

EP-odds and ends

A Curriculum for Electronic Publishing

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1 INTRODUCTION

In most disciplines it is not possible to say exactly when the discipline has achieved sufficient breadth and depth to be able to be considered as a subject in its own right. Is time alone the criterion? Computer-based typesetting began about thirty years ago, information retrieval is just as established whilst the ideas of hypertext go back even further. On timeliness alone Electronic Publishing (EP) could be seen to be established. Is this enough? Perhaps the true criterion is when the subject can justify an in-depth academically based course of honours degree standard, for which there is a market demand and a significant take-up.

The papers presented at TEP'92 [1] describe the objectives, content, learning strategies and assessment methods of a number of courses currently being mounted and all concerned with aspects of EP. They share the fact that they have all been of limited duration but, within that framework, one has been concerned with local skills training, four have involved modules contained within honours degree courses (Typography and Graphic Communication, Library Science, Publishing and Computer Science respectively) and one has been at post-graduate level. The content and learning strategies have been widely different. The courses described have all been European-based.

Does this mean that, within Europe at least, the climate is not yet ripe for EP to be presented as a single-subject course in its own right? This paper attempts to address the question. It looks first at market demand. It then relates this to possible course contents. It examines the disciplines which must come together to support EP as a single subject, and it offers a possible global content for a degree-level course in EP. Initially this could be a minor subject in a combined studies degree (Computer Science and EP or Library Science and EP) but this is likely to be only a short step before the full degree course materializes.

2 MARKET NEEDS

For the purposes of this paper the market for EP professionals will be considered as divided between text, graphics and video processing and between technical or design issues and publication.

In newspapers, for example, the production team are concerned with coordinating information retrieval and journalism with typesetting and composition. The publication team are concerned with the worldwide distribution, with local inserts, of the material generated. The publication team are also, however, concerned about competition and the impact of new technologies on competitive advantage. In this environment the production

team will be looking for skills directed at the various processes used by the organization. They will see the gradual integration of text, graphics and video into a single multimedia approach as something which can be handled within the reskilling tradition which is now being established. The publication team will be concerned with much wider issues and the relationship of each to each other and to the future of the business. Hence the different parts of the organization will be looking for both short skill-based courses and longer discipline based courses to meet their needs.

In the film and TV industry there is a mirror process. Computer-based techniques are both replacing existing techniques (in animation, titling, etc.) and offering extensions (interactive video, virtual reality, etc.). Again the technicians will continue to be skill-based. The programme developers and marketing departments must be more outward-looking. The scene in the newspaper industry is duplicated.

Newspapers and film and TV are, however, the major players. Alongside them there are many minor players. Consider the small company which is in advertising. It produces adverts for TV, newspapers and quality magazines, and it uses the same initial filming for all three. Such a company will employ many skills associated with EP (integrating text and image, generating high-quality and low-quality frames from the same image, scaling, etc.) but it will be on a tight budget. It will be looking for widely based skills but will still be skill-orientated.

The growth of EP has had a marked influence at the low end of the publishing business. Small companies have grown to exploit the cheapness with which low-print-run books can now be produced whilst many larger organizations have brought their company printing in-house. This has again generated a demand for specialists in the EP area.

All of the above refers to the publishing industry alone. One must not forget that EP has generated its own industry as well. This also will require a mixture of skill- and discipline-based courses, although there is likely to be a greater emphasis on technical computing aspects.

3 A RANGE OF COURSES

The breakdown of requirements sketched out in [Section 2](#) suggests a need for courses of each of the types given below. The courses would be organized around the concept of a module, which represents sixty hours of 'class-contact'. This contact could be tutor-led, or could be practical or project-based. In a Diploma Level course it would be supplemented by self-organized practical work whilst, in academic courses ((c)–(g) below) there would be a requirement for personal reading and assignments. Either of these would double the study time needed.

The types are as follows:

- (a) *Directed skills training*—Here the emphasis would be on acquiring the skills needed to operate particular packages effectively. Each package would probably equate to a half module and there should be a clear set of prerequisites. For example, no student should begin a DTP course without full competence in some word-processing package. No student should be introduced to `troff` or `TEX` without skills in both typographic design and computing.
- (b) *Diploma-level skills-based education*—Here the course would be longer-term (say twelve modules) and would assume that the students were either direct from

secondary education or retraining from another discipline. Hence there would be a need for all the basic technology, design and business topics to be covered followed by appropriate modules in EP, again covering the technological, design and business aspects.

- (c) *Modules in other academic courses*—Such courses would be one module in duration and would concentrate on those aspects of EP of more direct relevance to the host subject. If, for example, the module were for Computer Science students then there would be a concentration on text processing, database publishing and communications. If it were for students in Writing, Publishing and Communications then more emphasis is likely to be given to editorial aids and to the structure of the publishing industry. Obvious candidates for EP modules are degrees in Writing and Publishing, Publishing, Information Science, Typography and Graphic Communication and Computer Science. Not surprisingly, most of these have been covered in the papers presented at TEP'92. The different emphases in the different courses leads to a particular problem for institutions with a fully modular structure. Here there will need to be not one module in EP but a variety of modules each geared to a particular path and each with a different set of prerequisites. Another option might be to regard EP as another aspect of IT Basic Skills (spreadsheet, word processing, data management, statistics, etc.) but such a module would seem to be consigned to the category of 'skills training' rather than being wholly educational.
- (d) *A minor option in a combined studies degree*—Such an option usually represents four or five modules. Here it would be wise to offer a set of modules limited to some aspect of EP rather than try to cover the whole in less depth. The set could be made up from many of the combinations suggested within the framework given in [Section 4](#).
- (e) *Degree course in EP*—At present it might not be possible to justify a degree devoted wholly to EP but a twelve-module course covering the subjects listed in [Section 4](#), with considerable emphasis on the analytical content and on multimedia project work, would certainly justify the provision of a course covering the final two years of a degree course. This would correspond to a named award in a combined studies degree or a tripos award in the Oxbridge sense.
- (f) *Postgraduate conversion course*—Such courses correspond in nature to the honours degree course for the conventional undergraduate. They must, however, take the subject to the limits of current knowledge and they are increasingly being based on the concept of a course built around a major (ten man-year) project. Frequently such courses are used by members of the publishing industry to introduce awareness into their organizations of what is likely to become possible in the future. Middlesex University currently offers such a postgraduate course. The length (48 weeks full-time) corresponds to the twelve modules of an undergraduate equivalent and covers all the topics listed in [Section 4](#). There is, in addition, a heavy emphasis on personal research expressed in terms of contributions to major group projects.
- (g) *Postgraduate special subject courses*—However deep a conversion course may go there will always be a need for summer schools and for taught masters courses which investigate a narrower subject to the full depth of current knowledge and seek to probe even deeper. Digital Typography has achieved such status, Hypermedia is following. Middlesex University offers taught master's courses in Computer Animation and Computing in Design, and is proposing Design for Interactive Media. Perhaps a catalogue of such courses is overdue.

4 COURSE CONTENT

Electronic Publishing can be viewed from many directions. It is based on a number of fundamental technologies, such as hardware developments, software engineering (taken to include all aspects of programming and software development), telecommunications, computer graphics, human–computer interaction and information retrieval. On top of these one can consider paper-based publishing against video-based publishing or, alternatively, one may consider technology, design and information management (i.e. publishing) as three aspects of the problem. Whatever breakdown is chosen, the course content must address all the ensuing topics. What is important is that the three aspects of technology, design and publishing conventionally are addressed by different faculties in educational institutions. Technology tends to be the responsibility of the Faculty of Science, Publishing the Business School and Design the Faculty of Art and Design. It follows that, if a full course is to be mounted it must either attract support from all of the three faculties or must bring together an unusually diverse group of colleagues.

Within the above breakdown one can suggest the following modules (none of which is comprehensive, only the flavour is indicated)—the way in which each of the modules would be approached is indicated in the sample courses given in [Section 5](#):

Supporting modules:

- (a) Hardware—characteristics and potential of the basic elements needed for EP operation and likely developments;
- (b) Software Engineering—principles of software design and generation;
- (c) Telecommunications—characteristics and potential of telecommunications plus a survey of carrier services available and projected;
- (d) Computer Graphics—characteristics and potential;
- (e) Human–Computer Interaction—psychological, ergonomic and social considerations;
- (f) Information Retrieval—databases, on-line and CD-ROM services, network services (VANs), broadcast services.

Core modules:

- (a) Technology for Print—document structure, document preparation systems, DTP, DDLs, page description languages, text databases, standards;
- (b) Design for Print—type design, graphic design, composition products, separation;
- (c) Print Publishing—history, financial strategies, distribution, contracts, social considerations;
- (d) Technology for Multimedia—hypermedia etc., music and sound, interactive software, multimedia databases, intelligent systems, visualization, virtual reality, CAL, standards;
- (e) Design for Multimedia—design methodologies, media evaluation, HCI considerations;
- (f) Multimedia Publishing—financial strategies, market sectors (educational, music, art, etc., versus academic, business, popular, etc., versus newspaper, magazine, journal, book, video, etc.), comics.

Elective modules (in the sense that the student chooses what to do, not whether or not (s)he does it):

- (a) Group Project Modules (from 1 to 4)
- (b) Proposition Modules (i.e., the study of a particular aspect to a depth greater than the other course members)

5 SAMPLE COURSES

Within the framework of the market needs, the suggested course offerings and the proposed course contents, the following sample courses are suggested.

5.1 DTP skills

Such a course would operate for one week full-time (half module), it would assume that the students are fully conversant with the principles of word processing and have the computer skills (i.e., disc and file handling, security, etc.) needed to operate a personal computer effectively. No knowledge of computer science or of the printing industry would be assumed. The course would be a very detailed coverage of the potential of and techniques for using a particular DTP package (e.g., Ventura) with some attention to questions of design. There would be no reference to the wider context (e.g., to compare Ventura with Quark-Xpress say) or to the techniques adopted by the package to produce its results. Assessment would be no more than a subjective judgement of how well the student could perform specific DTP tasks. To the successful a certificate would be awarded.

5.2 Diploma-level courses

In the United Kingdom diploma-level courses are normally associated with either school-leavers or individuals already at work who are seeking career advancement whose academic qualifications are weak but who would benefit from an extensive course but one whose approach is related to skills acquisition rather than in-depth analytical studies. The duration of the course would be two years full-time (12 modules plus a project). All of the topics listed in [Section 4](#) would be covered but in a way that emphasizes the practical. Two possible approaches can be seen. For students who have a background in computing the treatment of the core modules could be in some depth, placing the emphasis, say, on producing software to implement new extensions of EP. For students whose background is more creative the treatment of the core subject areas would be more descriptive and more geared to understanding new applications of the existing technology rather than developing the technology itself. A mixed group of students would be catered for by placing greater emphasis on electives. All the topics covered would have to be placed in context but there would be no, say, comparative studies. Assessment would be by a combination of assignments, usually practical (e.g., prepare a magazine), projects and formal examinations. Although the latter would seem to be essential, they could contain a large proportion of practical exercises, as is common in papers in mathematics. Successful students would receive a diploma which would have a national (international?) standing.

5.3 Single-subject degree or postgraduate conversion courses

This paper assumes that students entering a course for a single-subject degree will have come from many backgrounds. Some will be technology-orientated, some will be creative and some will be business-orientated. Some will come directly from school, some will have spent a time in business and will be wishing to improve their qualifications. Some will have a clear career path, other will just be seeking education. All will have a positive academic ability. In such a course the emphasis will be on a uniform coverage of all the subject areas, allowing specific individual interests to be catered for by electives. The emphasis will be on putting everything into context, not only what a particular package achieves but how it does it, how it relates to the other packages in the same area and how it might be extended. A typical examination question could ask for comment on, say, how the designers of Word for Windows might have been influenced by Ventura Publisher. If a three-year course could be justified the supporting subjects would probably be covered in the first year but care would have to be taken not to put too great an emphasis on the technology. Assessment would include major group projects, in which the conduct of the project would count for as much as the end product, as well as written examinations. The written examinations would provide the opportunity for assessing whether the student had acquired a sufficiently analytical approach to the subject. Degree qualifications, of course, already carry international recognition.

6 SUMMARY

A set of modules, a selection of which should appear in any EP course, has been presented. A number of courses, which are operating now in institutions in Europe and were described in TEP'92, can be seen to fit within this framework. Often, however, the course content and objectives are determined by the special interests of individual members of staff in a particular department. It is suggested that the framework is sufficient to allow for the definition, within it, of an honours degree course in Electronic Publishing and that the time is ripe for such courses to begin to appear. These courses would be much more cross-disciplinary than is the case now. In the present paper no reference has been made to teaching strategies, teaching materials, bibliographies, equipment and software or other necessary support. The author would welcome responses from teams developing courses in EP, particularly in North America, with a view to publishing a much more elaborate framework (akin to that available for Computer Science [2]), including the items which have been omitted this time.

REFERENCES

1. Jacques André, ed., *Teaching Electronic Publishing*, BIGRE 79, IRISA, Campus de Beaulieu, Rennes, France, April 1992.
2. Peter J. Denning, Douglas E. Comer, David Gries, Michael C. Mulder, Allen Tucker, A. Joe Turner, and Paul R. Young. Computing as a discipline, *CACM*, January 1989.