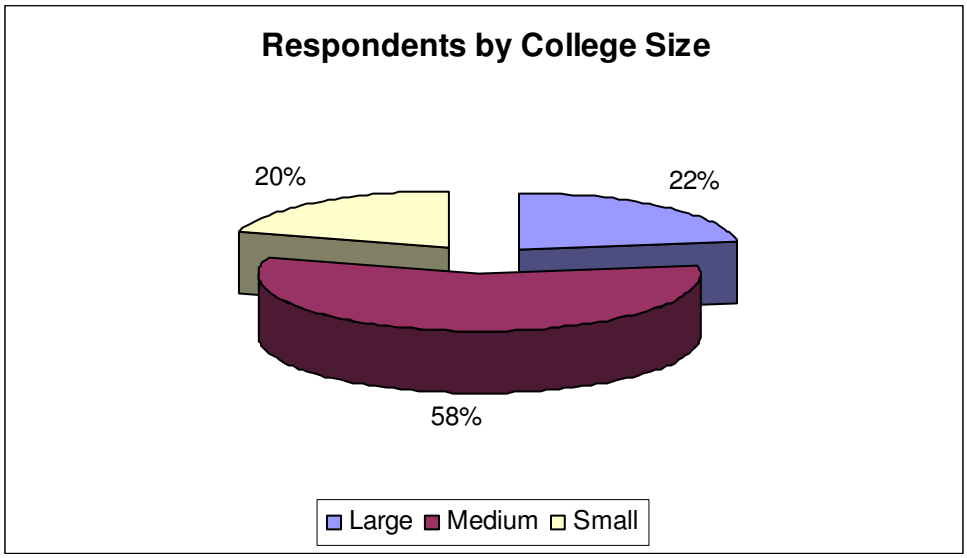
General FE Colleges accounted for over three quarters of the respondents.



These results are largely representative of the population as depicted by a comparison to an analysis of the AoC member database.



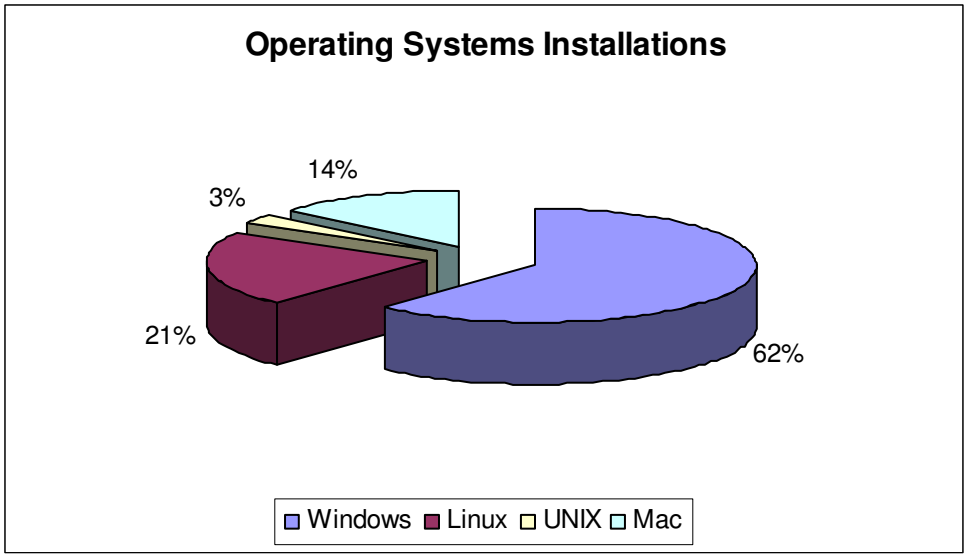
The majority of the responses were from Medium sized colleges between £10M and £30M turnover



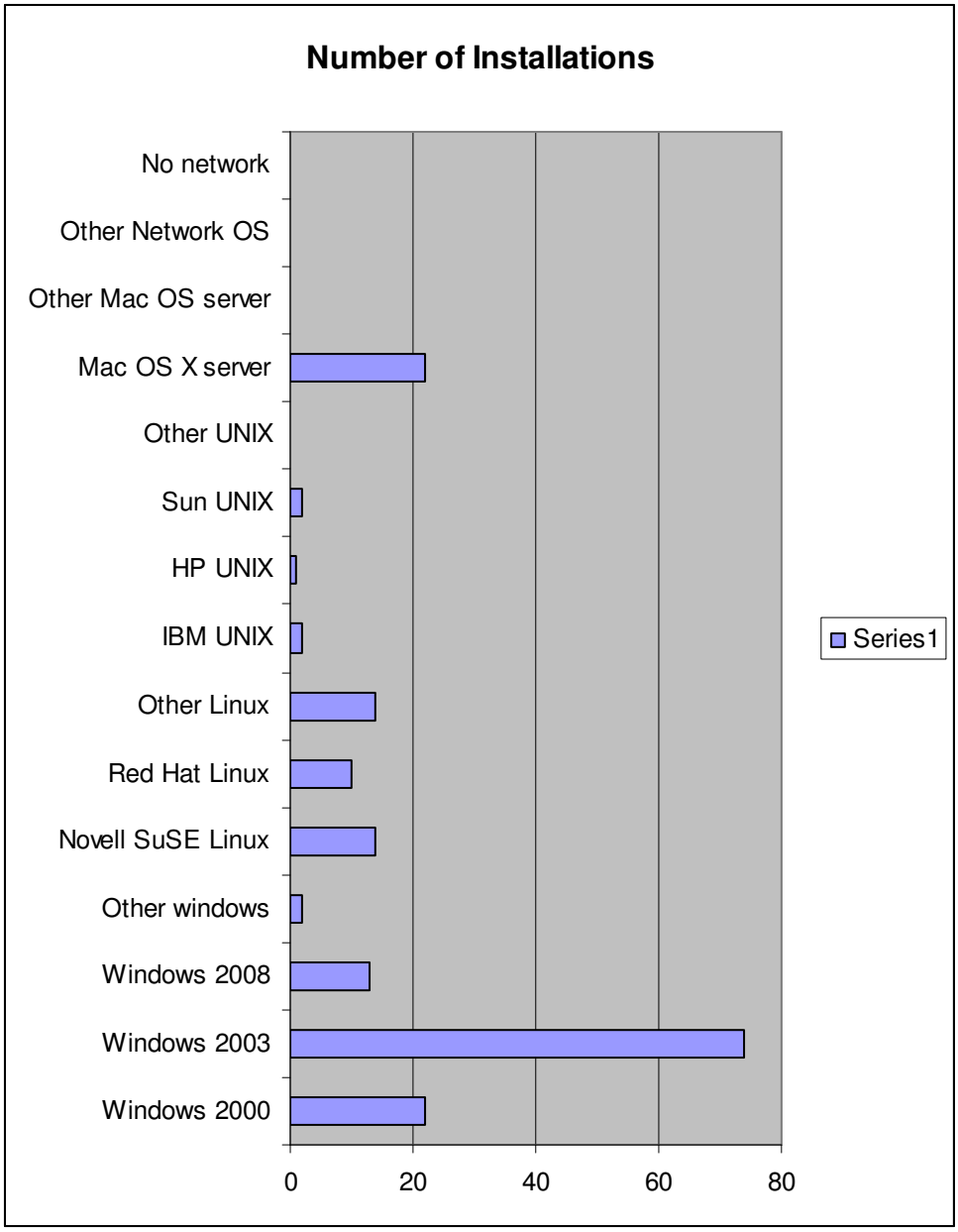
5.2.2.2 Infrastructure

This section shows the results from the survey of questions relating to the ILT infrastructure and platforms.

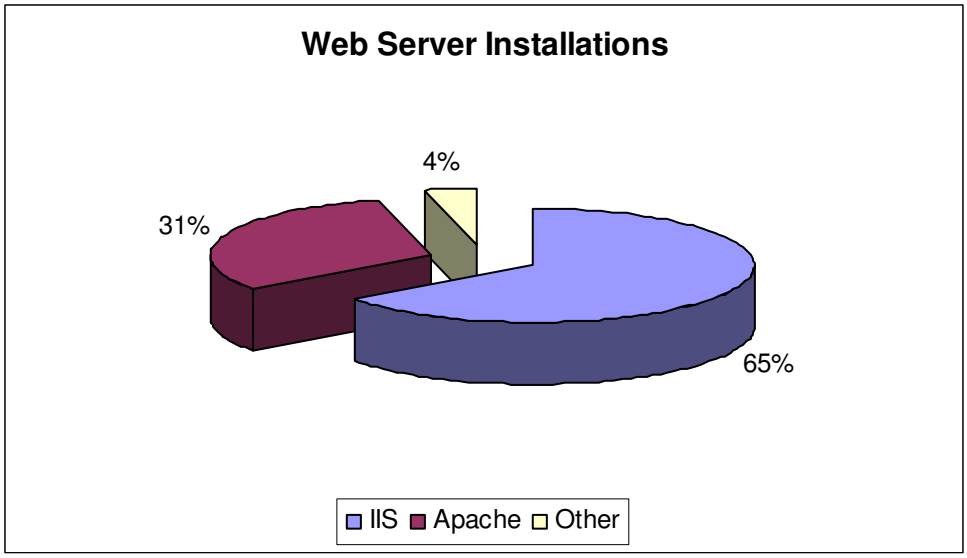
The majority of installations of operating systems in colleges were Microsoft; however, this picture is a little confusing as many colleges run a mixed environment.

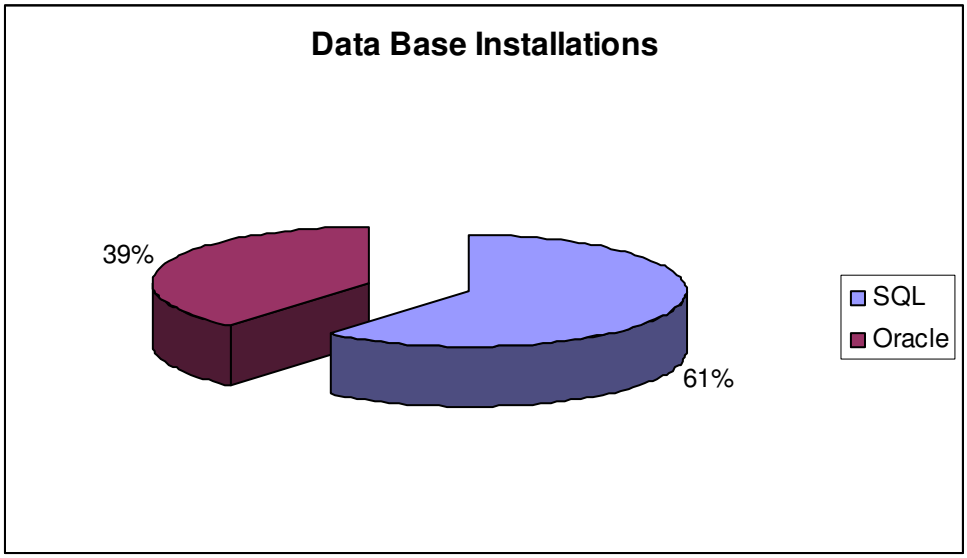


The number of colleges responding to this question was 77 and out of the 77 respondents 74 were running Windows 2003 as an operating system. This shows an almost total commitment to Microsoft as a server operating system.

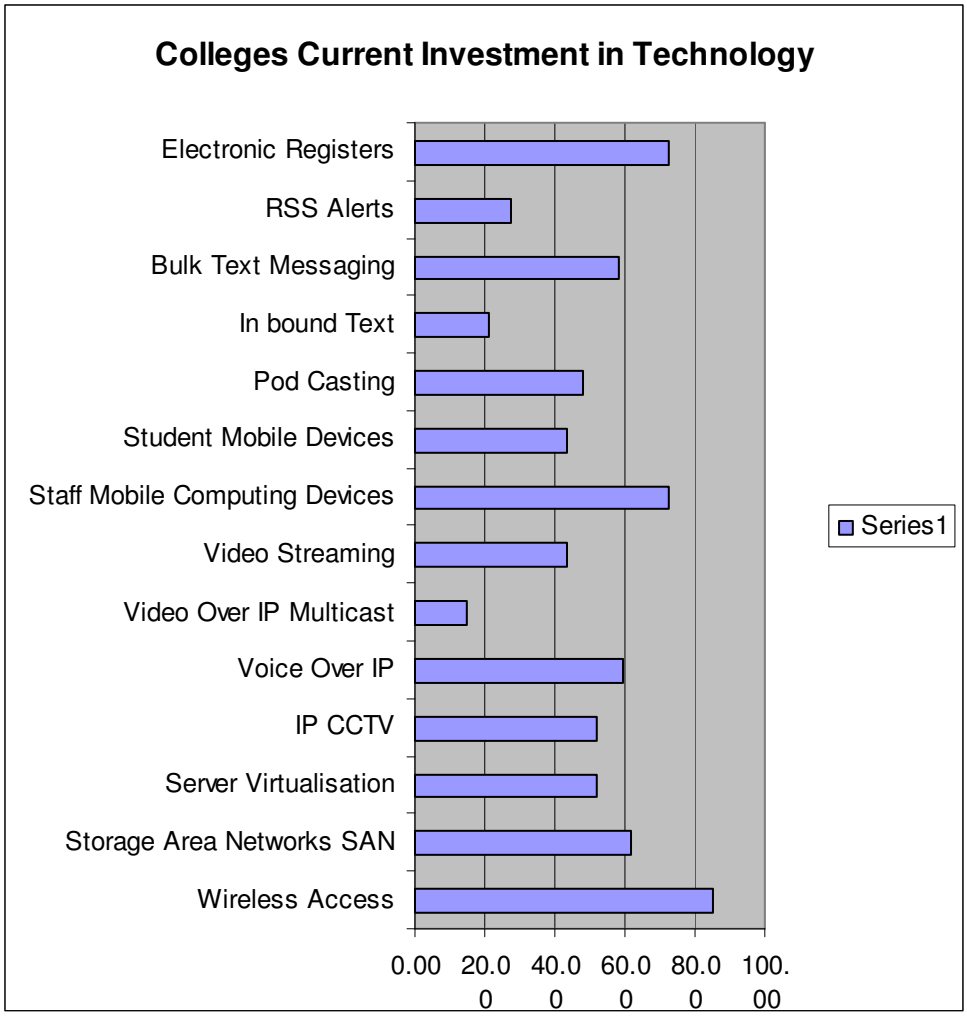


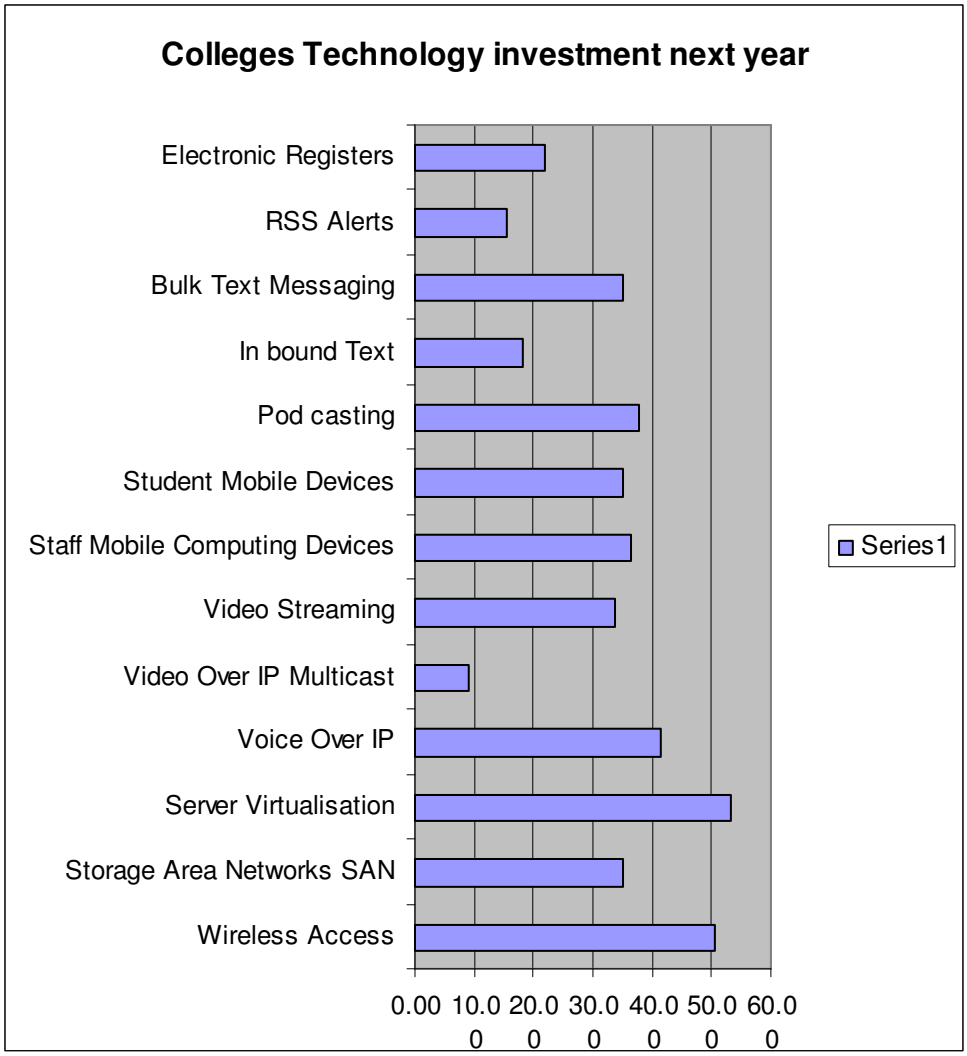
Most installations of web server applications are IIS and SQL for databases. This is also a heavy reliance on Microsoft platforms.





The investment in technology of Colleges both current and planned for the short term is very encouraging in terms of the level and range. It is particularly interesting to note that many have already invested in or are planning to invest in electronic registers to better manage attendance data. The other area of infrastructure that is interesting is the level of interest in server virtualisation and storage area networks which if configured correctly produce a more stable and flexible IT platform. Those investing in mobile and multimedia capability are showing a commitment to the development of high end learning delivery platforms which also contribute to the greater degree of Personalisation for the student.

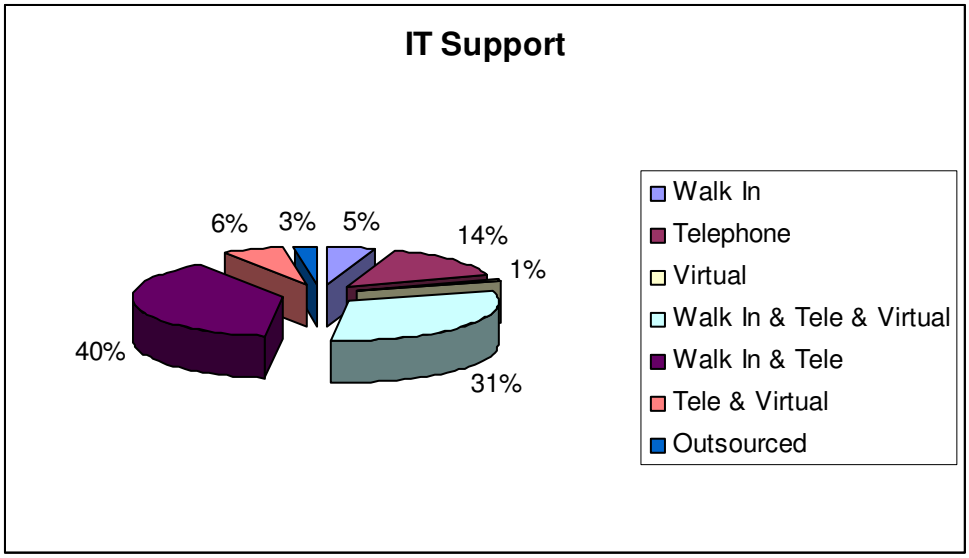

Colleges Current Investment in Technology
Electronic Registers
RSS Alerts
Bulk Text Messaging
In bound Text
Pod Casting
Student Mobile Devices
Staff Mobile Computing Devices
Video Streaming
Video Over IP Multicast
Voice Over IP
IP CCTV
Server Virtualisation
Storage Area Networks SAN
Wireless Access
0.00
20.00
40.00
60.00
80.00
100.00
Series1



5.2.2.3 Systems Support

In terms of network administration, all colleges had in house technicians to support the day to day administration, only 5 of the 77 respondents to this question reported using outsourced suppliers to manage the College network.

In terms of IT support for users, telephone support is the most common with 91% of Colleges having a support portfolio that contains telephone support. There is a very low use of any form of outsourcing for IT support services indicating that manned helpdesk support is dedicated and therefore will be at a premium cost.



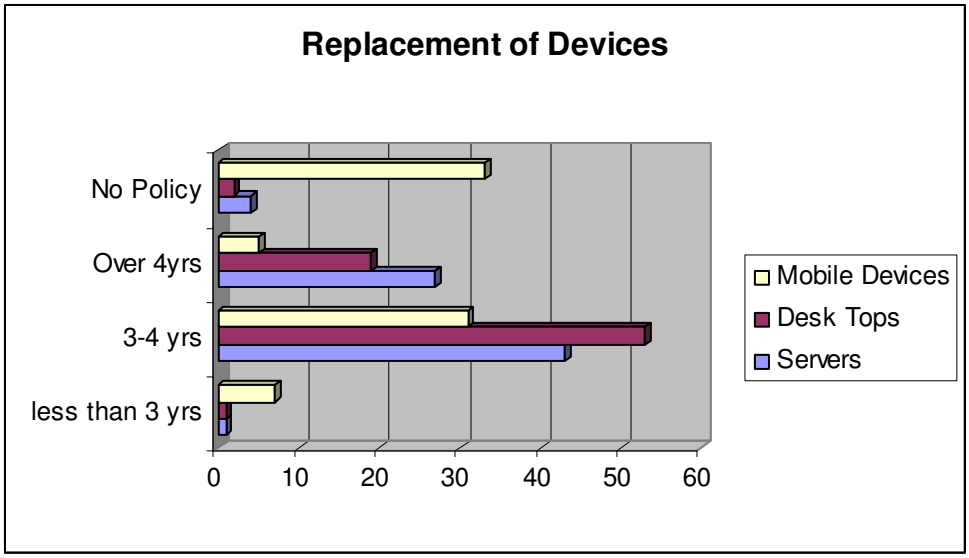
5.2.2.4 Security

Colleges are taking reasonable precautions with regard to disaster recovery. The prevailing method used being a daily incremental backup with weekly full backup; however, 36% of the respondents are still keeping backup tapes on site which may not be sufficient in some disaster recovery situations.

Colleges perceive their systems to be secure, with the majority of colleges rating their security as highly secure and the rest as moderate. The views on security applied to all systems including Internet access, Network access, Terminal access, E Mail and VLE.

5.2.2.5 Device Replacement

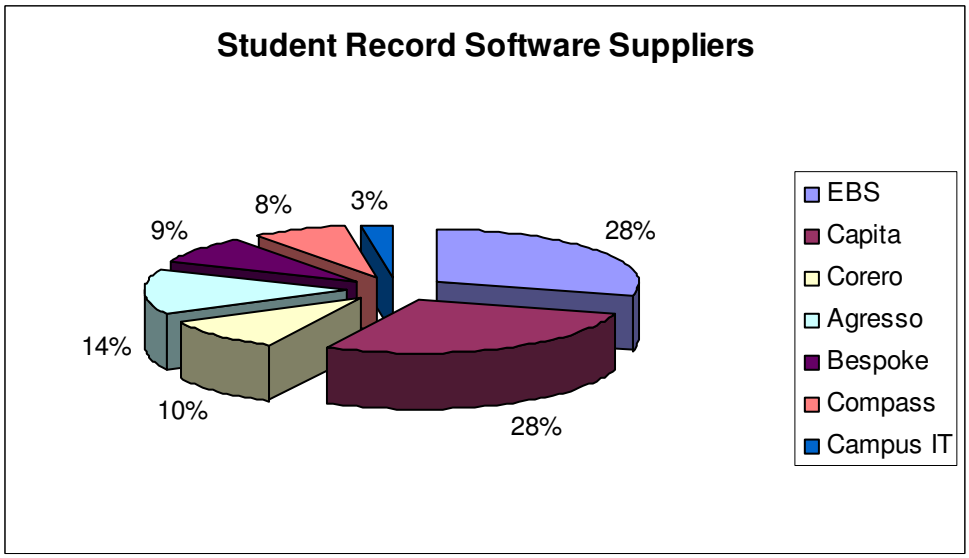
When replacing computing equipment the majority of Colleges adopt a 3-4 year replacement policy on servers and desk tops. There are however a significant number of colleges which report greater than 4 years as a replacement timeframe. The 4 year timeframe may suggest a number of colleges have aging equipment and may not be investing enough in technology to keep equipment up to date. The situation with mobiles is a different picture with many Colleges having no policy. This may be the nature of this new area of investment being uncertain of the average lifespan of mobile devices. It could also be an indication that many of these devices have been purchased as part of funded pilot schemes and as such the devices have not been utilised in strategic roles to be covered by the institutions asset management policy. The impact of 'Green IT' policies on device replacement has not, to date, been measured with regard to the impact on device replacement.



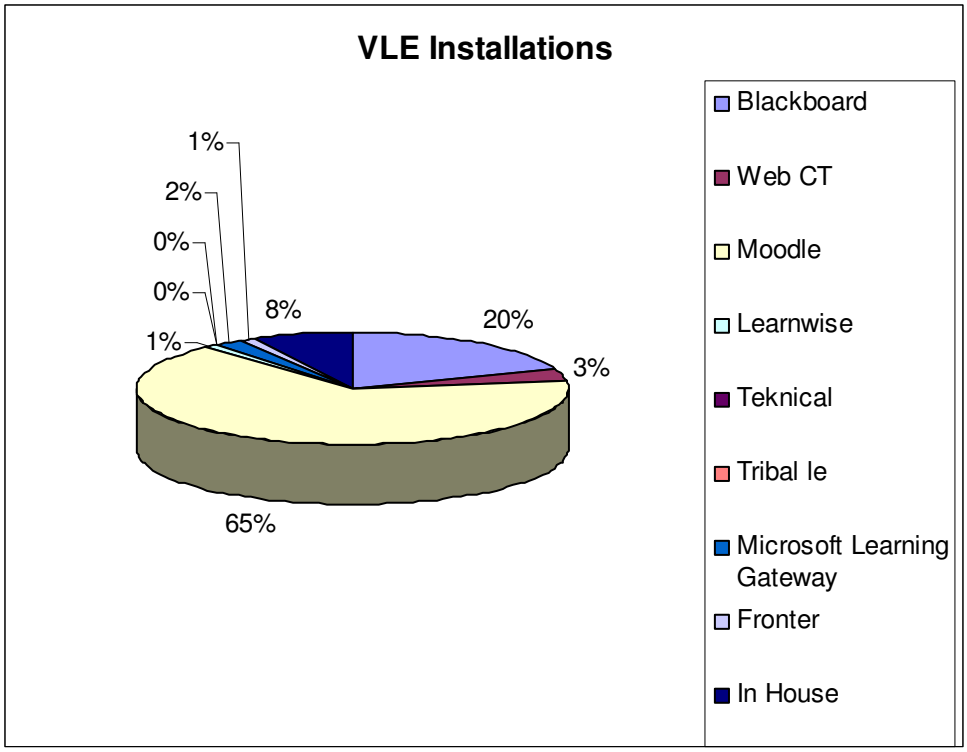
5.2.2.6 Systems

This section shows the results from the survey on the software systems employed by the Colleges for the administration of business and academic systems.

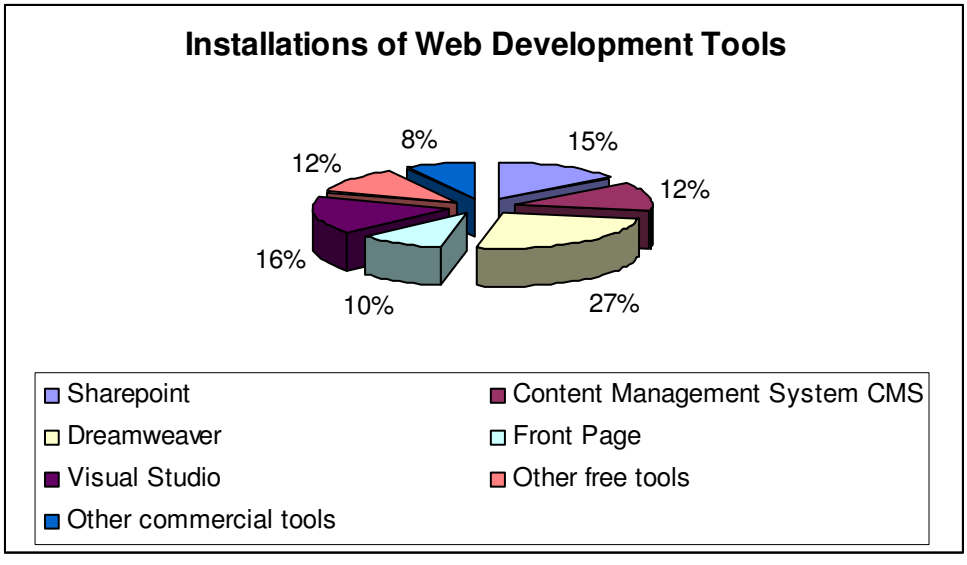
The top two Student records suppliers account for over half the installations in the respondent colleges.



The open source VLE software Moodle dominates the College sector in terms of VLE installations. Again this is often a mixed economy in colleges where a college may have more than one VLE installation. From the respondents to this question there were reported 92 installations from 76 Colleges and 11 Colleges had more than one VLE installation.

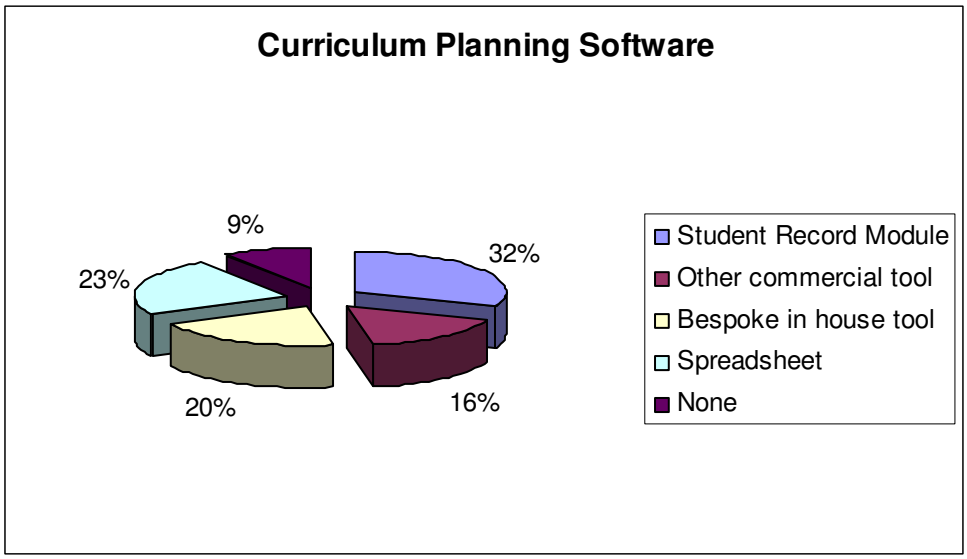


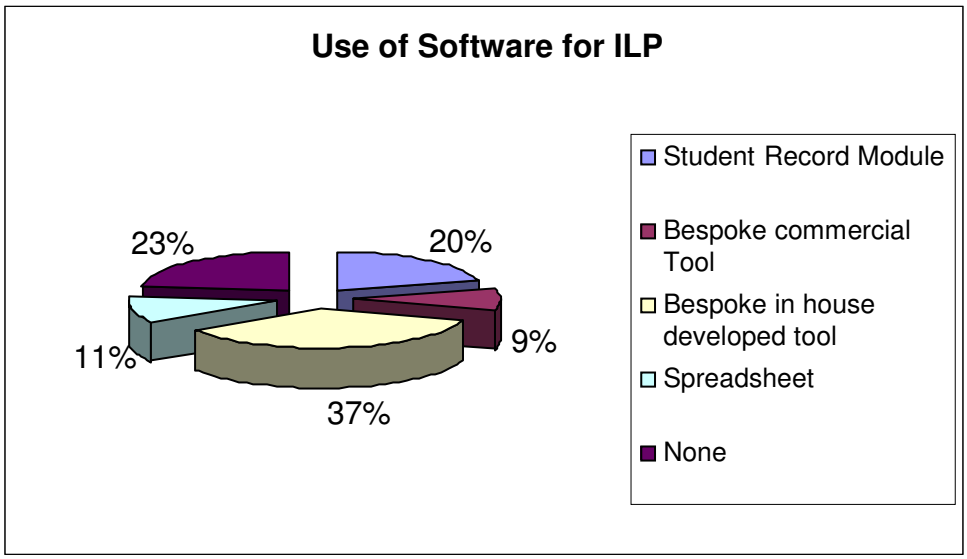
The types of web development tools employed by colleges is an indication of how standardised are the approaches to web development. It can be seen here that the College sector utilises a wide range of tools both open source free downloads and commercially available tools demonstrating a high diversity of approaches to web development. It is again interesting that 15 % of all installations are Sharepoint installations showing Microsoft development in the College market but not withstanding this there is clearly no industry standard approach to web development.

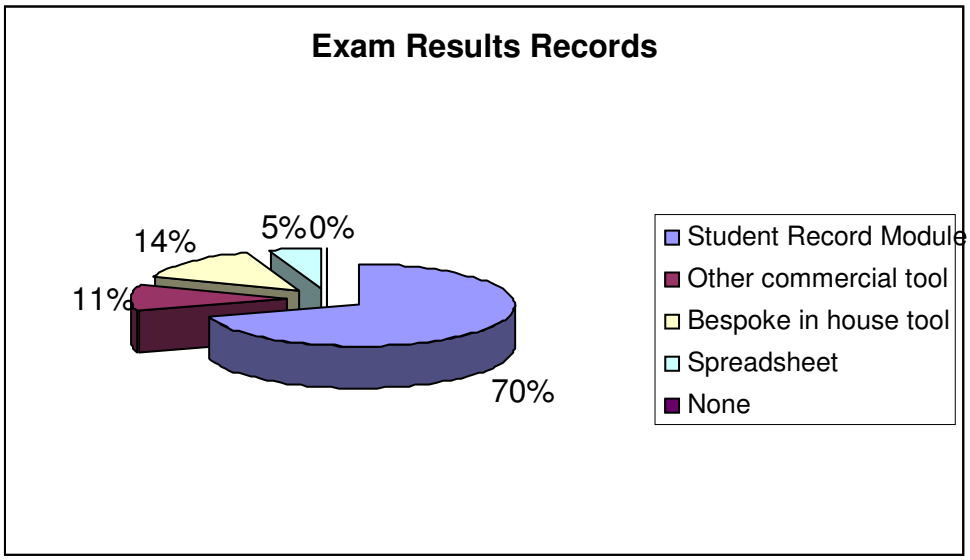


In terms of systems to support academic processes there is a high diversity of systems used and where the output of the systems is not required for

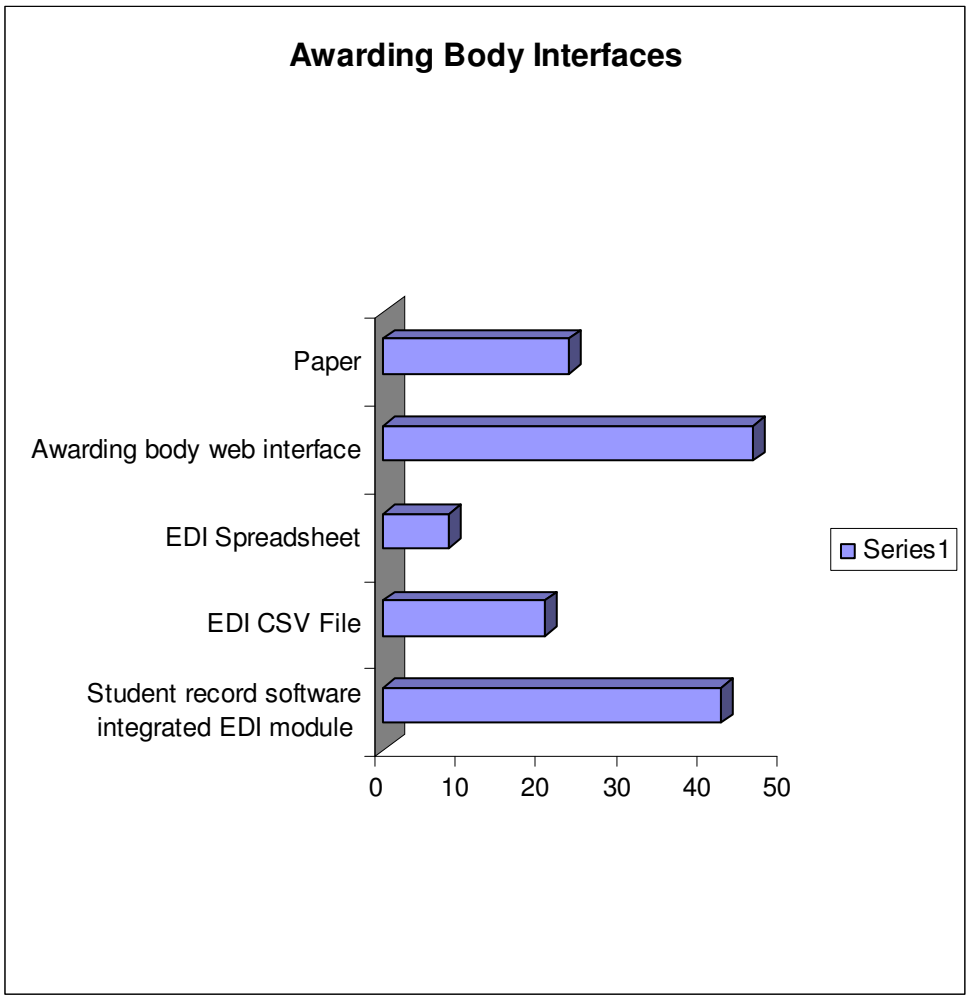
statutory returns there is a propensity to use in house tools rather than modules integrated into the Student Record software.



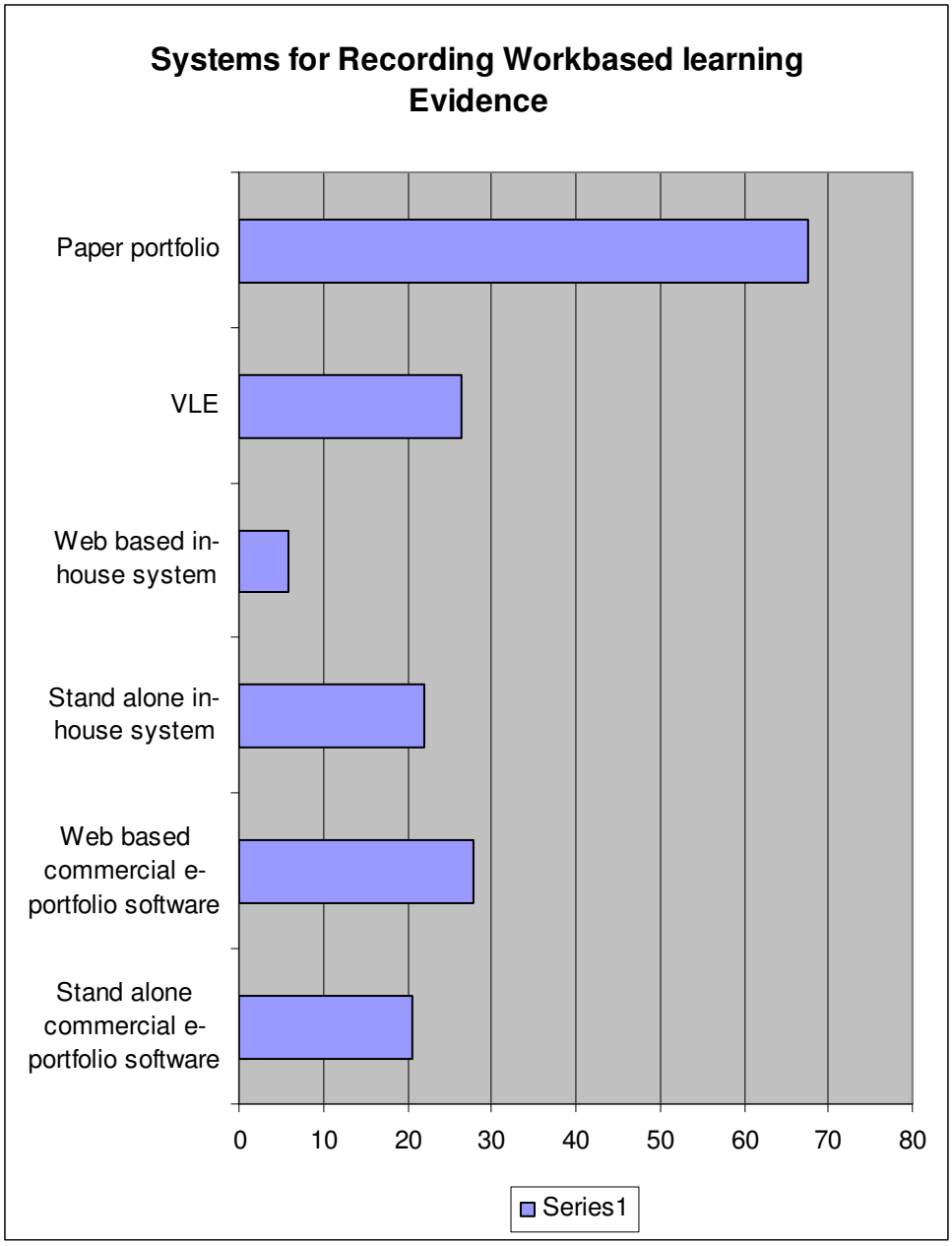




There is a diversity of system interfaces with awarding bodies which reflects the range of size and technical capability of the awarding bodies. The propensity to use paper or web interfaces however means that the data usually has to be re keyed and that this leads to an increase in cost and leaves the system open to the introduction of data entry errors.

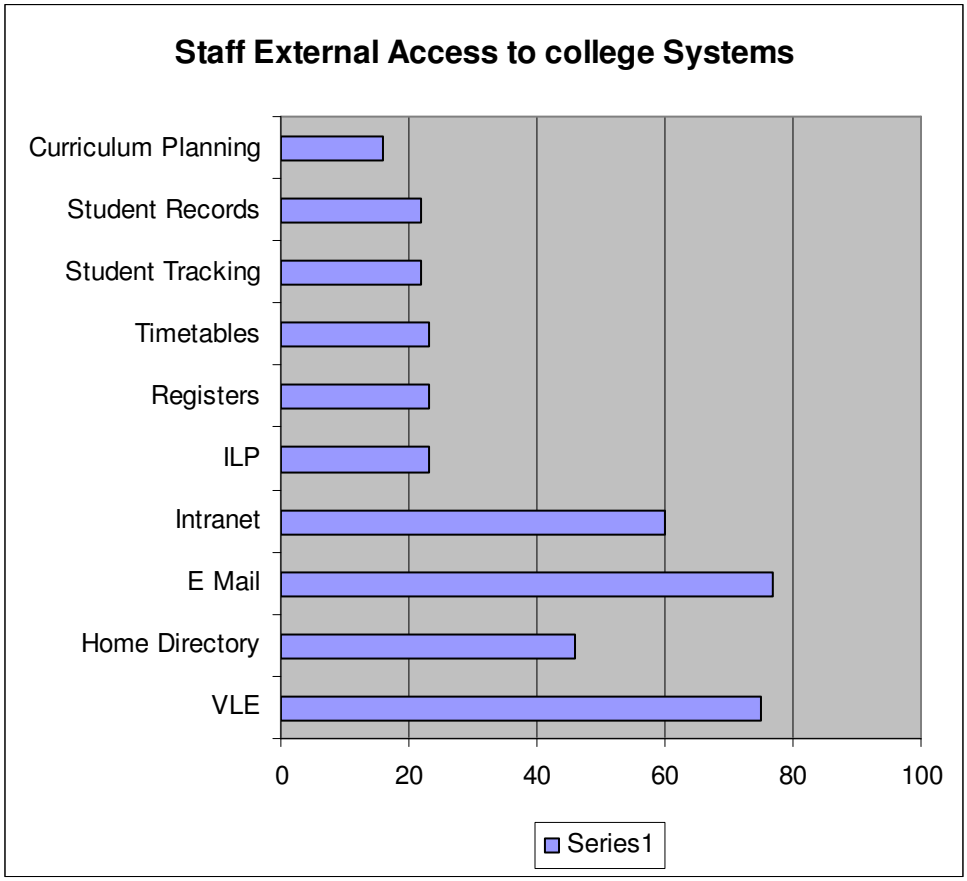


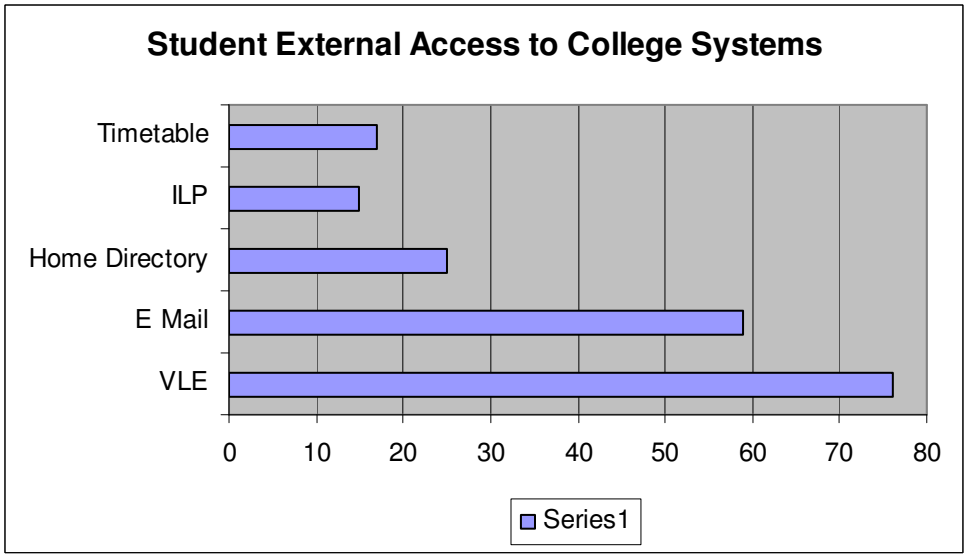
In terms of the recording of work based learning evidence, the use of electronic systems for recording and storage has not gained much support with the majority of colleges still using paper.



Staff and student access to systems is a good measure of the College's IT capability. It is a relatively easy matter to allow access to systems that are designed to be accessed from outside the College and run on a web server. A College allowing access to the VLE and E Mail is not therefore doing any more than offering a basic service that can be offered by all. Gaining access to college internal systems such as the home directory or intranet however requires a greater capability in terms of systems manipulation and shows a greater level of commitment to the provision of College systems outside the physical environment of the College. Finally, giving access to systems requiring a level of integration in order to display meaningful data to the staff or student (such as ILP and Timetables) shows a high level of commitment to the provision of college systems outside the physical environment of the college and therefore to reaping the benefits of flexible working and the economies of scale that internet access to learning and management systems

can bring, not least increasing the degree of Personalisation of learning available to students. These results show clearly the three levels of service provision and hence IT capability.



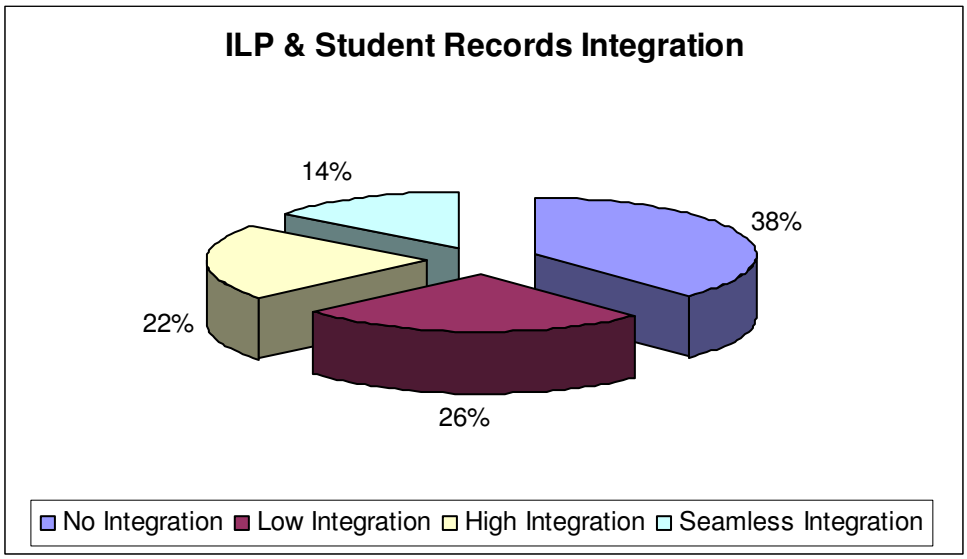


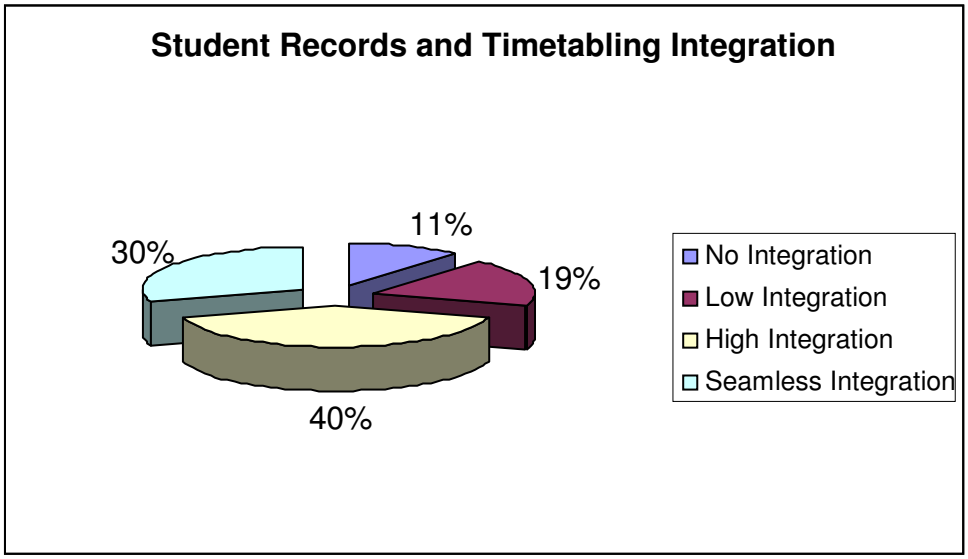
5.2.2.7 Integration

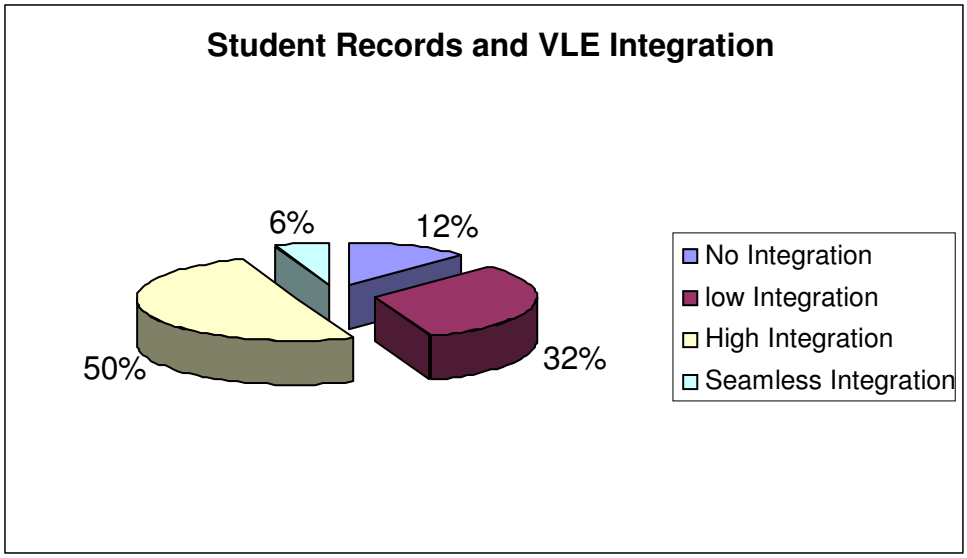
This section shows the results of the responses to the survey questions on the integration of College systems.

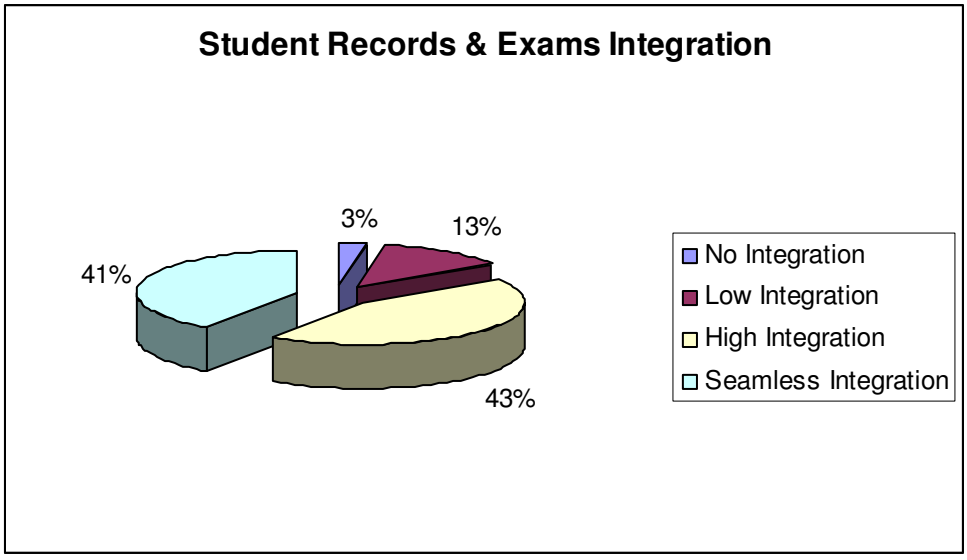
Respondents were asked to rate the integration between systems ranging from seamless integration to no integration. Overall there is much higher integration between business systems as shown by the integration levels

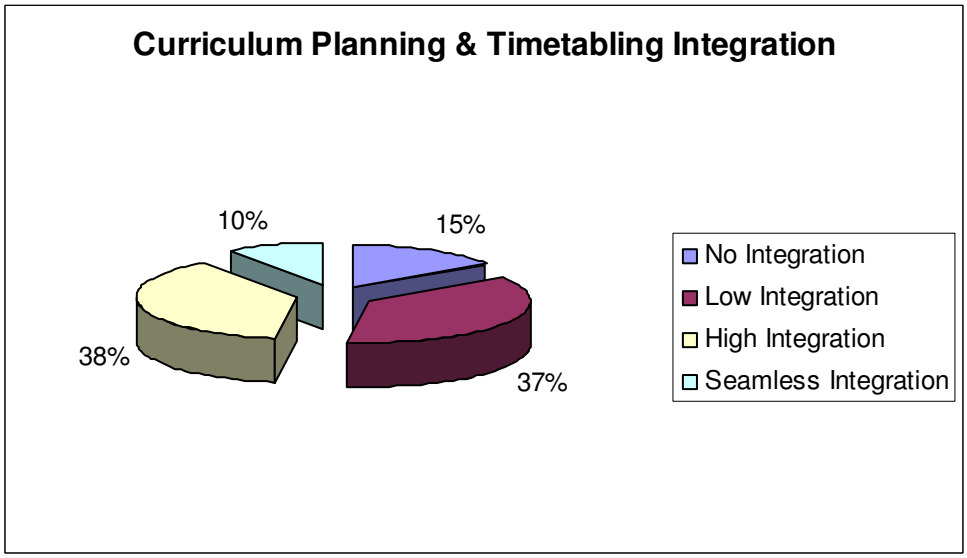
between student records and timetabling, exams and registers. On investigation into the relationship between those colleges rating seamless integration and the use of student record modules, no significant difference using the Chi Square test could be found between the use of a student record module and the rating of seamless integration between student records and ILP and Exams. As the modules are by definition physically integrated to student record systems it is therefore likely that not all of the Colleges that have access to these modules are using them in a manner that provides true business and academic system integration. This hypothesis however would need further investigation into the use of enterprise applications in Colleges.

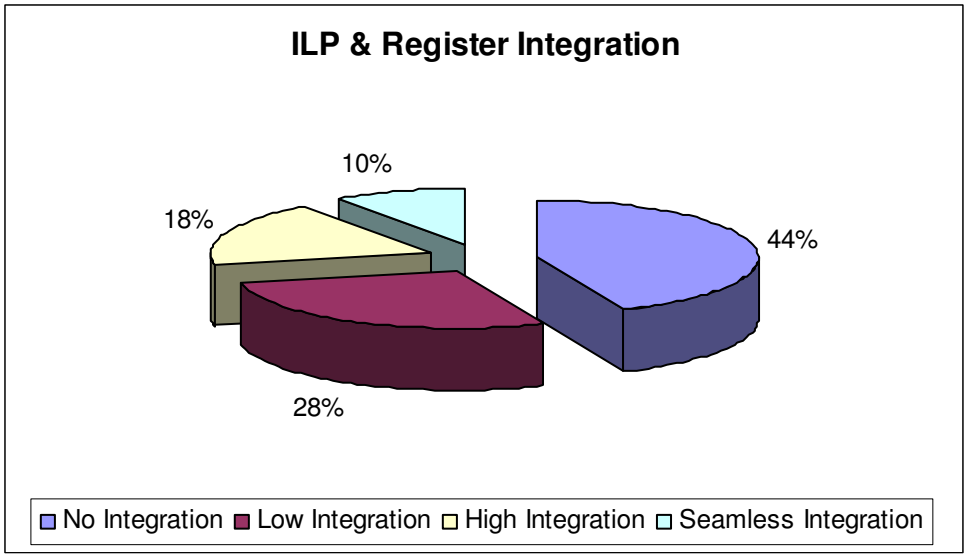


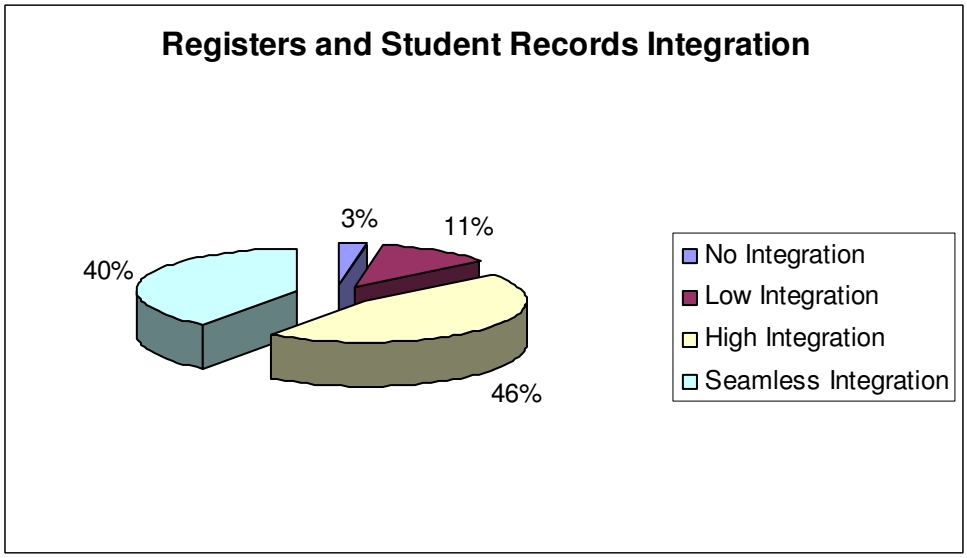



Student Records and VLE Integration
6%
12%
50%
32%
No Integration
low Integration
High Integration
Seamless Integration


Student Records & Exams Integration
3%
13%
41%
43%
No Integration
Low Integration
High Integration
Seamless Integration


Curriculum Planning & Timetabling Integration
10%
15%
38%
37%
No Integration
Low Integration
High Integration
Seamless Integration





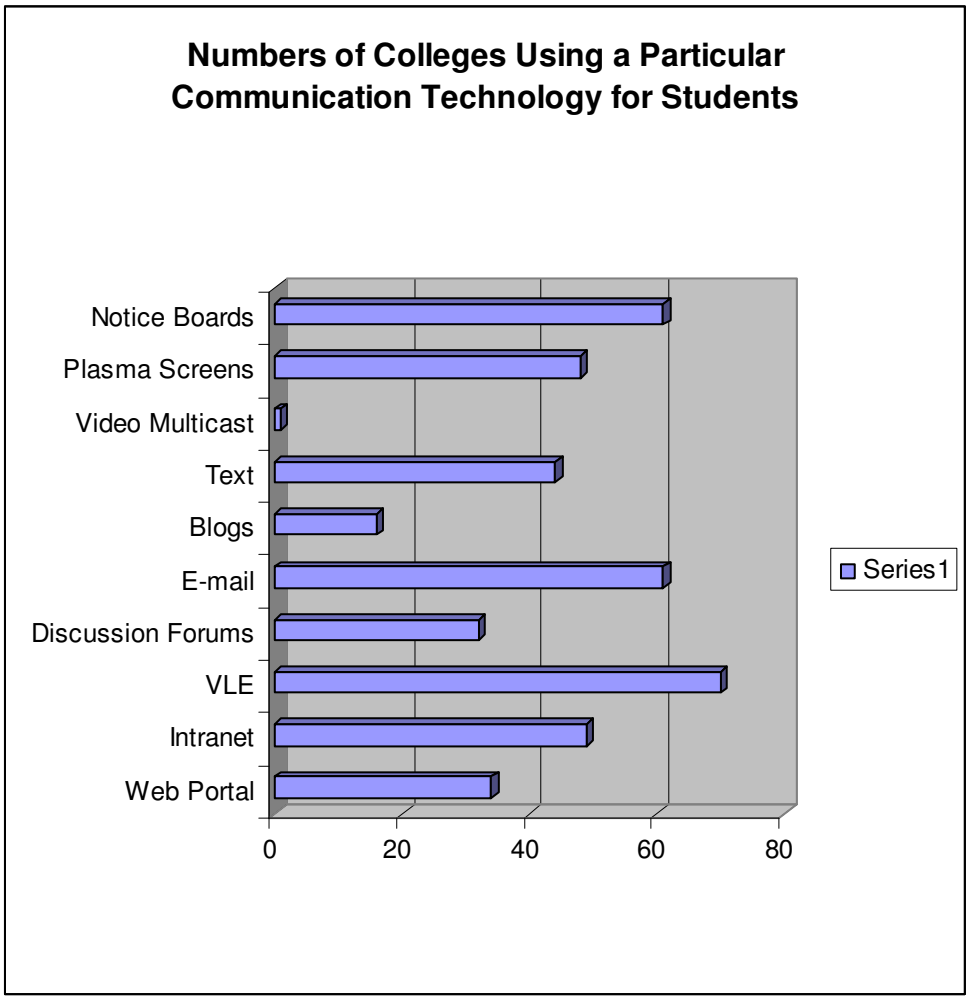
5.2.2.8 Strategic use of IT

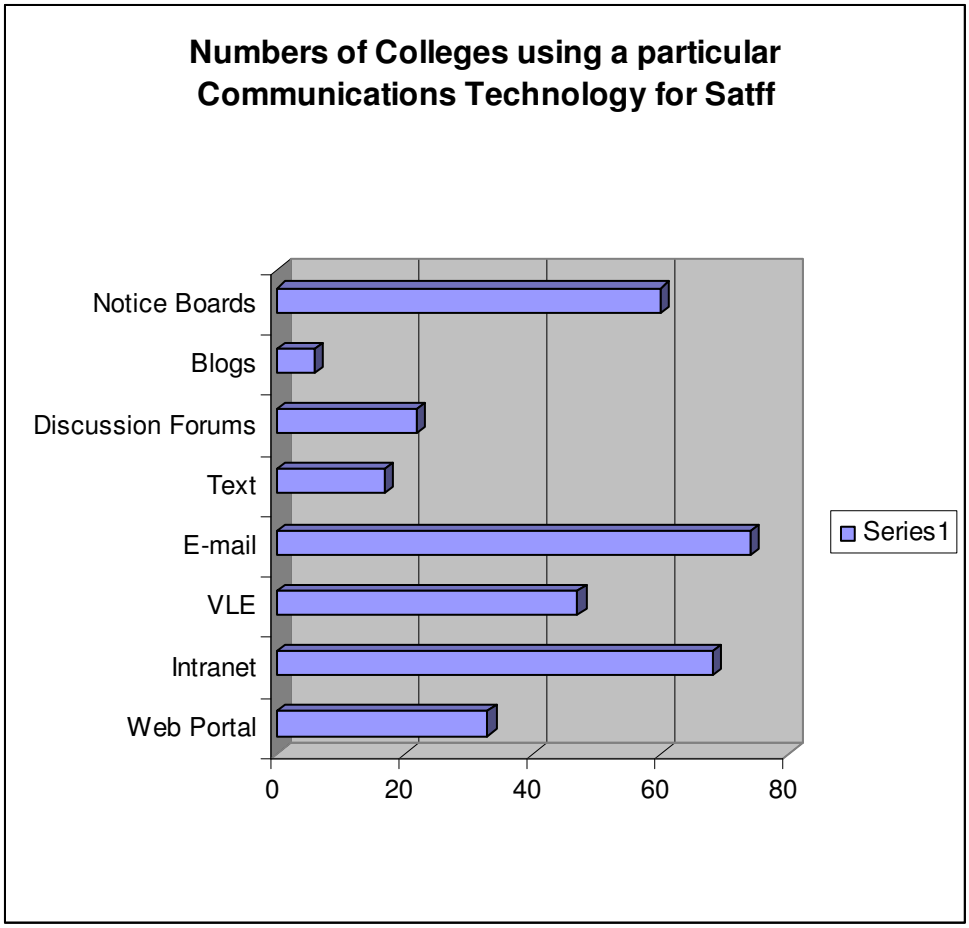
This section shows the results from the survey questions relating to the ability of a College to make strategic use of its IT systems. It was found that all Colleges responding to the questionnaire have an ILT strategy either as a separate document or contained in other strategic documentation and that it was reviewed by the majority of institutions once a year.

The way the College communicates to staff and students is an indicator of its strategy and the way it intends to implement it. In this section respondents were asked to indicate the technologies employed in the communication of information to staff and students.

These results show that the use of technology presents a varied landscape with Colleges responding in a diverse manner to the possibilities offered by the advancements in communications technology. The use of visual devices is evident with the adoption of plasma screens; however the lack of use of multicast technology suggests that many of these devices are not networked and are thus not making full use of the technology to broadcast corporate

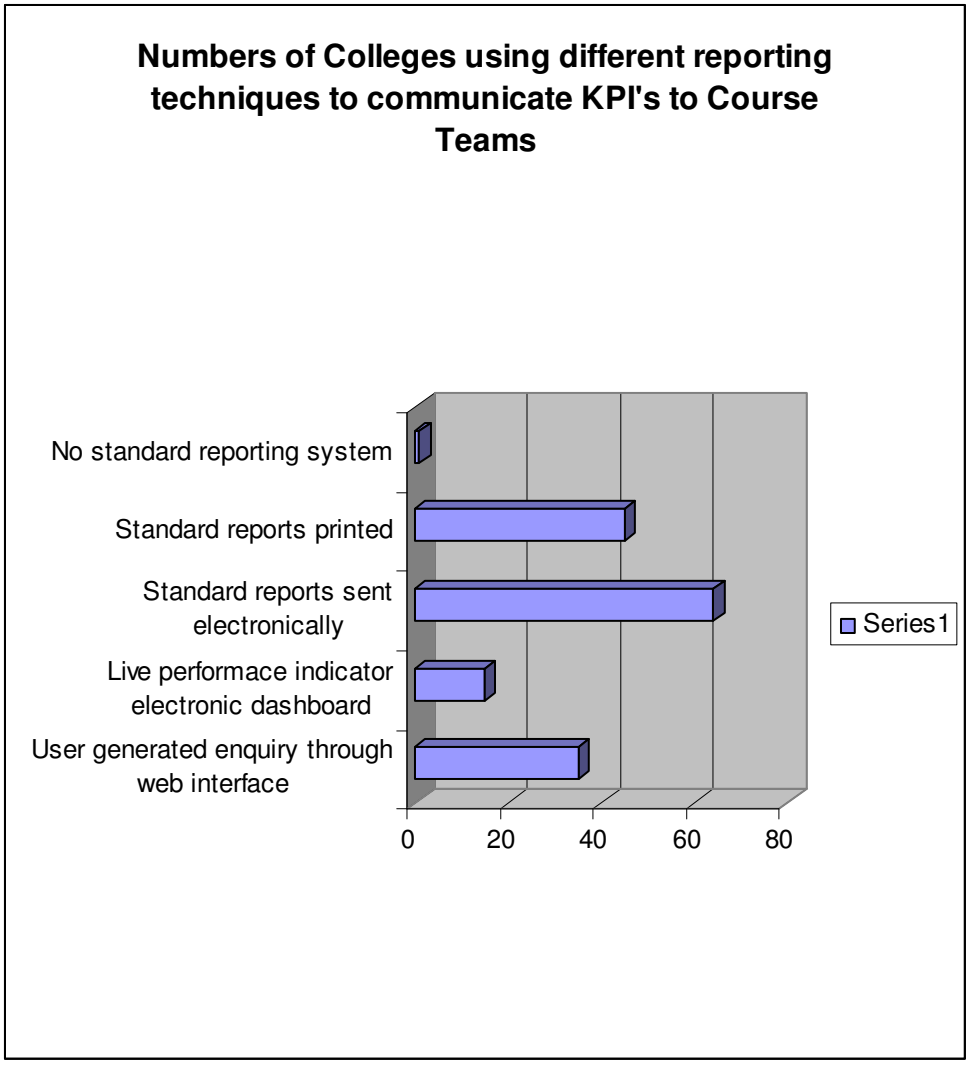
materials as well as local information and student generated materials. Email has become pervasive, especially for staff communications, where it may be more effective than communication with students who are fast adopting mobile phones as their gateway to information. It maybe for this reason that SMS text messaging is gaining ground in the portfolio of communication technologies used by Colleges.

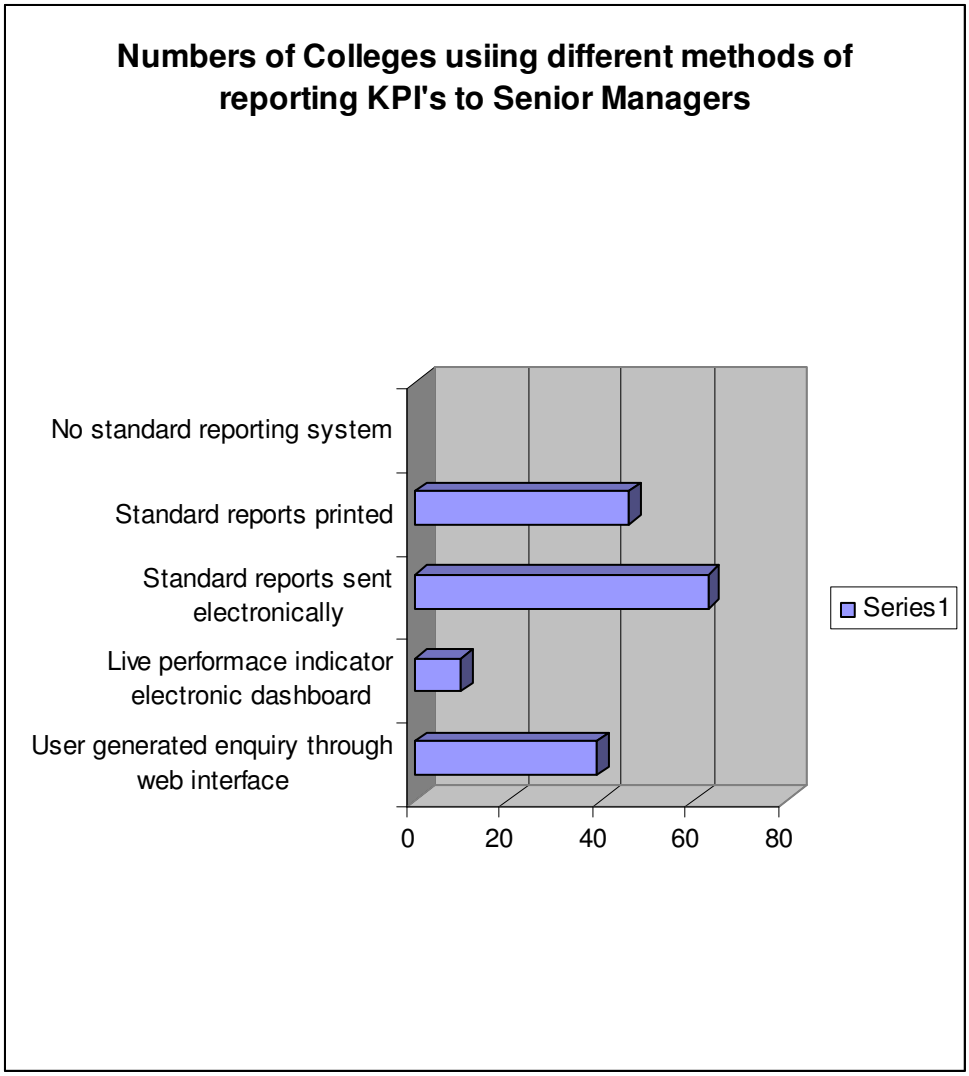




The sophistication of reporting mechanisms is a very good indicator of the strategic use of technology by a college, as they require accurate, on time, statistics on the measured Key Performance Indicators (KPI) of the business and electronic reporting to allow managers to make decisions on operational conditions in time to affect the KPI outcome. The ability to utilise technology in order to provide a standard electronic dashboard and user generated enquiries is a very strong indicator of an institutions 'e maturity' since it implies the planned deployment of technology to be able to gather and report on trends via a standard electronic dashboard and to give managers a diagnostic tool in the form of user generated reports to perform forensic investigation into the cause of trends. The successful implementation of this type of system demands the combination of technical ability and knowledge of the metrics that drive the business.

The results of the AoC NILTA survey show that 21% of colleges responding are able to deliver this level of reporting to their course management teams. Yet it is interesting that only 13 % of colleges report being able to give the same level of reporting to the Senior Management Team. This suggests that some of the Colleges having the technical ability to deliver a sophisticated reporting tool to course management teams may not be utilising it at a strategic level.

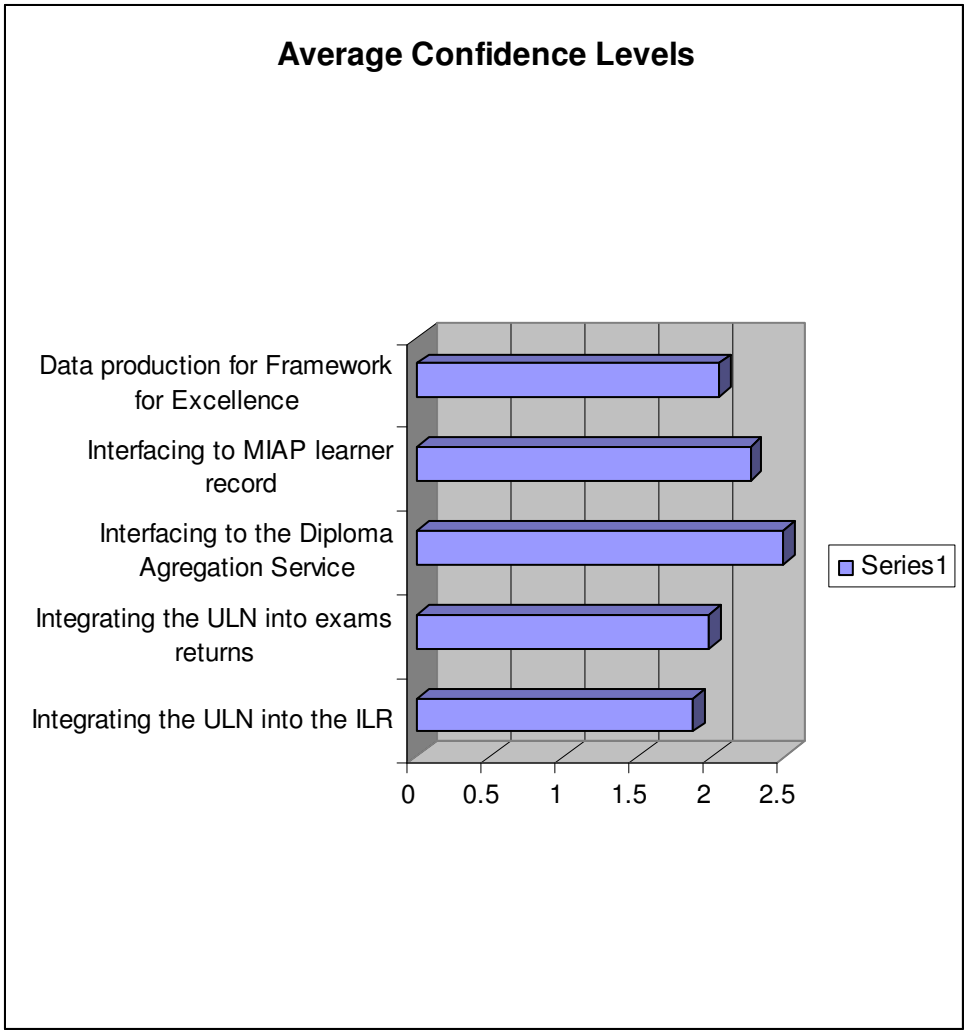

Numbers of Colleges using different reporting techniques to communicate KPI's to Course Teams
No standard reporting system
Standard reports printed
Standard reports sent electronically
Live performace indicator electronic dashboard
User generated enquiry through web interface
0
20
40
60
80
Series1

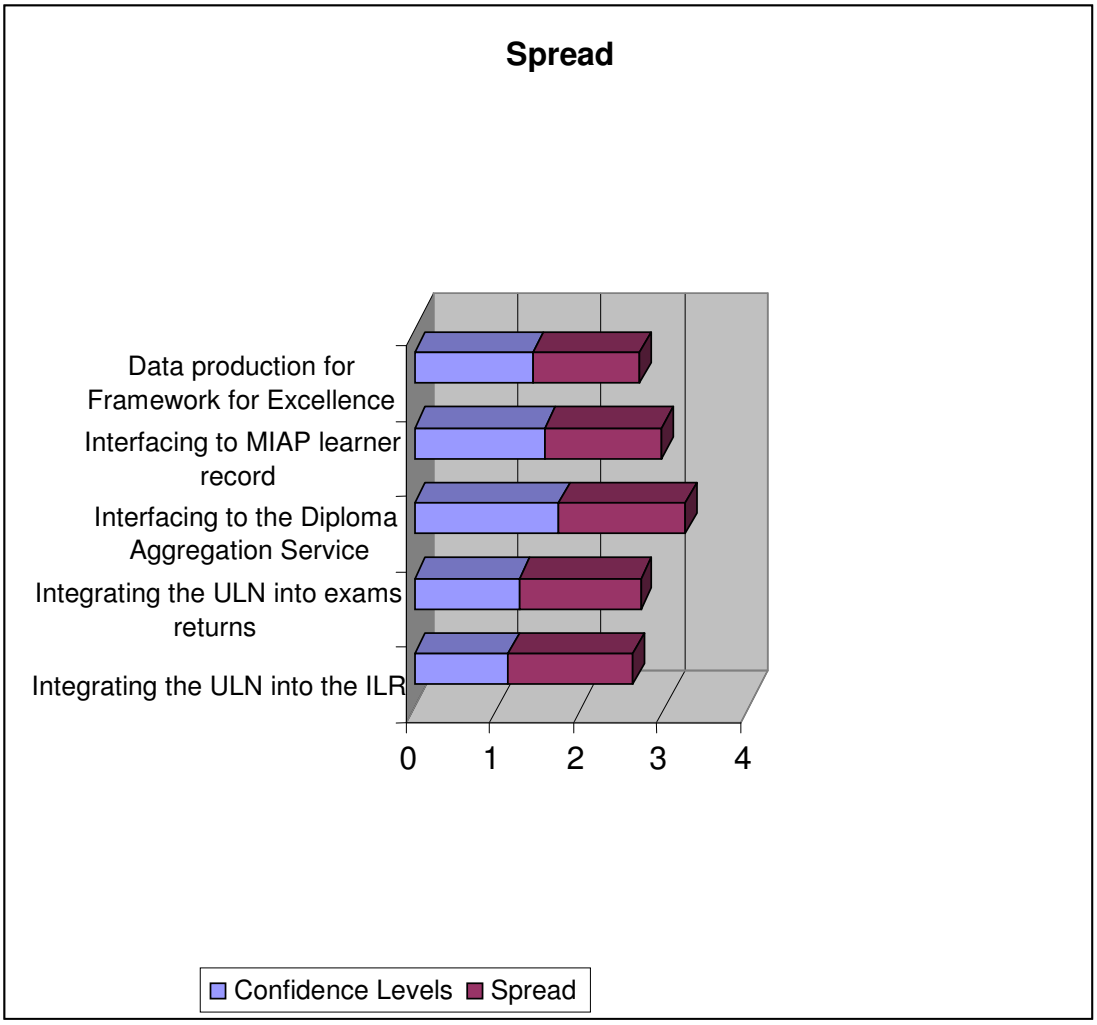


In order to gauge confidence in their capability, the respondents were asked to give rate their ability to implement the various new technological system interfaces in the order of:

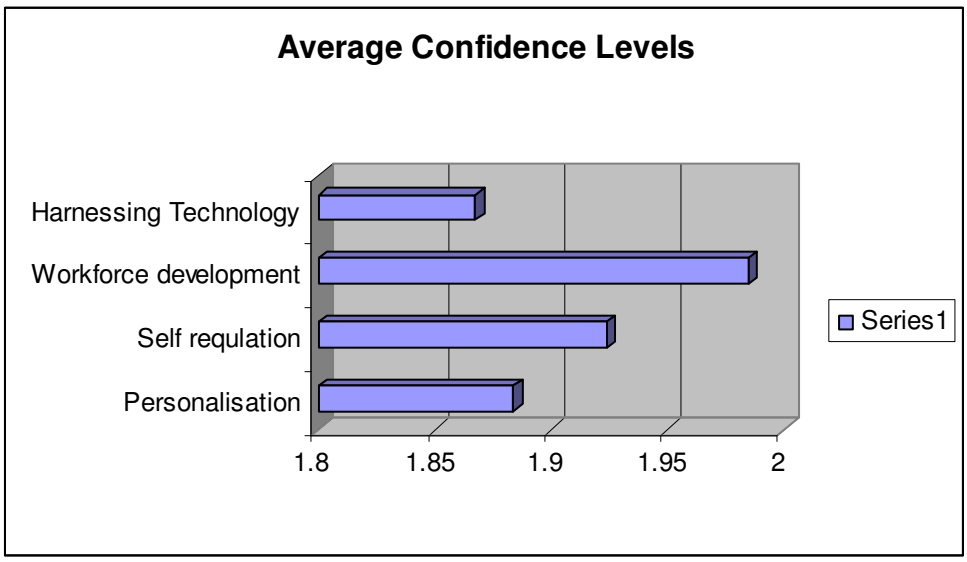
1 Very Confident
2 Confident
3 Not Very Confident
4 Not at all Confident

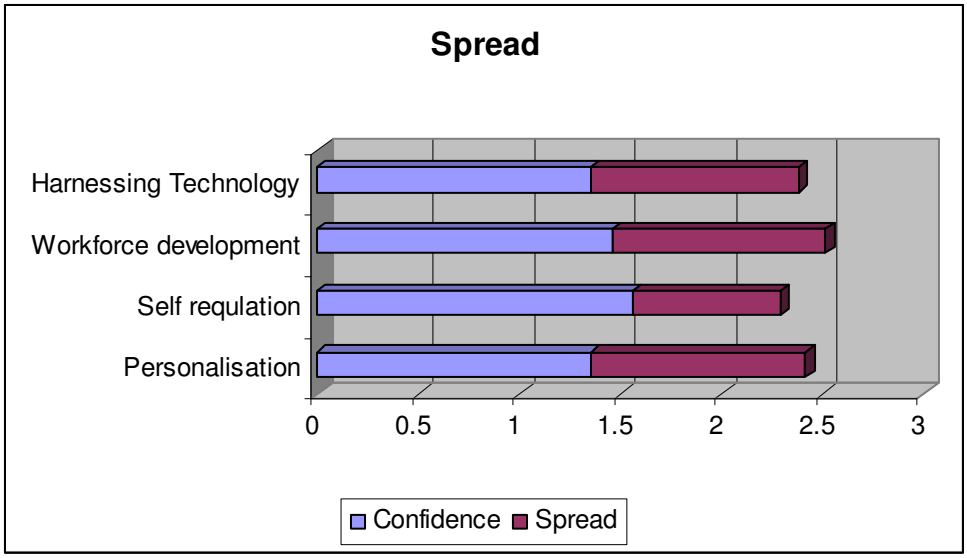
The average levels are graphed below and show a general high degree of confidence; however, the standard deviation is quite high and when taking into account the spread over one standard deviation the results show a mixture of confidence levels.


Average Confidence Levels
Data production for Framework for Excellence
Interfacing to MIAP learner record
Interfacing to the Diploma Agregation Service
Integrating the ULN into exams returns
Integrating the ULN into the ILR
0
0.5
1
1.5
2
2.5
Series1



When asked to give levels of confidence relating to the College being able to utilise technology to implement policy the average levels are again showing confidence and this time the standard deviation is lower giving a lower spread and showing all round confidence.





6.0 Findings

It is important to locate the findings of the AoC NILTA survey within the broader debate surrounding the level of 'e – maturity' in the College sector. The most recent work done by Becta on the Harnessing Technology agenda has defined 3 levels of e- maturity that it will use for phase 2 of the strategy:

- Enabled: Basic infrastructure in place; Existing practice support;
- Capable: Technology planning and management aligned with core goals and activity; Professional practice with technology recognised and developed;
- Confident: Learners access learning resources and support at any time and from anywhere, Technology-supported learning helps build higher order skills; Technology helps deliver more personalised services for learners; All learners gain value including disadvantaged and vulnerable groups.

[Harnessing Technology: Next Generation Learning 2008-14: A summary (Becta, 2008, p.4]

It is apparent from the AoC NILTA survey that the majority of Colleges are now 'e – enabled' and the there is a significant proportion that are moving towards becoming 'e – confident'. Yet, while the definitions produced by Becta are useful in providing a context within which to discuss the findings of the survey it is important to note that achieving 'e – confidence' is problematic because of the broad scope of its definition. As the survey has shown, there is a distinction to be made between the use of technology for the improvement of business and academic systems within colleges. There is an important difference between students being able to access 'resources' and being able to access 'support' using technology.

The difference in the nature of the ways in which technology is used across and between systems within colleges is crucial, not least because one of the

main barriers to becoming an 'e – confident' College is 'poor interoperability and, in particular, little linkage between information and learner management systems', ['Technology strategy for further education, skills and regeneration: Implementation plan for 2008-2011', Becta, April 2008, p.7]

The findings of the AoC NILTA survey which relate to the level of Infrastructure and Systems, Integration, Access and Reporting allow for the identification of the characteristics of colleges falling into the three categories defined by Becta as 'e - enabled', 'e- capable' and 'e - confidant'.

6.1 Infrastructure and Systems

Most colleges responding to the survey have a good level of investment in the infrastructure and systems required to run information systems for the management of academic and business functions in the organisation. These findings are consistent with those colleges defined as 'e-enabled', suggesting that all colleges responding to the survey would fall into this category.

The continued investment of colleges in leading edge technologies does point to a high level of capability. The pattern of investment falls into three categories: Network Capacity, Access Capacity and Communication Capacity. Investments in any of these areas however could mean the institution is at any level of capability, since it is how the capital expenditure is utilised that leads it to be e Confident or e Mature. What might be argued is that in order to be confident in using ILT for strategic purpose there is a requirement for the continued investment in maintenance and replacement of Infrastructure and Systems.

6.2 Access

External access to systems is a very good indicator of the ability of an organisation's e-maturity, since the type of systems accessible externally indicates the capability of the organisation to be agile with the use of different platforms and operating systems. The majority of Colleges can allow access to those systems specifically designed to be delivered on http platforms such as email and the VLE, but more difficult to enable external access of systems running on the network operating systems such as access to the home directory. It is even more difficult to enable access to bespoke academic systems that access data from different sources such as an ILP reporting system.

One might then define external access to such items as ILP and timetables as e Confident and access to systems such as the Home Directory as e Capable, finding that only around 25% of colleges are e Confident.

6.3 Integration

There is again a difference between the ability of a college to integrate its business systems and its ability to integrate academic systems, and even more of a problem in integrating academic and business systems.

An analysis of the survey reveals that, despite the fact that the 'typical' college has a robust IT infrastructure and good management practises for the administration of that infrastructure, there are significant weaknesses with regard to integration of discrete systems.

One could accept that all colleges have the infrastructure and systems necessary to deliver an e Mature organisation but without the ability to manage this platform in order to actually deliver an 'e – mature' organisation. This would leave the organisation at the 'e -enabled' stage. Examining the levels of integration reveals a difference between the ability to integrate business systems and academic systems. Some 43% report seamless integration of student records and exam systems and 40 % between student records and timetables. However, only 14 % of respondents report seamless integration of ILP integration to student records and 10 % to registers. This might be construed as the split between 'e –capable' and 'e - confident' colleges.

6.4 Reporting

The sophistication of the reporting capability of a college was a good indicator of its ability to make strategic use of technology. One could therefore say that the ability to be able to generate an electronic dashboard of KPI indicators and forensic user generated reporting would be an indicator of e Confidence and e Maturity. Colleges would therefore have to have both of these types of reporting systems in operation in order to be considered e Confident and e Mature under this definition. This would leave the level between the figures of 10% as defined by the level of this type of reporting to course team managers and 6% as defined by the level of this type of reporting to Senior Management Team. It is possible to argue therefore that the true level of 'e-maturity' given by the need to use technology for strategic and effective use might be lower than existing studies suggest.

7.0 Conclusions

The following conclusions are drawn from the findings with reference to the Aims and objectives of the research.

The range of systems and software configurations in Colleges is large and this is consistent with the purchasing autonomy given to colleges and has resulted in a very diverse approach to the use of IT in the operation of business and academic systems.

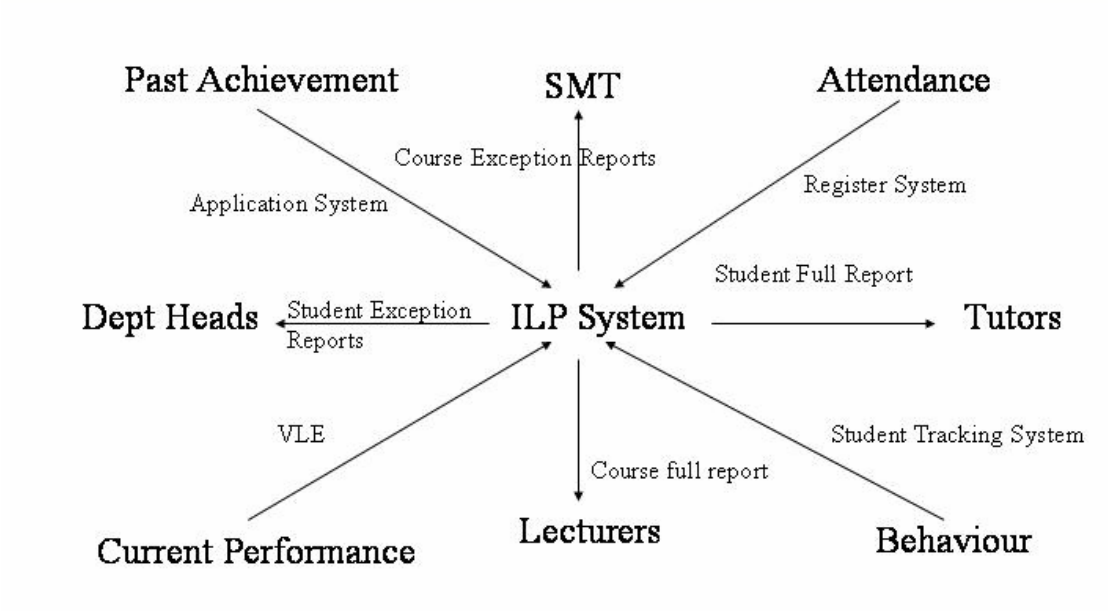
Despite the fact that the range is large, the majority of Colleges are operating on a standard Microsoft platform with commercial software systems for the operation of student record functions. Most of these student record systems have now developed modules for many of the business and academic processes that a college operates. In terms of capability therefore, a college operating these systems should, where appropriate, be able to make use of the

enterprise approach of the student records systems and manage the information to improve business efficiency and quality of provision. The findings of the AoC NILTA survey also point to the lack of use of the enterprise capability of the student record software deployed. This is particularly apparent in the deployment of academic systems where there is a propensity to utilise systems developed in house. This suggests that there is not only a diversity of systems used in the College sector but by and large a diversity of systems utilised within a college, which is evident in the apparent difficulty in integrating systems, again particularly student records and academic systems.

Colleges do, however, have the data required to manage performance but, in the majority of cases, it exists in separate systems with little integration. This results in data management difficulties causing an information vacuum for college managers taking decisions on curriculum planning and student performance management. The fact that the data exists even in disparate systems means that it should be possible to produce a reporting system that can deliver the information that managers require to take preventative action in order to improve quality of provision and increase business efficiency.

The fact that colleges are not making full use of enterprise approaches of student record software suppliers is an indication that the systems do not match the needs of the college. In essence, the utilisation of data for performance management is a simple process of data capture and reporting of information to compare against a standard in order to take action to improve performance which adjusts the data captured for the next report. Colleges are capturing the data required to monitor performance but due to the diversity of systems in which this data is held many do not have the capacity to produce meaningful reports for performance management.

An example of this is a reporting system for managing success rates, as this is one of the key performance indicators of a college. By definition, the data collected on success rates is only collated when the results are known and when it is too late to take any action in order to influence the outcome. Retrospective action can be taken by analysing historical data but this will not affect the past results. What are needed are indicators of performance in time to take action in order to affect the performance of the individual student. Many Colleges have quality systems in place to record data on student performance; however, the analysis of this data is often manual and because it is at the individual student level the volume of data means that managers may be unaware of the need to take action until it is too late. A system of exception reporting to identify students at risk would greatly aid decision making in this respect and the following diagram outlines the possible sources of data and reports to facilitate this type of decision making.



The ability of colleges to manage student performance will be an important factor in the delivery of complex qualification structures, such as the modular approach of Diploma and QCF, and a reporting system that makes use of all the data existing across student records and academic systems will help provide information in time for managers to make interventions to increase performance.

In terms of utilising technology for business efficiency, the same case might be proposed as applies to academic and pastoral systems. Despite the obvious potential efficiency gains of using remote assessment of work based learners, paper based systems still prevail. Where these barriers exist, a change in working practices, facilitated by comprehensive CPD programmes, would allow for the benefits of the systems to be fully realised. Again the power of recording of electronic performance data is the ability to report on it but if these systems are not linked through a common reporting structure management will not be able to make use of the data to make decisions to increase efficiency of delivery.

A final conclusion of this paper is that all Colleges responding to the survey have invested in technology and have systems capable of providing internet connectivity and a platform to run software systems that could be utilised for enhancing the quality of provision and increasing business efficiency. The majority of colleges do not have the resources to fully integrate their internal systems to make the maximum use of the data existing in different systems that would generate the depth of management information required to make interventions to maximise performance.

8.0 Implications for Education Policy Implementation

The results and findings of the AoC NILTA survey suggest a high level of confidence exists in colleges' to make best use of technological solutions for the implementation of strategic policy.

On the whole, most managers who responded to the survey were confident that their college is able to integrate the ULN into its systems and will be able to interface with the DAS, MIAP and the data requirements of Framework for Excellence. They are, moreover, confident that their current infrastructure will allow the college to deliver the key policy agenda of Personalisation, Self Regulation, Workforce Development and Harnessing Technology. However this is set against a backdrop of technological capability in terms of access, integration and reporting that would suggest that the confidence is reliant on the manual manipulation of data between system interfaces in order to provide solutions. This is particularly apparent where interoperability between systems in different institutions is concerned.

8.1 Diploma

The lack of integration of college systems and interoperability between institutional systems is of particular relevance for the successful delivery of the Diploma.

An area of concern implied by the research findings focus on the use of paper and web interfaces, which can result in re keying of data and the attendant risks. A further area of concern is the lack of standard interfaces between consortia parties, resulting in a lack of systems interoperability and a propensity to manipulate data manually with the attendant risk of error. A particular concern is over the possible development of additional and disparate consortia management systems requiring colleges to pass data from their own systems to the consortia system. Where colleges are involved in multiple consortia and volumes are large this could result in extra administration for colleges.

The risks to the diploma process resulting from these concerns might be identified as:

- Inaccurate data input at registration not being corrected
- Inaccuracies due to re keying of data in the Exams Office
- Inaccuracies due to lack of interoperability between consortium partners
- Inaccuracies due to extra processes and administration burden on the Exams Office

Some of the identified risks cannot be addressed for the first wave of the Diploma due to the need for system architecture to allow true interoperability between colleges, consortium, awarding bodies and the Diploma Aggregation Service. Work has started on this area in the form of the Schools

Interoperability Frame Work (SIF) which AoC NILTA believes could be adapted for this purpose. Even if this were a reality time would be needed for software suppliers to develop application agents for colleges and then for Colleges to implement them. AoC NILTA believes there is a danger that the lack of technological solutions here could lead to the development of local systems with different data structures and utilising technologies resulting in differing levels of effectiveness.

8.2 Qualifications and Curriculum Frame Work QCF

Some of the issues of the Diploma are common to QCF, in particular the issue of awarding body interface. However the complexity of the modular combination of QCF particularly when applied to the Apprenticeship framework will require Colleges to be adept at giving Information Advice and Guidance (IAG) and diagnostics at recruitment in order to get the right students on the right courses. It will also require the College to be skilled at student progress monitoring to ensure interventions are made to increase performance or transfer to more suitable modules. The ability to perform both of these functions will impact success rates and the use of integrated technological solutions can be employed to make the information available to Lecturers, Tutors, managers and Governors.

8.3 Personalisation

At the heart of the Personalisation agenda is the need to deliver information to the student that supports their individual learning needs. This would include personalised learning materials and personal performance information to enable the student to self manage their learning to meet their own individual learning goals. In data terms this means accessing data from different systems and displaying it to the individual through a personalised and accessible system. The ability of an organisation to do this is another signal that it has gone a long way to being an 'e - confident' organisation. It is however indicative that the research results show that only 15% of the respondents can display this type of information through external access to ILP information. The propensity of young students in particular to be early adopters of technology means that supplying this information through systems that are becoming increasingly mobile implies organisations staying at the leading edge of technology in terms of system integration reporting and access.

8.4 Self Regulation

The self regulation agenda means that colleges will need to be able to be critical of their own performance and to do this will require a high degree of Information Management capability to report and make publicly available performance against sector standard benchmarks. The ability to report this information via an electronic dashboard of KPI's will be a demonstrable example of a Colleges level of e Maturity. The ability of a college to make use of forensic reporting tools to make interventions that improve a College's performance against these KPI's will be another example of e Maturity.

8.5 Workforce Development

The recording of CPD can be considered as a part of a Lecturer's portfolio which can easily be made electronic. However, the information required to the professional development of a member of staff is much than just the recording of the required CPD. Like the personalised ILP the staff member might be furnished with the information through a personalised interface would greatly enhance the ability of that member of staff to self manage their development.

8.6 Harnessing Technology (HT)

It is clear form the results, findings and conclusions of this research that the ability of a College to meet the HT agenda relies not just on its investment in IT platform and systems (although this is a pre requisite) but also on its ability to manage the information which the findings of this research suggest may be in disparate systems within the College Network or even external to it. The ability of the College to implement intelligent reporting of this data is the key to delivering the aspirations of the HT agenda.

The HT agenda also promotes the increased efficiency of purchasing technology solutions which finds resonance with collaborative initiatives such as shared service agreements; however the research seems to indicate that colleges are reluctant to enter into this type of purchasing arrangement for IT platforms or Information Management.

9. Recommendations for further research

The research has inevitably raised some questions that point to the need for further investigation.

The results and analysis of the integration levels of College systems raises the question as to whether college business and academic processes are so unique that an enterprise approach to the implementation of College information management is not feasible or whether the diversity is simply a result of autonomous purchasing decisions and that a standard architecture could be developed to enable software suppliers to develop an fully integrated enterprise approach.

The lack of engagement in shared service arrangements leads to the question as to whether Colleges can make better use of these types of purchasing mechanisms to obtain a more cost effective solution to IT platforms and support services.

The lack of interoperability between organisations, for example, Awarding Bodies and Colleges as well as between consortia partners and LEA prompts a need for research into the suitability of Zone Integration Server ZIS solutions such as Schools Interoperability Framework (SIF) to act as a means by which different organisations can pass data to each other in a seamless and secure manner.