

Collaboration, Interactivity. Using Virtual Technology as a Policy Guide in Knowledge Sharing among Libraries

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Abstract: The past few years have seen some radical improvements in educational technology, and with them distance education is being transformed from a poor cousin of the "real" classroom to a key delivery channel for educational content of all types. The paper attempts to identify strategic issues for libraries wishing to pursue a more active policy with regard to the changes affecting librarian system due to the increased use of information and communication technologies. The article starts out by sketching the changes currently occurring in the organizational schedule of libraries in Greece. We can identify two major areas in which libraries can develop strategies to enhance services for their patrons. Following domains are discussed: collaborative design and the relation between physical and virtual learning environments. Next, possible implications for library staff regarding the changes are discussed.

The article also includes thoughts on alignment between library strategy and the strategy of the Open University. We are standing in front of a new challenge; the extent and strength of the library support that can be offered to this new generation of distant learners! The point is to help the patron in formulating his own information needs within a national collaborative virtual-based reference question forum. Greeks, as we think all people incoming in libraries, love the quick, accurate and friendly interaction between the patron and the librarian in intermediary face-to-face way. The bringing together of libraries with a growing organizational interoperability is the wind of noticeable organizational change in existing service structures demonstrating highly innovative service solutions. Libraries need to raise awareness of their role as implementers of national collaborative frameworks, as protagonists in the driving of the "e-services car". Importance has been given to:

- **Strategy and method for approaching the visual users in the information environment.**
- **Development and management of individual libraries in a national collaborative schedule.**
- **Connectivity and manager platform.**
- **Reaching the goals**

Interoperability, sustainability and service convergence can overcome the different world views of the means by which services should be organized. Proposing an improving virtual user-relationship in a properly adjusted, information environment can help our

initial scope: the effective support of Learning and Information Literacy according to the Information Policy principal of Innovation and Knowledge Sharing.

Introduction - Strategies:

In their reports on the America Library Power project, Carol Collier Kuhltau, and Norman Webb and Carol Doll stress that the most important condition is that there is a basic agreement between administrators, teachers and library staff on what kind of education an institution wants to give. Those schools advocating more active learning styles will benefit especially from increased cooperation. The pay-off for students is an increase in information literacy and critical thinking skills, core competencies for knowledge workers. It can be expected that more active library support of educational innovation will give rise to new types of jobs. Some early examples are the academic technology specialists at Stanford University in the United States and the learning technology officer at the University of Edinburgh in the United Kingdom. The academic technology specialist is a hybrid function, combining library and ICT expertise, and the specialist's task is to support teaching staff in the use of new technology. Most of the time (about four days a week), these specialists work with faculty in their offices and classes, the remaining day of the week is used to exchange experiences. Edinburgh's learning technology officer acts as a bridge between library and academic staff to ensure that library expertise is properly exploited, a definition that seems a bit too library-centered. On a larger scale, there could be organizational consequences. Much in the same way that digital library projects have led to closer cooperation, and sometimes mergers, between libraries and computer centers, educational innovation leads to closer cooperation between libraries, computer centers and educational support units.

The Role of Librarians:

The role of librarians seems to vary around the world. Articles from Australia and the U.S. reveal that librarians working in libraries and campus media centres have a more active role in providing a wide variety of education services to distance learners than librarians in Canada. The new technologies available to librarians today are changing the way library services to distance learners are delivered, as well as providing opportunities for services never before possible. Technology has provided options for library services to distance learners in a number of areas including document delivery, bibliographic instruction and reference assistance. I think it is very important what Abbas summarizes a number of roles that others have identified for future librarians:

- **Librarian as gateway to future and to the past.**
- **Librarian as teacher**
- **Librarian as knowledge manager/worker.**
- **Librarians as organizers of networked resources.**
- **Librarians as advocates for information policy development.**
- **Librarians as community partners.**
- **Librarians as "sifters" of information resources.**
- **Librarians as collaborators with technology resource providers.**
- **Librarians as technicians.**
- **Librarians as individual information consultants.**

Currently, especially in Greece, library schools have not recognized this pretty compound role of the librarian and they don't face the issue of services to off-campus students as a high priority. Perhaps in the future, this issue will have to be incorporated into library schools curriculum's if librarians are to be prepared for the challenges that face them.

Virtual Learning Environments:

Special attention must be given to the followings:

1. Lifelong learning leads to an emphasis on "learning to learn". Knowledge becomes obsolete at an ever-increasing rate in a knowledge economy, and knowledge workers need to be able to refresh their knowledge on a regular basis.
2. More and more information is made available through the web. Search engines assure the accessibility of this material. Groupware allows (a)synchronous communication between teachers and students – worldwide.

One might envisage learning environments of the future as:

- being student-centered
- being interactive and dynamic
- enabling group work on real world problems
- enabling students to determine their own learning routes
- emphasizing competencies like information literacy to support lifelong learning

The purpose of CDRS: to provide professional reference service to users anywhere, anytime, through a national, digital network of libraries. With this service, an end-user may ask a question and receive an answer from a librarian working through a participating member organization. The infrastructure supporting the system includes operating agreements describing the scope of services and software for tracking and managing the routing of questions and answers. It stands also as a necessity to build resource databases that will include member profiles and a searchable knowledge base of questions and answers. NLG will provide technical and developmental support by building and maintaining a database of profiles of participating institutions that will provide answers through CDRS; building and maintaining a question-and-answer database system that will enable CDRS participants to catalog answers and store them in a searchable/browsable database; and providing administrative support for CDRS, including marketing, registration, training, and user support.

The Philosophy of the cooperative designing environments:

CVRE (Cooperative Virtual Reference environments acknowledges that people work together as a way of managing complex tasks. Despite the wilder claims of Artificial Intelligence, not all these tasks can be automated. Thus it is sensible to design systems that allow people to collaborate more effectively. This can also open up opportunities for collaboration that have previously been impossible, overly complex or too expensive; such as working not merely with colleagues in the same office, but via video and audio

links with colleagues in a different building or on a different continent. CVRE has a strong interdisciplinary tradition, drawing of researchers from computer science, sociology, management, psychology and communication.

The world of CVRE is often described in terms of the time and space in which a collaborative activity occurs. Collaboration can be between people in the same place (co-located) or different places (remote). Collaboration can be at the same time (synchronous) or separated in time (asynchronous).

Examples from the various quadrants are:

- same time, same place: meeting support tools.
- same time, different place: video conferencing.
- different time, same place: A design team's shared room containing specialist equipment.
- different time, different place: email systems.

The traditional paper-based library operates mainly in the co-located and synchronous quadrant. As computer technologies have advanced more activity has moved to the remote half where users access library services via network connections. The interest in Digital Libraries can be broadly represented on Figure 1 as a move from the top left to the bottom right; although, as the term 'hybrid library' emphasises, libraries will continue to operate in all four of the quadrants.

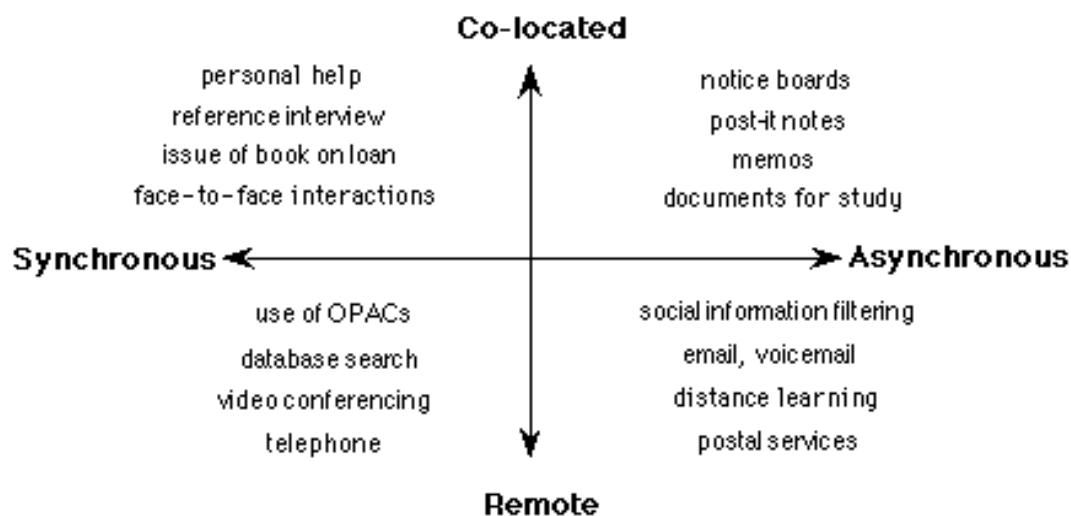


Figure 1 - The CVRE spatial and temporal quadrants with LIS examples

We focus here on the potential of CVRE to support library activities that are more specialised (even though they may have parallels with activities in other organisations). We can see collaboration occurring in a library in three ways: (1) among staff members, (2) among users and staff members, and (3) among users.

Staff-Staff collaborations

Despite the stereotypes, librarians are not solitary types. Just as other workers do, they interact, both formally and informally, with colleagues to get their work done. One of the great contributions of ethnography to CVRE has been to reveal the complexity of these kinds of interactions. They can be both formalised, where a complex task is broken down and tackled by a number of people with varying levels and different kinds of expertise, and also informal, where a problem arises and people creatively use their colleagues as resources to help them work around the problem and come up with innovative solutions. Studies of help desks show that problems are often solved by teams of staff or are referred 'upward' to subject librarians. Another example of staff-staff collaboration occurs in the solving of particularly complex reference questions. Staff-staff collaboration can be learning-oriented as well as work-oriented. A powerful and effective way of acquiring skills is by working alongside more experienced colleagues. With increasing use of various computerised information systems, the growth in number of databases and the rapid change in updates to software there is a permanent training/learning need. It would help to understand this process better, to consider how to teach techniques on how to be a better learner (and a better teacher) in an OTSL episode, and to develop functionalities into computer systems to support this process.

User-Staff collaborations

Collaboration between users and staff in traditional libraries is most evident at the help or reference desk. Libraries have often provided additional services to support users who are not in the physical library. Remote interaction has occurred for some time, using letters, internal mail and particularly the telephone. One of the simplest computerised approaches to the same issue has been to set up an email reference desk service, e.g. For a comprehensive review of approaches to remote reference see. When library staff try to collaborate with users who are not 'in' their library, their job becomes much more difficult. As anyone who has used a software phone helpline can testify, solving problems becomes a lot harder when you lose the shared contextual information present by simply being next to someone. However, this shared context is precisely what is missing in Greece from remote (attempts at) collaboration. As the computer systems do not provide an easy way for users to record what they have been doing they cannot easily give this information to the library staff. Although library systems and remote databases are often quite good at supporting the hits resulting from a search they are often less effective at supporting the process of searching. This process information is exactly what is needed for effective collaborations in remote help-giving situations. A key aspect of the introduction of technology into libraries is how it changes the jobs of the staff. As users interact via technology then the staff have to adapt their work practices to fulfil their service role.

User-User collaborations

Physical libraries restrict collaborations between users in several ways. In addition to an atmosphere that discourages talking, a collaborative meeting first requires people to be in the same time and same place (in their local library). Once technology allows users to extend their presence over time and space then user-user collaboration becomes much simpler and potentially more important than collaborative activities involving staff.

Examples of user-user collaboration include the facility to leave annotations and evaluations on documents so that subsequent users are presented with more than the simple documents. A particularly interesting example is where groups of ratings supplied by users can be used to filter a set of documents for another user with the very significant help of the cooperative network of librarians.

Collaboration and technology

In Greece when trying to build computer systems that will help people to work together more productively we have to take into account a number of factors. These can be expressed by the following questions:

- what exactly is it that people do?
- which activities can computers do for people?
- which activities can computers help people do more effectively?
- which new activities does the new technology allow people to do?
- how can we introduce new systems and ways of working without disrupting existing successful operations?

This is known as the socio-technical design challenge. It involves determining what should be built not merely by reference to what is technically possible, but what would be useful to the organisation and acceptable to the organisation. Collaborative work is necessarily social. Thus a system that flouts social rules, norms or customs, even if it does useful things, may fail to be used. The key to selecting, or developing, successful collaborative systems appears to involve an understanding of what is currently done, and designing systems that not only can mesh with that way of working, but can adapt gracefully as people change their way of working over time. Another approach to the introduction of new technology is to acknowledge that humans and computers are suited to different types of activities. Computers are good at laborious, repetitive and memory intensive tasks; humans are good at creative, inter-personal and tasks requiring broad knowledge, common sense and judgement. We believe that the most productive applications of computers in libraries will occur when computers do the boring jobs leaving the humans to concentrate on other tasks. This approach suggests that we should be aiming for supportive software rather than the trying to replace humans with a computerised 'intelligent expert'.

The Situation in Greece:

- ◆ The number of students is still growing.
- ◆ Different types of students are asking for education; participation of women, older students, and students from ethnic minorities is growing. Different students bring different experiences with them.
- ◆ Increasingly, work and study are combined, and that leads to a need for more flexible learning arrangements in which the campus or school building is no longer central to the educational process.
- ◆ More generally, there is a trend towards lifelong learning.
- ◆ Lifelong learning leads to an emphasis on "learning to learn". Knowledge becomes obsolete at an ever-increasing rate in a knowledge economy, and knowledge workers need to be able to refresh their knowledge on a regular basis.
- ◆ Because of the differences between students, there is a need to accommodate different learning styles, customization and alternative learning routes. Courses have to take more into account the different experiences and backgrounds of students.
- ◆ Higher education institutions have long had a monopoly in providing education, but increasingly, companies and public bodies possess knowledge that can be reused for educational purposes, partly for in-house training (knowledge management) but also to offer to external markets.
- ◆ Education is under constant budget pressure, thus there is a need for more efficient and effective education.
- ◆ Students more and more are behaving like consumers who want to make informed choices about how and where they want to be educated, which implies students are no longer committed to one institution.
- ◆ Teaching staff will exhibit more job-hopping behavior than they did in the past.
- ◆ There are too many dropouts in the current educational system.

Special Parameters – Strategic Areas:

- To libraries and librarians, the digital approach seems more threatening; however, we think in both options there will still be a need for library staff to support each other and the educators with respect to the selection of adequate resources for a certain question or a given course, especially as it concerns the Greek libraries. In Greece there are 32 universities and consequently 32 central, academic libraries, belonging to 18 universities and 14 technical educational foundations, with branches in almost every department. There are also 120 special libraries, considered to be research centers, 46 public libraries, having no branches, 600 municipal and communal libraries, among which only the 200 have possession of more than 3000 volumes and their operation depends on the local government, 500 school libraries, 27 Children's libraries and 6 libraries established by foreign delegations contributing to the furtherance of knowledge regarding the culture of these countries and assisting in this way Greek researchers. Through web services, initiatives and by launching new ones aimed at approaching the library patron, we can replicate what is most valued in the

public environment: personalized guidance in the gathering and selection of the best resources, providing users, in a national level.

- The relation between physical and virtual learning environments. In Greece, we could say that Digital libraries are already available from anywhere in the world, offering flexible arrangements for students / knowledge workers. These are really well done efforts, but independent actions.
- Librarians must be aware of changing trends in education and the impact these trends have on the delivery of library service. In Greece there is only one University, The Hellenic Open University that provides distance learning courses since 1997. In the model we propose, it is sketched a close cooperation with the academic libraries of the other Greek institutions according to the thematic unions that are relevant to the specific bibliographical staff each of the other universities' libraries owns. The bringing together of libraries with a growing organizational interoperability is the wind of noticeable organizational change in existing Greek service structures demonstrating highly innovative service solutions.
- Moreover adopting a national theory to the e-services issue, that limits the chaos of the different approaches and the economic cost of the various projects which many times "one does not recognize the other". The transformation will be really amazing if we utilize the geographic and thematic diversity of libraries under the umbrella of a national body, as it is the National Library and The Open University. Many talks about centralized and decentralized models in the field of e-reference and e-learning. But every orchestra needs a conductor for the diversity of the patrons' demands, the appropriate queering of questions.
- National Library of Greece can have a manager role in organizing a special, properly adjusted to the Greek librarian reality, schedule where there will be information's diffusion by establishing a national consortium, adopting virtual solutions and playing the role of e-teacher, of an e-guider to the librarians of the academic, the public, the school library, a museum's library, a gallery's library. Even though it sounds quite ambitious, a good start can be done with the academic libraries, which are well harmonizing with the technological evolutions and plus there are successful academic consortial approaches to digital services, especially to e-reference in an international level. At these 32 institutions there is a core library located at the main institution. In some of them this core library administers other smaller libraries located at regional centres.

Practical Proposals:

1. Consortium access to reference databases. (primarily commercial index/abstract databases) This consortia approach means that, together, libraries are able to offer more resources to their users than they ever could alone. As well, costs can be reduced in regards to overall costs for licenses, data and storage and system/contract administration.
2. Training programs. These include Internet training programs to staff in member libraries, who in turn can train their own users.

3. Development of new resource sharing models. Task forces to further resource sharing among post-secondary, academic, special and national libraries in order to provide access to all member libraries through one seamless interface.
4. Librarians need to act as members of the "education team". They need to be aware of the policies and objectives of their institutions concerning distance education so that they may define their own roles in the process. Academic and school librarians who continue to concentrate on their custodial and service roles will find themselves increasingly marginalized from the teaching and learning process. If librarians make the education function the central focus of its services, the library will move from its usual position on the periphery of the institution to a more prominent position on campus. So many of the issues facing educators also face librarians as they are becoming teachers as well. Perhaps they have always been teachers, but now more than ever bibliographic instruction or information literacy is a vital part of the academic librarian's job, considering the changing philosophy of education as a whole.

Support solutions:

Following are some ideas for making online library services a reality on a national distance collaborative website:

1. Reference assistance
 - o "Virtual Reference Desk" based on web forms that go to reference department e-mail accounts for ready-reference questions;
 - o "Electronic Pathfinders," i.e., web subject guides to quality, pre-evaluated and abstracted websites to supplement course resource materials. Especially apropos for class research projects;
 - o Web-accessible Telnet connections to the library's online catalog.
2. Bibliographic instruction
 - o Online text-based user guides;
 - o Interactive Hypercard-like tutorials (granted, this is beyond most of us, but may be possible with the help of a knowledgeable systems person or programmer);
 - o Video demonstrations of how to search an online library catalog or CD-ROM database using web-based streamed video technology like RealVideo (although frankly, mailing videocassettes to learning sites is still more practical until web video is perfected).
3. Research assistance
 - o Online research service based on web form or e-mail requests to conduct literature searches in databases not available to learners at distance ed sites.
4. ILL & document delivery
 - o Web form or e-mail ILL requests for books, dissertations, proceedings, etc., to be mailed to the learner;
 - o Document delivery based on web form or e-mail requests; articles could be delivered via traditional fax, or scanned in and then faxed in page layout from the desktop.
5. Electronic reserve collections

- Password-protected hyperlinks to full-text electronic reserve readings (scanned or typed in) on class website;
- Guidelines for electronic reserve systems for easy-to-understand discussion of copyright/fair use issues relevant to distance ed. Below are summarized the most pertinent access and use guidelines:
 - Access to digitized readings must be restricted to students registered in the course via password or other protection;
 - Copyright notices must appear prominently in the layout with no changes introduced to the electronic format;
 - Readings may only be used one semester at a time, upon request of the instructor. Permission from copyright holder is required if the item is to be reused for the same course in subsequent semesters.

Below are some ideas for working with faculty to design, develop and implement electronic courses:

1. Current technologies
 - Educating faculty about available technologies and advising which may be most suitable. For example, if privacy and interactive text-based discussion are important features in a course, then a closed class listserv would be a good solution the teacher may or may not be aware of.
2. Literature searches/web scanning
 - Conducting literature/web searches to uncover similar projects that may be relevant, especially on the web where many projects are discussed in detail and available for perusal.
3. Copyright
 - Consulting on fair use and copyright issues as pertaining to electronic resources.
 - Obtaining or acting as liaison in obtaining copyright permissions from publishers.
4. Interface design
 - Assist or give input on designing user-friendly interfaces for computer-mediated education. This year the web is the rage, but CD-ROM, video, even print-based correspondence courses could benefit from our knowledge of how end users interface with information.
5. Communication channels
 - Evaluate and suggest--or even offer to construct--appropriate communication channels for distance ed class discussion. Possibilities include:
 - asynchronous e-mail listservs;
 - real-time chat rooms;
 - bulletin board newsgroups, threaded hypernews or "Net Forums."
6. Training
 - Train both faculty and students in the intricacies of e-mail computer-mediated communication (beyond the quick and dirty e-mail classes offered at most computing centers) so faculty can moderate their own class discussion groups and learners can comfortably navigate this possibly unfamiliar mode of communication..

Services:

Even though in Greece there is inevitably a considerable differentiation among library institutions in the offered library services, an effective design should include the following: A National Digital reference services, maybe named as 'Greek Virtual Reference Desk', will offer great possibilities to meet these changing needs. NLG should provide facilities, equipment, and communication links sufficient in size, number, scope, accessibility, and timeliness to reach all patrons-members and to attain the objectives of the virtual reference service. Proposals of suitable arrangements include but are not limited to:

1. designated space for consultations, ready reference collections, electronic transmission of information, computerized data base searching and interlibrary loan services, and offices for the library distance learning personnel;
2. virtual - electronic connectivity, face-to-face reference; online chat sessions or even video-based services (by creating the right architectural form).
3. convenient, direct physical and electronic access to library materials for virtual services equivalent to those provided in traditional settings and in sufficient quality, depth, number, scope, current ness, and formats to:
 1. meet the Hellenic Open University's students' needs in fulfilling course assignments (e.g., required and supplemental readings and research papers) and enrich the academic programs;
 2. meet teaching and research needs;
 3. Accommodate other informational needs of the distance learning community as appropriate.
 4. deal effectively with a wide range of informational user needs working on thematic sections relevant to the Greek antiquity, literature and linguistics.
 5. provide the ideal flexibility to partition or centralize the environment as needed in a distributed service organization; the tracking, archiving, search capability, and use-report capabilities critical for the effective management of ongoing operations; reliable, rapid, secure access to all Greek libraries resources; management of information resources reference assistance under the adoption of updated policies; consultation services in the use of nonprint media; adequate service hours for optimum access by users (24/7 is our idealistic goal)

Conclusion:

Digital, electronic, virtual reference services and AskA services are opposed to static Web pages, digital reference services use the Internet to place people in contact with those individuals who can answer specific questions and instruct users in developing certain skills. Digital reference services are also referred to as AskA services, because of such service names as Ask A Scientist, etc ... AskA services normally respond to individual queries on a one-time basis. In Greece links like "Ask The Archaeologist" and "Ask a Linguist" can become examples of very useful services. In The Open University there are 27000 distance education students. One way to show them how to practice the e-learning is through Web co-navigation. Traditional face-to-face learning will probably be with us a long time. But in this downsized "do-more-with-less" environment, Internet-based distance education offers one more delivery option--and set of library patrons--that we need to consider. Welcome to the 21st century a brave new world in which librarians are amply qualified to serve.

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