THE USE OF INTERNET TECHNOLOGIES IN DELIVERING ARCHITECTURAL CPD

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ABSTRACT: This paper is based on a Royal Institute of British Architects funded project carried out with the co-operation of the Royal Incorporation of Architects in Scotland. The study reports on modes of delivery for various levels of Continuing Professional Development (CPD); detailed surveys of the IT equipment and skill levels in Scottish architectural practices; and the possible uses of simple Internet technologies to provide CPD to these practices. Proposals are made regarding the strategies that may be adopted by the professional institutes with regard to both new technologies and supporting a widely dispersed membership.

KEYWORDS: Continuing Professional Development, IT, Internet.

1. CONTINUING PROFESSIONAL DEVELOPMENT (CPD)

CPD refers to the ongoing learning that adults engage in to do their work and improve their work-related knowledge and skills. For many professionals learning is a central aspect of their work and it is often hard to differentiate between work and learning. Learning of this kind falls into two categories:

- acquiring stored information
- human contact (interaction)

Professional learning is self-motivated, self-directed and self-monitored. It is this aspect that sets it apart from other forms of learning.

1.1 Forms of CPD

In broad terms CPD can be classified as either formal or informal - in other words structured coursework or not - and currently the main emphasis is on attendance at courses. Formal courses can be classified as:

1 technical - those that update professional knowledge and skills; these are the most popular, and
2 contextual - those that enhance professional capabilities or relate to the solving of particular problems, leading to specialisation.

One of the major problems and criticisms of CPD systems is their relation to this formal instruction. Recent research has shown that in maintaining and enhancing their capabilities practitioners are relying more heavily on informal sources than organised training provision.

Becher (1999) categorises this informal learning into 4 groups:

1 Resource-based - draws mainly on magazines, journals, publications which professionals read or refer to keep up-to-date with developments in their field.
2 Practice-based - relates to “learning on the job”, learning by observation and learning by doing.

Construction Informatics Digital Library http://itc.scix.net/
paper w78-2000-136.content

3 Practice-related - draws on practical knowledge and includes such activities as giving lectures; teaching; writing articles; carrying out research, etc.
4 Interpersonal - perhaps the least recognised category: it includes the phenomenon of networking, the sharing of knowledge amongst practitioners to the benefit of each other.

Researchers in the field of professional development insist that failure to recognise these alternative and more informal approaches to professional learning and enforcement by professional bodies of formality will prove to be counterproductive in terms of motivation to learn. Both the Royal Institute of British Architects (RIBA) and the Royal Incorporation of Architects in Scotland (RIAS) acknowledge this factor and their CPD requirements include both formal and informal methods of learning.

1.2 CPD Awareness and Promotion

Architectural professional bodies are making every effort to tailor CPD to the needs of every individual by maintaining an overall flexible structure. Informal learning as mentioned above is regarded as legitimate as formal learning, namely attending courses. In a recent RIBA Journal article (RIBA, 1999) the RIBA's main message was its liberal attitude to the type of activities chosen. It encourages its members by highlighting the fact that CPD requires only 45 minutes of study per week. Forms of CPD activity also vary tremendously, from video, meetings, site visits, exhibitions to reading and more recently distance learning and networking.

The RIAS Information Sources Survey of February 1999 (RIAS, 1999) has shown that the use of the Internet is very much on the increase in practice (17% in 1995 to 62% in 1999). The surveys undertaken in connection with this research also indicate that in tandem with this increase is the increase in willingness of practitioners to use the Internet and its various forms as a means of CPD achieving CPD. Now is an appropriate time for the RIBA and others to further extend their use of the Internet in particular their use in relation to CPD.

2. SURVEYS

Several surveys were undertaken (all within Scotland) to investigate a number of issues:

- how the Internet was being used in practice;
- why some practices were not online;
- how those not presently online might use the Internet;
- the interest in Internet technologies - newsgroups, discussion groups, bulletin boards, chat rooms, video and audio conferencing, and the WWW;
- architects' views and attitudes to these new technologies;
- how the Internet could aid a CPD programme.

A number of specific groups were surveyed -

1 A "Remote Group" comprising of 180 members of the Inverness Chapter of RIAS in practices dispersed throughout the region, many on islands. A high proportion of returned surveys were from sole practitioners (42%).
2 An "Online Group" comprising of the 50 practices from the 160 practices in the Glasgow Chapter of the RIAS, who were all online with email.
3 "Sole Practitioners Group" comprising of all 46 members of the Edinburgh Chapter Architects Network (ECAN) and Dundee Sole Practitioners' Group.
4 Architects attending the RIAS 1999 Conference in Glasgow.

Offices were categorised by size: small practice (up to 5 staff); medium practice (6 to 20 staff); and large practice (more than 20 staff).

2.1 Numbers Online

Remote Group - (Inverness Group)
62% were online with email, which equates well with 64% of architects online in the RIAS survey of February 1999. The larger the practice the greater the likelihood of being online. All the practices surveyed with 4 or more architects were online. Only 37% of sole practitioners had access to the Internet.

Online Group - (Glasgow)
50 of the 160 Glasgow Chapter practices were online (with email) which represents a fairly low figure of 31% of practices online compared to 64% in Scotland as a whole.

Sole Practitioners Group - (ECAN and Dundee)
50% of these practices had Internet access and email. This is a relatively high percentage for sole practitioners however this could be due to the members within ECAN recognising the potential of the Internet to network individuals to everyone's benefit.

RIAS Conference - (Glasgow)
100% of the participants (26) responding to the survey were online with email. This seemed high however, the majority (77%) came from practices with over 6 of a staff, several organisations with 100+ of a staff. Typically these days practices of this size are online. Large practices have to adopt new technologies quicker than smaller ones simply to survive. Competition is fierce and their clients expect them to do so. Two of the smaller practices were remote and required the Internet for cheaper email communication.

2.2 Reasons for going Online

The main reasons for going online, irrespective of size, were unanimous:

- information retrieval
- drawing transfer
- email.

Other reasons were, to keep abreast of technology; keep up with IT; to have a web site; and to keep in touch with professional bodies.

The reasons for not going online came from the smaller practices and sole practitioners. Some had no computer or an old computer and it was felt that the initial cost or upgrade costs were still too prohibitive, compared to the cost of a fax or telephone (which they already had). Some noted that *"paper was just as effective"* and *"more ready to hand*"; but the biggest drawback was the number of issues the sole practitioner already had to manage without also undertaking the initial steep learning curve of IT.

2.3 Information Searching

All practices across the surveys used the Internet to access information, the large practices using it more often than the smaller and medium practices, sole practitioners and remote users. Technical data and manufacturers' data were the types of information most accessed by architects. RIBA/RIAS and other architects' web sites, along with practice information, were the next most popular sites. Sole practitioners and those working in remoter locations used the Internet for computer technical support. CPD was occasionally accessed by smaller and medium practices but never by the large practices (who probably support in-house CPD or

are committed to the professional bodies' CPD provision). Small practices, particularly sole practitioners were more likely to use the Internet for accessing "other items" e.g. travel and architectural competitions. Practices seldom used the Internet to secure commissions.

Across all practices surveyed there was agreement that the new technologies were more convenient in terms of time (24 hour access) and location (remoteness becomes irrelevant) compared with traditional methods of information searching. Large practices noted Internet searching was cheaper but perhaps this was due to the fact that it is hard to put actual figures against this. Small practices, particularly sole practitioners felt that although quicker than traditional methods of information searching, it was not cheaper. On the whole the majority of sole practitioners preferred the traditional methods of information searching. Few felt that currently the Internet offered than a wider range of information; and many found that information searching became less focussed as associated but sometimes irrelevant material sidetracked searches.

Those not online thought that searching for information would be quicker but the majority still preferred to search for information in the traditional ways - looking through product libraries, catalogues, calling reps., etc.

2.4 Email

From the surveys it is noted that the larger practices all have email. The Inverness Group shows a typical trend - 62% of the practices had email which compared favourably with a previous survey by the RIAS of computer use which found that 64% of practices in Scotland had email (Feb. '99). Practices of 4 or more architects all had access to email. As the size of the office decreases so too did the percentage of practices with email. Sole practitioners were least likely of the groups to have email.

Email was most frequently used to communicate with the design team and other consultants. It was also used very frequently amongst staff in an office and for sending information to and from clients. Many practices, particularly medium to large offices, used email to send drawings to others in the design team, consultants and clients.

Large practices were more likely to communicate via email with their contractors than small practices were. Small practices and sole practitioners often used email to contact family and friends; RIBA/RIAS; computer technical support and other architects.

All of those surveyed in the large to medium sized practices found email to be faster, cheaper and more convenient in terms of time and location than traditional means of communication. That is not to say they stopped using the traditional methods: both were used in tandem.

The smaller practices didn't all agree that it was faster (85%) and only around 77% agreed that it was indeed cheaper compared with traditional methods. There are still misgivings about the new technologies, with some practitioners particularly very small practices admitting difficulties adjusting to the new technologies or finding them unreliable and still too costly for the initial outlay compared with the cost of telephone or fax, for example.

2.5 Further benefits the Internet can offer practice

Large, medium and small practices all thought that the Internet offered them the opportunity of web marketing and practice promotion. The larger firms, in particular, saw potential in its use as a shared repository for all project information; whilst the smaller practice and mainly

sole practitioners saw its use in enhancing networking. Already numbers of sole practitioners are linked electronically to their own benefit - ECAN.

Other benefits included its ability to save on physical space - no longer the need for large office libraries; and, cheaper overseas communication.

2.6 Web Sites
100% of the large practices surveyed in the Glasgow Online Group had their own web sites; 66% of medium practices and only 38% of small practices. Generally the larger the practice the greater the likelihood of there being a presence on the web. The RIAS Conference survey showed that just under half of those surveyed had web sites. The reasons for having web sites were primarily to promote the office and showcase projects, in the hope it generated business.

2.7 New technologies (discussion forums; newsgroups, chat groups, communication tools, etc.)
Irrespective of the size all practices were interested in the new for the promotion of design team collaboration. They also felt they had an important role to play in the sharing of knowledge and discussion of experiences of products, practice issues, and technical and legal aspects. Sole practitioners noted their interest primarily to communicate with other sole practitioners.

General discussion groups on architectural topics, on the other hand, were a fairly low priority. Topics had to have purpose and be of benefit to the individual or practice.

All practices were agreed that relatively low operational costs made these communication tools attractive, particularly if they were already online. Speed was also a valued feature. Text and images were important aspects of communication, however being synchronous was not. The larger practices showed more interest in video and audio communication than the smaller practices, their preference still being for face-to-face meetings or communication via the telephone.

2.8 CPD and the New Technologies
Few architects or practices surveyed currently used the Internet to access CPD material. Small and medium practices did occasionally but sole practitioners and large practices did not. However, there was great interest in the possibility of being able to carry out CPD activities on the Internet. 76% of the Inverness group were interested in the new technologies for CPD presentation; 92% of small practices; 66% of medium sized practices; 100% of large practices and even 50% of sole practitioners.

The majority of those surveyed were interested in the new technologies mainly in terms of making the events more accessible; available when required (24 hours a day); and, offering a wider range of material. The small and medium practices were keen that the new technologies could reduce practice costs in terms of CPD. Approximately two thirds appreciated the technology's ability to record CPD activities simply and quickly.

3. FEATURES AND BENEFITS OF THE NEW TECHNOLOGIES

The features and benefits of network technology should be made explicit. These benefits would include:

- New ways to disseminate and exchange information. The Internet and the WWW offer a new experience in the accessing and sharing of information. Email is widely used in architectural offices in order to transfer information and data cheaply and quickly.
- Offering a wider range of material in different formats. The greatest potential of the Web is its ability to link to other sources of information. A wide range of material in many forms - text, audio and video can be accessed all from the one point - the personal computer. It is however, necessary to know what to look for and where to look for it (addresses). Search engines and other tools have been developed and are being refined for this purpose.
- Access and Flexibility. New technologies can make information and CPD activities more accessible and flexible in terms of:
    - Place. Geographical factors can be removed. Distance and remoteness are becoming less important. Attendance at events could no longer be dependent on location. Events could be delivered via video conferencing or viewed as archived transcripts available to all. CPD material can be accessed from any location. Busy architects can achieve CPD at home or at work.
    - Time. Online material can be accessed at any time - literally 24 hours a day, making access from home or any place away from work possible, when required. Architects are more likely to find time away from the hustle and bustle of the office to carry out CPD. Online courses can be "attended" when an architect has time rather than when a course is scheduled. New technologies will also save time in terms of travelling to events.
- Reducing Costs. This factor appeals to practices. Costs can be saved in terms of time lost when employees are attending courses/lectures/events. Travelling costs can be eliminated in many cases. Computer-mediated communication or accessing the information from the Web does not incur initial outlay if the practice already has a computer system with Internet access. The only cost is the cost of being connected and this is often charged at local call rates. Practice costs could be further reduced if individuals accessed material form home or if office computers were used after "normal working hours" in the evenings. The cost of taking online courses can be greatly reduced due to the potential numbers being able to "attend" and take part.
- Promote Networking and Sharing of Knowledge. Email, distribution lists, discussion forums, real- time chat, audio and video conferencing are all new technologies that can be used to help professionals network and support each other as well as share their great resource of personal knowledge and experience. The new technologies also provide the opportunity of group working that might not otherwise exist due to distance.
- Learning Opportunities. These new technologies offer richer learning experience - a particularly important issue now there is more emphasis on professional learning by professional bodies, clients and employers.
- Learning from others. The new technologies can help promote peer learning. There is a vast source of professional knowledge and experience that can be "captured" and shared with others online.
- Reflective Learning. The archiving of lectures/events/seminars can not only be viewed by those unable to attend the actual event but can be utilised for reflective learning. Traditional lectures are delivered with little time allowed for reflective learning afterwards. Online archives can allow architects to return again and again to material for a better understanding or reinforcing of the principles.
- "Just-in-Time" Learning. The Web offers an opportunity to access material quickly (if an address is known) which supports the type of learning that most often occurs in practice -

"just-in-time" learning. Manufacturers' product data can be accessed quickly when required from the office or home and applied to project work.
- Sporadic Learning Experiences. Online learning can allow for the completion of course or study material in several "sittings" if time available is short and intermittent.
- Informal Learning Experiences. The nature of discussion groups and "chat" tend to promote a more informal atmosphere for the exchange of knowledge.
- Compensate for Limited Resources. Having the ability to offer material to many from one point of source (the Web) should potentially compensate for limited resources on the part of the deliverer of the CPD material.

4. APPLICATION OF NEW TECHNOLOGIES

The most popular methods of carrying out CPD are:
- attending courses or lectures
- reading professional literature
- talking to one's colleagues.

The new technologies can be applied to many of the traditional ways of carrying out CPD, for example:
- Email, mailing lists, Listservs and newsgroups when organised by professionals have become major sources of information and contact for professional development.
- Virtual libraries and hyperlinked online journals and documents are offering professionals new ways of sourcing material and meeting learning needs.
- Alternative forms of publications are bringing new resources to architects. Journals and magazines are becoming available online.
- Alternative means are offered for searching for manufacturers' product data via the WWW. Tools such as search engines, metasearchers, classified directories, gopher services, ftp archives, intelligent agents all help in that search. The Web currently offers three main types of product information - online manufacturers' product data, catalogue services and CAD element library information. This information can be organised and stored for easy access at a later date.
- Hyperlinks can be utilised for quick access to associated learning material.
- The Internet has enabled major advances in information retrieval in libraries to take place via computer networks. Access can be made remotely rather than physically.
- Research can be carried out jointly at distances.
- Lectures and events over the network (video conferencing) have the possibility of reaching a far wider audience.
- Lectures and events can be archived to allow an even greater audience and access by those who could not attend the event at the specified time.
- Lectures and conferences can support interaction before or after an event with speakers and colleagues via moderated online discussions, real-time "chat" or audio and video conferencing.
- The new technologies such as email, distribution lists, newsgroups, listservs, discussion forums, real-time 'chat' and electronic conferencing can support networking which is helpful for exchanging ideas and giving support on specific issues. Architects could find the sense of belonging to a 'virtual community' a professionally useful one.
- The Internet supports computer conferencing to allow colleagues to work collaboratively.
- Courses can be taken online, allowing architects to participate in the course of their choice at the time they wish and where they want.

- Assessment can be recorded automatically by embedded assessment engines. Credits gained can be accessed simply and quickly.
- Online recording of CPD activities or the compiling of a Professional Development Plan could be extremely convenient for busy professionals in terms of organisation and time.

5. A PROPOSED MODEL

A successful online CPD model should:
- be strategically and well planned in advance;
- have all aspects of the site and content trialed or "pilot tested";
- be developed gradually and allowed to build momentum over time;
- be seen as an alternative means of carrying out CPD rather than replacing existing methods;
- incorporate "social" areas and "self help" areas (with the support of discussion groups or mailing lists which often tend to be more informal in their use);
- offer a means of recording activities online;
- be simple and easy to navigate;
- use technologies that appear "invisible" in their use allowing the participant to gain full experience of the activity undertaken.

The following is an outline of a possible RIBA online CPD facility and its possible contents (with linking throughout).

Administration Area offering:
- Advice (with direct email to RIBA Committee members)
- Description of CPD and current regulations
- FAQ area (to reduce queries to staff at RIBA)
- Registration for courses, lectures, etc.

Noticeboard or "Events" Area
- Advertising lectures and events (for physical attendance)
- Links to online exhibitions or events

"Lecture Theatre" offering:
- Online courses by CPD Network Providers and new suppliers of CPD material
- Links to AIA courses and events
- Links to other professional bodies recognised events
- Moderated online discussion forum seminars related to specific topics (for formal discussion)
- Forum for video conferencing (use cold be made of HEI video conferencing facilities)
- Online assessed reading material
- Real-time discussion with speakers or lecturers before or after an event

Resource Facility offering:
- Links to useful documents and references
- Links to manufacturers' product web sites
- Links to classified directory sites
- Archived video clips and IRC transcripts of past lectures and seminars

- Links to library material
- Links to online journals
- Links to RIBA bookshop and other "shops"

"Social Area" allowing:
- informal discussion amongst members (using email lists rather than desktop conferencing or real-time chat at present)

Assessment Area where:
- Architects can take tests of read material
- Credit can be checked
- Transcripts can be downloaded instantly

6. CONCLUSION

These network-based technologies can offer an alternative and flexible way to carry out CPD but can only be adopted with a positive approach. There are many barriers to be overcome, not least a lack of interest amongst practitioners. Age; unsuitable equipment or none at all; no access to the Internet; preference for more traditional methods, are all cited as possible reasons for not possibly adopting an online CPD approach. Users will also need to develop online communication styles to compensate for the lack of expressive richness in text-based communication. Security is also seen as a barrier to these new online activities, but software developers have taken heed of their users concerns and are now incorporating cryptography software into web browsers to facilitate secure messaging and transactions.

However by maintaining their current policy on what constitutes CPD (in terms of the wide variety) and then implementing online CPD the RIBA will be offering its members a comprehensive and at the same time an up-to-date and state-of-the-art means of learning and studying professionally. The benefits of an online CPD provision must be emphasised to members (not enforced) because undoubtedly, the virtual desktop will become the learning interface of the future.

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