ASPIRATIONS OF UNIVERSITY STUDENTS IN DIGITAL MEDIA EDUCATION

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Abstract

The widespread and universal adoption of the Internet and the extensive use of Web based media highlights that there is a shortage of appropriately qualified graduates with the necessary skills required by rapidly changing technological environments. There is a dichotomy between theoretical, analytical and often abstract concepts developed through a course of undergraduate study and the skills based training which is often required by the computing industry. Businesses require employees with the creative and technical skills and knowledge of the new and developing digital technologies.

This paper represents a snapshot taken in 2006 of student aspirations and views on undertaking vocational certification programs in multimedia and Internet subjects in addition to their normal studies. It makes recommendations for the possible integration within Higher Education academic curricula.

Keywords
Industry certification, student aspirations, vocational skills, employability

1. INTRODUCTION

1.1 Motivation and Objectives for this Research

Liverpool Hope University aim to offer a range of software vocational training courses to undergraduate students to run alongside their degree programme. The motivation for this is to provide graduating students with the skills necessary to find work in the constantly changing area of Computing. This would enhance undergraduate courses and would provide students with the knowledge and practical skills required to meet industry requirements.

The Internet has caused dramatic changes in business and academic life in the last ten years. Extensive use of high quality multimedia over broadband connections and alternative methods of presentation (PDAs, Television, 3G phones, media players) indicates the need for graduates and postgraduates who have skills to work in the medium. Many businesses working in the new digital economy are SMEs (Small to Medium Enterprises). These companies may not have the capacity to train staff so need to employ workers with the correct skill set. The rate of change and innovation in the digital medium is increasing at a very rapid rate. It is increasingly difficult for Universities to maintain up-to-date expertise in all areas of multimedia and Internet technologies. Computing disciplines strive to keep up-to-date with new technology and with software releases in order to support subjects such as Design or Media.

This paper is organised as follows:

> A review of current perceptions and examples of certifications in the Computing Industry offered by Higher Education, from basic provision such as ECDL (European Computer Driving License) through to training courses of a more advanced nature, offered by Microsoft, Novell and Adobe.

Examination of the type of training available specifically in Internet and multimedia software.

Summary of a vocational training pilot study and analysis of a survey of final year undergraduate computing students at Liverpool Hope University in 2006.

Conclusions and proposed strategy for implementation

2. REVIEW OF CURRENT PERCEPTIONS

The requirement that industry has for graduates to be trained in specific tools and methodologies appears to be in conflict with university theoretical teaching.[3] Universities would argue that they aim to give students generic skills enabling them to deal with future developments, not just current needs. Research indicates that having established themselves in employment, graduates recognise and appreciate the generic, transferable skills such as time management, critical reading, and report writing in relation to software development in particular.[4] In order to help address the difficulties of students finding suitable employment after graduating, universities need to examine what skills the students take from university into the workplace.

Prospective employers consider industry certification as a means of identifying employees who would require less initial job training,[6] and the identification of marketable skills highlights the advantages of industry certification in gaining initial employment. [5]

Graduates with industry certified skills have equipped themselves with the means of demonstrating to employers that they are in the category of employee who have the aptitude and capability to fill new roles which become available as technology advances. [5] Students could see this certification as an important component which, together with their degree, could be the first step on their career ladder.

Although the job market in ICT experienced a decline around 2002, by April 2005 the decline appeared to be in reverse. [7] If students are to have the best possible chance of gaining employment in the Computing industry they need to possess the skills required by employers. Universities in America recognise this need and a solution could be to offer vocational courses which run alongside, or are incorporated into, the undergraduate degree course. The restraints on this type of additional provision are the time that students have at their disposal and what the perceived order of importance is in their study. Students who do not have time to dedicate to extra study for vocational skills, perhaps through family commitment or the need for remunerative employment, could possibly undertake these courses after completion of their degree depending on the way they were set up and delivered.

One of the constraints of this type of plan concerns the time available for students to study. Full-time degree courses require a lot of time and effort from the student if they are to attain worthwhile grades. Expecting a student to put in extra hours dedicated to study of software, on top of studying for their degree could dilute the effort put into the degree study. Emphasis that the student may put on one part of the study or the other has to be considered. If a student pays more attention to the learning of software packages than to the attainment of a good degree classification then the benefits of the software certification would be out-weighed by the deficiency of the degree classification. Balance is essential if a student is to reach their full potential in their degree, whilst providing themselves with marketable software skills.

3. SOFTWARE TRAINING AVAILABLE

The types of training available cover skills training such as those offered through the ECDL (European Computer Driving Licence) or ICDL (International CDL) which aim to provide generic skills like spreadsheets, word-processing and presentation skills. An undergraduate degree provides students with a breadth of knowledge and understanding in their area of study, plus higher level skills of analysis and

problem solving. Vocational skills certification provides the graduate with a link from undergraduate degree study, to vendor software skills. This additional certified training allows them to take up employment with knowledge and skills useful to the employer.

ECDL or ICDL are designed to test and assess knowledge and competencies in the use of ICT tools. They are a standard definition and an international means of measuring competencies in theory (1 module) and practical applications for word processing, spreadsheets, presentations, databases, Internet and email. Italian universities offer ECDL certified courses with varying numbers of modules which are taught by different teaching methods. [2] These are self-taught, blended (combining classroom and self-teaching) or classroom only; the latter two being most commonly adopted, with 80% using blended with classroom delivery. The ECDL certificate provides students with basic knowledge and understanding of information technology, file managing, software programmes and information and communication. [2] This study does not examine the view of industry; it is written from the student/training perspective. There is no way of estimating, from this study, whether employers consider that they benefit from the scheme.

Vocational training is available from Microsoft, Novell, Cisco, Oracle and Adobe and can be accessed on-line or face to face via training organisations. Linux certification is also available to professionals at different skill levels.

The British Computer Society (BCS) is a professional body offering product independent accredited courses to the industry, which courses have been designed to meet the needs of the employer. BCS recognise the evolving needs of the IT community and update qualifications offered to keep pace with these changes. Courses are available in Internet Technologies and New Web Technologies. Other areas of training are Software Testing Specialist, Data Management (Diploma) which is a Manager's Certificate in IT Infrastructure Management, Manager Certification in IT Service Management in their Higher Level Qualifications. They also provide training at Foundation Level and Practitioner Level. Prospective applicants can gain Accredited Prior Learning credits for skills and work experience already possessed. Professional Graduate Diploma level equates to an undergraduate degree. [1] Universities can have their undergraduate computing degree programmes validated by BCS.

Adobe offer on-line training in Flash, Dreamweaver and Authorware via traditional e-Learning, or Capture and Breeze on the Rapid e-Learning route. Adobe certification is also delivered through commercial Accredited Training Centres (ATCs), offering specific software skills. These relatively expensive courses in Multimedia and Internet software are aimed at working professionals, and this research seeks to establish whether there is a need for such training and certification to be offered to students, in addition to their normal studies, possibly at a nominal cost.

Liverpool Hope consider the ECDL courses to be at a lower level than those required by undergraduate students. The vendor software certification offered by Adobe (Including Macromedia) would provide the graduating students with industry certified, marketable skills.

4. PILOT STUDY AND SURVEY OF STUDENTS AT HOPE UNIVERSITY

In 2005 Liverpool Hope University opened negotiations with Macromedia (now Adobe) to enable industry certified courses in Macromedia (now Adobe) software to be offered to students. The intention was to offer Flash, which is part of the Macromedia (now Adobe) Studio package, and Dreamweaver training initially. Using Macromedia (now Adobe) Studio students could develop skills in Flash, Fireworks and FreeHand. In the same year Adobe Systems Incorporated acquired the Macromedia (now Adobe) company and offered a good range of software packages. Although Adobe did not progress the relationship that Hope had with Macromedia (now Adobe), Liverpool Hope were still interested in developing this initiative.

In view of the intention to offer industry certified courses to run alongside undergraduate degree courses, researchers at Liverpool Hope University surveyed 194 undergraduate computing students from all years, in order to determine whether they considered industry certification to be a desirable addition to degree

qualifications. The purpose of the survey was to determine whether students would be prepared to undertake the extra work required in addition to their academic study. Of lesser importance to Liverpool Hope was the question of whether students considered certification worth paying for.

The pilot study (A Qualitative Analysis of Merseyside Skill Demand, 2006) surveyed employers involved in the Business Bridge project to ascertain employers' skill requirements from 2002 to 2006. The student survey was carried out in 2006, by questionnaire, to determine whether it would be feasible to offer vocational certified training.

4.1 Pilot Study - Analysis of Merseyside Skill Demand

In 2006 an analysis was carried out of skills most frequently requested by companies participating in the Business Bridge work-based learning project, between August 2002 and August 2006. This is a high profile, externally funded project run by the three Liverpool Universities (Liverpool Hope University, University of Liverpool and Liverpool John Moores University) offering paid work to students, within local Merseyside-based small and medium sized enterprises (SME). The employer identifies the required skill/s for their individual project and the universities match the project to suitable students.

Projects were coded by classification. Employers requiring, say, systems analysis skills would come under one code classification, whilst those seeking, say, Dreamweaver skills would come under another code classification. If a classification had five or more requests made, which had been filled by students, they were included in the study. Data from the central Business Bridge database can be used to identify regional changes in skill requirements. [8]

The skills analysis is split into several sections:

General Skills:
- Administration and organisation
- Ability to prioritise
- IT and keyboard
- Communication and interpersonal skills
- Professional telephone manner
- Presentation techniques
- Literate and numerate
- Willingness to learn

IT skills:
- Computer software packages/programming languages/IT development skills.

Academic Skills:
- Specific skills and knowledge learnt during time at university, such as a detailed/theoretical knowledge of a subject.
- Knowledge of different systems development techniques.
- Ability to analyse current systems, and to advise on improvement.

4.2 Summary of Skills Required by Employers

Analysis of the Business Bridge project indicates that IT skills are required by the majority of employers across all industrial sectors in Merseyside, with Microsoft Office skills seen as a generic requirement across all sectors. Specialist software requirements in IT, computing and engineering-related fields include a range of multimedia packages such as: Macromedia (now Adobe) Flash, Director, 3ds Max, Adobe Photoshop, Microsoft Visual Studio, Quark Express and Adobe Illustrator. The technologies of JAVA, ASP, C+ and C++, XML, Microsoft.net, Visual Basic were also requested by employers.

Vocational and industrial trainers place considerable emphasis on Macromedia (now Adobe) software, Adobe Illustrator and Auto CAD. Amongst system analysts by far the most requested software is CAD

and AutoCAD and one fifth of systems analyst projects require knowledge of more than two programming languages/software packages. Computer analysts and programmers require knowledge of Microsoft Access, Oracle, SQL, Visual Basic and VB.Net. Proficiency in digital photography and image editing/manipulation are considered necessary for students wishing to be graphical artists and designers and experience of using Apple Mac is considered essential in many projects, as is knowledge of PhotoShop and PaintShop.

4.3 Survey of Students

A survey, which included all levels of undergraduate students at Liverpool Hope University on IT and/or Media related courses, was undertaken to ascertain whether or not students considered industry certification to be something in which they would be interested. This pilot survey was considered important prior to setting up vocational training courses. A questionnaire was developed to help Hope University to establish the potential levels of demand for such courses.

The methodology was to complete a qualitative survey based on exploring the perceived skill requirements of students. The results of this would be used in conjunction with the pilot study described in 4.2 above. Students were asked questions under the four categories of:

Bibliography,
Interest in Vocational Training,
Personal Commitments,
Mode of Study.

The students answered on a scale of Strongly Agree, Agree, Neutral, Disagree and Disagree Strongly.

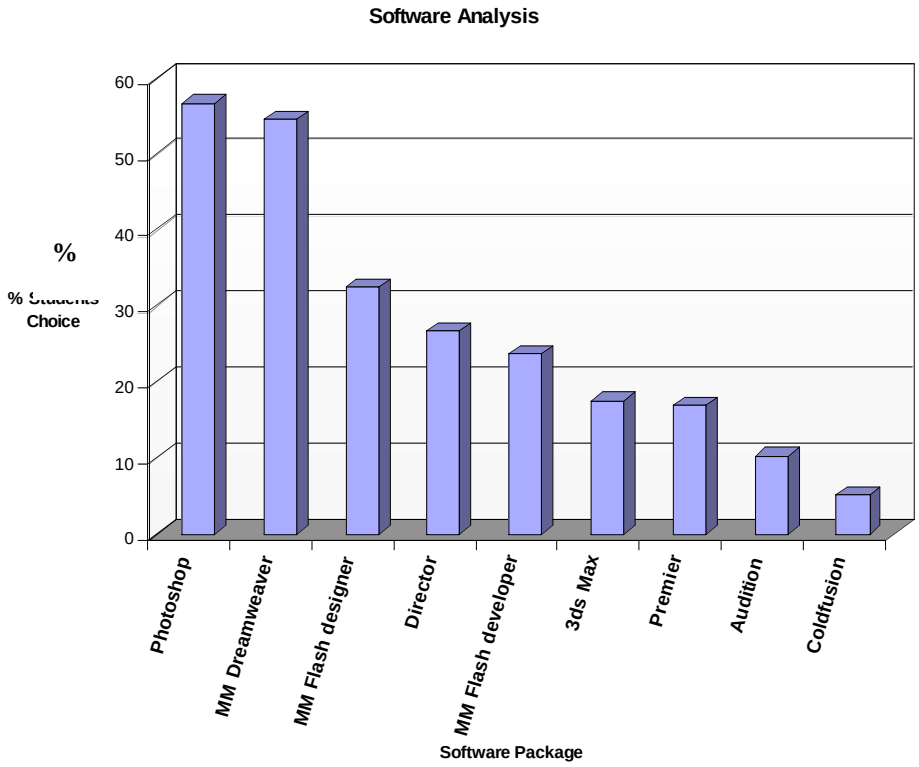
A total of 194 students were surveyed; 103 male and 91 female. The majority of these students, 85 female and 82 male, were in the 19-24 age group. Sixty-seven students were final year students.

Students identified the main influencing factors as course content and completion time. They were concerned about who may be teaching these courses and what the cost would be. Overall benefit derived from the course and qualifications gained also played an important part in any decisions to take courses.

More than half the students questioned agreed that a vocational qualification in Multimedia or Internet software would be of interest to them, and felt that a qualification within this area would increase their chances of obtaining a job. Some of the students thought that the qualification would be more worthwhile if awarded by the company making the software, and more than half the students questioned also agreed that the qualification would be more worthwhile if accredited by a national body.

4.4 Breakdown of Students' Software Training Preferences

The most popular options with the students were Adobe Photoshop, chosen by 56% students, followed by the Macromedia MX2004 suite (now Adobe) which includes: Dreamweaver, Flash and Fireworks. Dreamweaver had 54% students select it and the Flash products Designer and Developer were selected by 32% and 23% respectively, whilst Director was considered important by 26% of the students. Premier tolled 17% in favour and 3ds Max (Discreet 3D modelling software) had 18% in favour, Audition 10% in favour. The majority of students would like the qualification to be a specific version to the software.



Software	Photoshop	MM Dreamweaver	Flash Designer	Director	Flash Developer	3ds Max	Premier	Audition	Coldfusion
Totals	56%	54%	32%	26%	23%	18%	17%	10%	5%

Figure 1 - Breakdown of Software Choices

4.5 Learning in Own Time

When asked if they would be prepared to study for such a qualification in their own time, a mixed response was provided. Out of the 194 students surveyed only 5% strongly indicated willingness to self-study, and 39% agreed that they could do so. Thirty-four percent (34%) did not commit either way and remained neutral, whilst 20% of students were not prepared to self-study for industry certified qualifications and the remaining 3% strongly disagreed that they should self-study.

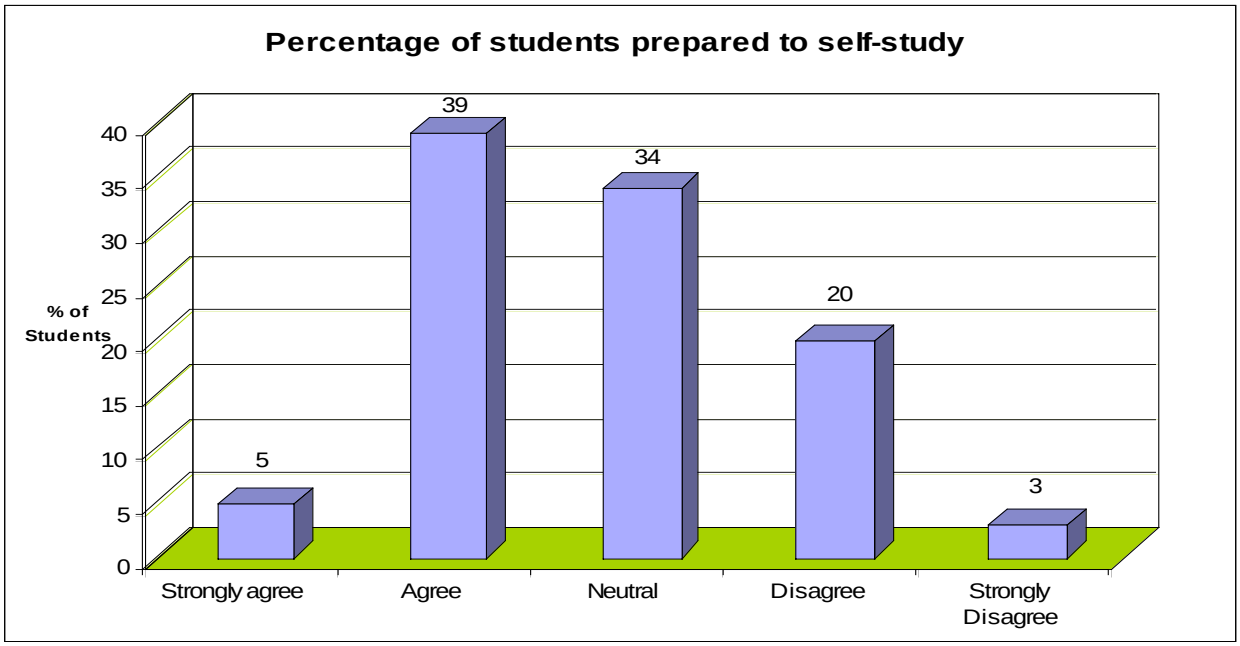


Figure 2 – Students Willing to Self Study

4.6 Other Programmes Popular with Students

Programmes, other than those included in the questionnaire, that students expressed an interest in are Excel Spreadsheets, Toolbook, Quark Express, Apple programmes such as Final Cut Express/Pro, FPS creator, CM, MCSE, Mediator and Adobe Go Live.

These suggestions came from students on a range of courses and, in fact, some of the software is already covered in modules taught on Computing courses, but some software is not covered in the teaching. Students are expected to self study software packages as part of their skills development.

Time spent on courses, and the costs of such courses, are serious considerations for students who need to be convinced that they can manage all of their commitments. Most students agreed that they could cope with between 8 to 16 hours work a week on these courses, with costs of exams and tuition not exceeding £50.

When asked if they would be prepared to study on-line 73 students said they would with the remaining 39 disagreeing, but considered that on-line back-up would be beneficial in case they could not attend class. Tutor led sessions proved to be the most popular choice.

5. CONCLUSION

It is not the role of Universities to develop competencies in software products, but rather to develop in students enduring concepts and high level skills of problem solving, analysis, and skills of evaluation and presentation. Industry certification develops specific competencies which an employer would be able to utilise, providing practical skills that graduates can take into the workplace. Although graduates possess specific knowledge in their area of study, together with generic skills valued by employers, it is not necessarily enough to enable them to gain employment within their field. Graduates who leave university

equipped with industry certification in specific software have proven knowledge and skills which are measured against industry standards.

Liverpool Hope students recognise the advantage of industry certification and their choice of desired courses fits in with the pilot study into the employers' skills requirement list. These include Macromedia (now Adobe) software, AutoCAD, 3D modelling tools and image editing skills. Employers would also like to see database and Internet certification. Implementation of industry certification courses in addition to undergraduate study, offers graduates a strong advantage in the job market. Strong competition for jobs within the Computing business requires graduates to prove potential, skill and the ability to meet the needs of the employer. Certification is proof of hands on training and skills which are measured against certain standards.

The result of the survey into industry certification revealed that the students felt it would be of benefit, and of interest, to them. The survey asked students to comment on specific software, which arose from the negotiations between Macromedia (now Adobe), and Liverpool Hope. Students added a short list of additional software which they considered would be of benefit to them. Difficulties envisaged by the students were study time required for these certifications, courses tutor and cost.

The two top choices from the given list were Adobe Photoshop, the Macromedia (now Adobe) software of Dreamweaver, Flash and Fireworks. Director, Premier, 3ds Max and Audition were also favoured by students. Other software identified as being of interest are Excel Spreadsheets, Toolbook, Quark Express, Apple programmes such as Final Cut Express/Pro, FPS creator, CM, MCSE, Mediator and Adobe Go Live. The reasons students may, or may not, wish to self study are often tied up with their perceptions of on-line learning. Many students appreciate the benefits of tutor led sessions, with accompanying peer support.

Liverpool Hope considers the results of this survey to be positive and encouraging, and is pursuing funds to enable industry certification to be implemented alongside the traditional degree programmes.

We acknowledge all registered trade marks within this paper.

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