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The relationship between software skills and subject specific knowledge, theory and practice

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Background and rationale

Previous research (Marshall & Austin, 2003) suggests that there is a need for theory to be integrated with practice in design subjects. There is current concern that the acquisition of software skills is taking priority over subject specific knowledge and skills. This is seen as a source of some tension between design education and industry, as many employers require graduates to have knowledge of software prior to employment. Integrating these skills into the curriculum alongside developing creativity and theoretical/contextual understanding is proving difficult for education.

Although technology plays an integral role in the production of designed artefacts, it is an adjunct to the core content of courses which is an understanding of the knowledge and skills associated with design, their application to creative problem solving and contextual/theoretical understanding of issues related to design and a broader field. There is national and international debate around this issue. Justice (1999) expresses concern about space in the curriculum, stating: 'Before computers, faculty may have had a full semester to teach a beginning typography course. Now, they have a full semester to teach typography and the several software packages the students will use to complete the typography projects.' (Justice, 1999, p.54)

The research

In order to identify the position of industry and education in relation to the inclusion of software skills in the curriculum, the requirements of industry have been compared to the content of visual communication design courses and the views of those involved in forming and delivering the curriculum.

The inclusion of software into visual communication design courses was a gradual process; as recently as 1997 students would not expect access to software as standard on visual communications courses. It would be seen as a necessary, but not major, adjunct to the core content of the course – an understanding of the knowledge and skills associated with design and their application to creative problem solving. It would be unrealistic and unwise for courses to ignore the increased use of technology in the industry. Consequently, the use of software and the number of computer workstations has increased, so that it is now generally accepted that a student will have access to a computer to produce finished work and that software skills will be included in courses.

There is concern that the visual communication design industry is demanding more software skills and that this is shaping the academic content of visual communication design courses. Visual communication design courses are vocational and therefore need to be responsive to the needs of the industry. These two factors, plus students' expectations of courses, could lead to visual communication design courses becoming predominantly software orientated. This would, in effect, mean training rather than academic courses as there would be less room or time in the curriculum for the other aspects of the subject. The

problem is not specific to visual communications design; software applications are in common use in many subjects such as product and interior design.

Swann (2000) finds that students like using technology because it makes producing highly finished work simple. He describes students concentrating on computer skills and vocational knowledge to enable them to get jobs as junior designers. He considers current students on visual communication courses to be computer literate and keen to explore and exploit the potential of new technological tools: the problem with this being that they risk becoming dependent on the capabilities of software packages.

Methodology

Students from a visual communication design higher education course were asked why they chose to study the subject to establish if the research would be worth pursuing. A small sample of advertisements for visual communication design posts was analysed to ascertain the message sent out by industry with regard to knowledge and skills it considers necessary. The analysis from this sample was compared with the findings from interviews with people working in the industry. Interviews with staff in higher education visual communication design courses were then compared with the messages from industry to establish if there was dissonance between what the industry was looking for and what education was offering. Literature relating to the problem was used to ensure the research was placed in relation to current and previous national and international discussion around the issues.

Level 1 students on a visual communications design course at the School of Art and Design were asked to complete an open questionnaire to establish if the research was worth pursuing. It was decided, in consultation with the staff team, that asking students what they considered the most important area of visual communication design education would lead them to gear their responses to whoever they thought would look at the questionnaires. Therefore a more general question, "Why did you choose to study Visual Communications?" was used. There were 33 responses from the 37 students present.

Advertisements for visual communication design posts in *The Guardian*, *Design Week*, *Creative Review*, and <http://Fish4.co.uk> were analysed to investigate the message from industry to the novice group (current students and potential applicants to courses). These advertisements were seen as the most reliable method of ascertaining how students would perceive the requirements of industry, as they were usually the students' first measure of their employability.

People involved in recruitment at design agencies were interviewed to establish: what employers looked for in graduate employees; if employers' requirements related to education's view of what the industry required; whether employers expected graduates to be fully trained in all aspects of the industry; if employers supplied any training.

In order to compare the views of those involved in visual communication design education with the views of industry, staff from the School of Art and Design were interviewed for their views regarding content of visual communication design courses, particularly in relation to the teaching of software and how they considered students were prepared for the needs of industry. Their views on students' expectations of courses were sought, alongside their perspectives relating to the integration of software into the curriculum.

The study was small in scale and exploratory, to establish if a problem existed and if it was worth pursuing to a larger study covering other institutions and a larger section of the industry, which would be needed to ascertain if the data gathered would be generalisable. However, the literature reviewed provided evidence that the study was applicable nationally, and internationally.

The outcomes

Student response

In the survey of visual communication design students, 20 of the 33 students mentioned computers/software. Only 7 mentioned subject specific interest and even these were quite general, 4 of these also stated computers/software as reasons for choosing the subject. Only 4 of the students mentioned creativity, or equivalent. 3 students named specific software; most used more general terms such as 'Mac skills'. Approximately 30% of students mentioned a career in visual communication design. This suggests that learning software is considered more important than subject specific knowledge and skills. The link between software skills and career was not clear but some students did link the acquisition of software skills with job prospects.

The Industry

The interviews with staff from design agencies provided different views of the way students needed to prepare themselves for work in the industry.

In the advertisements analysed there were few jobs suitable for newly qualified graduates. For example, only 4 of the 14 posts advertised in the Guardian required no prior experience. All but one of the posts that were available to people with no industrial experience stated software skills required.

Over two thirds of the advertisements stated software requirements and a third of the advertisements stated either specific visual communication design software packages or Mac skills as either the only requirement or the first requirement. References to typography, page design, or similar subject specific knowledge were few and creativity was stated second to software requirements in many of the advertisements.

Analysis of the interviews with representatives of the visual communication design industry indicated that the skills and knowledge looked for in an applicant varied considerably. The requirements of Agency A were subject knowledge, versatility and software skills whereas Agency B stated: 'Good outside the box thinking, creativity, someone prepared to experiment, to take risks, to be brave...' Agency B did not consider software knowledge a necessity; and explained that software could be dealt with once a person was employed: '...we can show them the software and, anyway, they'll learn what they need as they go along, to fit in with their ideas – as and when they need it.'

Very few advertisements fitted the description of the skills and knowledge Agency B stated as necessary. In contrast, many of the advertisements fitted the requirements Agency A described, requiring software but placing it as second to qualities such as creativity or motivation.

Agency B had stressed creativity as important but didn't see a degree in visual communications as essential for employment. In contrast, Agency A was concerned that visual communications courses did not provide students with enough software knowledge. This company (Agency A) expected applicants to have knowledge of all the standard software programmes, and tested for software competence at interview. Agency A stated that visual communication design courses needed to become more vocational and expected education to provide the software training for applicants.

Education

The interviews confirmed that many educators see visual communication design courses as vocational and therefore providing suitably prepared students, in subject specific knowledge and skills, including software skills. The problem was the time needed to incorporate the software skills with other areas of the curriculum whilst maintaining a balance between them.

Staff made it clear that students regarded the acquisition of software skills as important for gaining employment in the industry. There was evidence that students looked at hardware and software provision when choosing courses, and that the more recent hardware was equated with quality. Some students seemed to see mastery of a software package in itself as an achievement, not necessarily linked to visual communication design.

Staff found that some students regard software training, whether learning the tricks or related to design, as the most important part of their course in visual communication design. For example, one member of staff explained: 'They see it as the be-all-and-end-all, ... Some of the students just specialize in Photoshop, Flash and Director as they assume that that's where the money lies.'

Swanson (2000) makes a point related to training and the speed of software development; that technology is changing so rapidly that any vocational training will be out-of-date before it is complete and that most jobs that exist now will not exist in 10-15 years time. This underpins his view that students should be given a general education in design rather than training in software skills as a broad education will prepare them for the changing job market better than 'the narrow concerns of vocational training'.

Conclusion

Students do regard software skills as important in gaining entry to employment in the visual communication design industry and, to a certain extent, they are correct. The message from the majority of companies is that software skills govern entry.

Although much of the literature suggests there is demand for multi-skilled generalists, the demand for software skills is leading to more specialisation. Narrow skills training needs to be avoided if people entering the industry as artworkers are to progress to more creative roles.

Tension exists between education and industry regarding the preparation of students in specialised software or creativity. Software is considered a necessary part of visual communication design education which needs to be integrated into the curriculum.

Industry is causing built-in obsolescence in demanding that students be prepared in production methods that may be out-of-date by the time they graduate. Changes in industry happen much faster than in education, making it difficult for education to keep pace with the world of work. It seems logical for education to concentrate on integrating basic level software skills into a programme that would prepare students for a broader range of employment opportunities.

One answer would be to develop a less vocationally focused programme; a course with more emphasis on creativity, rather than the narrow specialism associated with software skills, would prepare students as creative individuals for a constantly changing industry.

There is a need for software skills and students who hold them will be employable as long as that piece of software is industry standard. Students need to be made aware of the need to develop knowledge and skills outside the technological skill set to ensure they are employable in the long term. Education needs to integrate software into its curriculum but maintain a balance between it and other aspects of visual communication design education and include broader issues outside the vocational ones.

Benefits and future developments

The research will help in planning curriculum in all visual communication subjects to take into account the rapidly developing technologies. It is essential that students are suitably prepared for the fast moving multimedia and design industry. The research will provide an insight into the needs of industry and the balance of design knowledge and skills, theory and software skills appropriate to prepare students for a range of career paths.

It will also aid identification of academic and technical staff development needs in relation to situated teaching and support of software.

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