Virtual University Reference Model: A Guide to Delivering Education and Support Services to the Distance Learner

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1. INTRODUCTION

Distance learning has gone through massive changes since the advent of the personal computer and more recently the prevalence of the Internet. During the 90's there has been an increased interest in distance learning using personal computers and computer networks that connect them. Although there are many colleges and universities that have offered distance learning programs for years, there is a rapidly growing need to provide instruction and services to learners anytime anywhere in a virtual environment. Providing a distance learner with academic services through telecommunications mediums should give the distance learner the same advantages and privileges that a traditional on-campus learner has always received.

This increased interest and involvement in distance learning among higher education institutions may continue to grow. This area is being fueled by three major factors: 1) institutions are looking to increase enrollment by attracting non-resident students; 2) there are growing needs of adult learners to acquire new skills and college credits while overcoming the constraints of time and distance; and 3) the development of new technologies are making the delivery of distance learning courses more attractive. As high-speed transmission systems (e.g., ISDN, cable modems, and xDSL) will deliver high bandwidth to residential homes, applications requiring high data rate transfers for voice and video will be possible. The applications that will be used to deliver instruction and provide services is likely to improve over time, opening up the range of possible courses and services offered on-line and accessed by the learner.

Distance learning can take many different forms, ranging from mailed printed materials to desktop videoconferencing. A large number of past literatures discuss the different modes of distance learning and their effectiveness. As the focus of this study is not on the examination of different delivery methods, but presenting a comprehensive model of online distance education (i.e., the provision of a learning environment that utilizes computer networks to a large extent), the effectiveness of different educational delivery systems is not addressed here.

1.1 Virtual University

The revolutionary aspect of online distance education is that it enables a new method of learning, which is accessible at the learner's convenience. Not only that many traditional higher education institutions have started offering courses online, but also new educational institutions, called themselves as virtual universities, have started to exist, somewhat competing with traditional institutions. This new type of educational institutions do not have the traditional sense of campus and classrooms; in other words, they may not have a physical presence consisting of buildings and fields, but they exist in cyberspace. Many traditional higher education institutions emulate the educational environment online by offering online version of their courses and support services.

Virtual university calls for a new paradigm of higher education, as not only students, but professors, administrators, and staffs who are directly involved in higher education have to partake in the new institutional practice, which refines their roles and the mission of institutions (Rossman, 1992; Thompson, Simonson, & Hargrave, 1996; Hache, 1998). The two major challenges the virtual university faces are the provision of necessary resources to students, faculty, and administrators, and the recognition of degrees conferred. In this sense, existing higher education institutions have a better position in securing necessary resources and marketing their degree programs.

The term, virtual university, has been overused without paying due attention to its meaning. Many have used the term referring to online courses, i.e., courses offered through the Internet at a distance. Some have used the term referring to online course catalogs, i.e., electronic databases of online courses. Here, the term, virtual university, is defined to be the infrastructure for providing students with a learning experience and related support services to complete a degree program partially or totally online and for providing faculty members with resources for teaching and doing research effectively online.

1.2 Current Situation and Future Prospect of Distance Learning

According to the 1995 National Center for Education Statistics, about three quarters of the institutions that offer distance learning courses or have plans to offer distance education are planning to increase their use of technologies to deliver their distance education courses in the next three years. Some accredited educational institutions such as the New School of Social Research are staking much of their future on increased enrollments brought about by distance learning programs. According to the Thorson’s Guide to Accredited Distance Learning Programs (1996), currently there are more than 160 accredited colleges and universities offering distance learning programs.

Gellman-Danley and Fetzner (1988) state that selecting technology is perhaps the easiest part of developing a distance learning program as there is an array of available delivery systems ranging from interactive television to sophisticated Web-based asynchronous learning networks (ALNs). However, the access to student support services has been shown to be a critical factor in the learner success (Tinto, 1993; Voorhees, 1987). "Learners must be able to choose among programs and institutions, and select from an array of delivery options and support services. Libraries, financial aid, advising, counseling, mentoring and opportunities for social interaction with other learners and faculty are some support mechanisms important to student learning and development" (Kovel-Jarboe, 1997). As these institutions strive to provide quality alternative instructional delivery and enter the increasingly competitive market of higher

education at a distance, it is becoming increasingly important to provide all facets of student support services to the distance learner to assure his/her academic success.

Accreditation system has served as an important vehicle for quality assurance in higher education in the U.S. In the Middle States Proposed Guidelines for Distance Learning, it states that enrolled students have reasonable and adequate access to the range of student services to support their learning. According to Gellman-Danley (1997), "distributed learning is a force that requires a fundamental reexamination of policies and procedures that define the business of higher education" (p.81). Where policy and procedures change, so will the systems that are needed to support the functions of that institution. This will require on-line support capabilities that current administrative systems and institutions are not designed to support. Gellman-Danley (1997) also states that support service issues including advising, counseling, libraries, marketing and access to course resources are an area that needs to be reexamined by the accreditation system. In a virtual university, students, faculty and staff, learn, instruct and administer in a virtual space rather than brick and mortar buildings. The college or university must provide the distance learner with the same quality of administrative services, student support services, resources and instruction that on-campus learners take for granted.

2. VIRTUAL UNIVERSITY REFERENCE MODEL

Planning and designing a virtual university or a virtual campus is a complex task involving many different aspects of higher education administration and instructional delivery. In the early days of online courses, just putting course syllabi on the Web is worthy of attracting some attention. Nowadays many online courses are offered using a combination of asynchronous and synchronous computer conferencing, slide presentation on the Web, and file transfer systems. Though course delivery is an important component of virtual university, it is not the only component. In order to create a successful academic environment for a distance learner, various support services to students and faculty members have to be included in the plan as integral part of a virtual university.

To aid planning and designing of a virtual university by existing as well as new higher education institutions, this paper will present the Virtual University Reference Model (VURM). This model is intended to be a guideline or a framework for colleges and universities which plan to deliver instruction and support services to distance learners or to be a checklist to evaluate existing distance learning programs. It should assist in quickly identifying necessary service elements and mechanisms for offering a various degree of online distance learning programs.

2.1 General Principles

Figure 1 depicts the Virtual University Reference Model. In the model, a virtual university is broken down to four major components: administrative services, student services, resource services, and faculty services. Each component has a different purpose and provides students with different services.

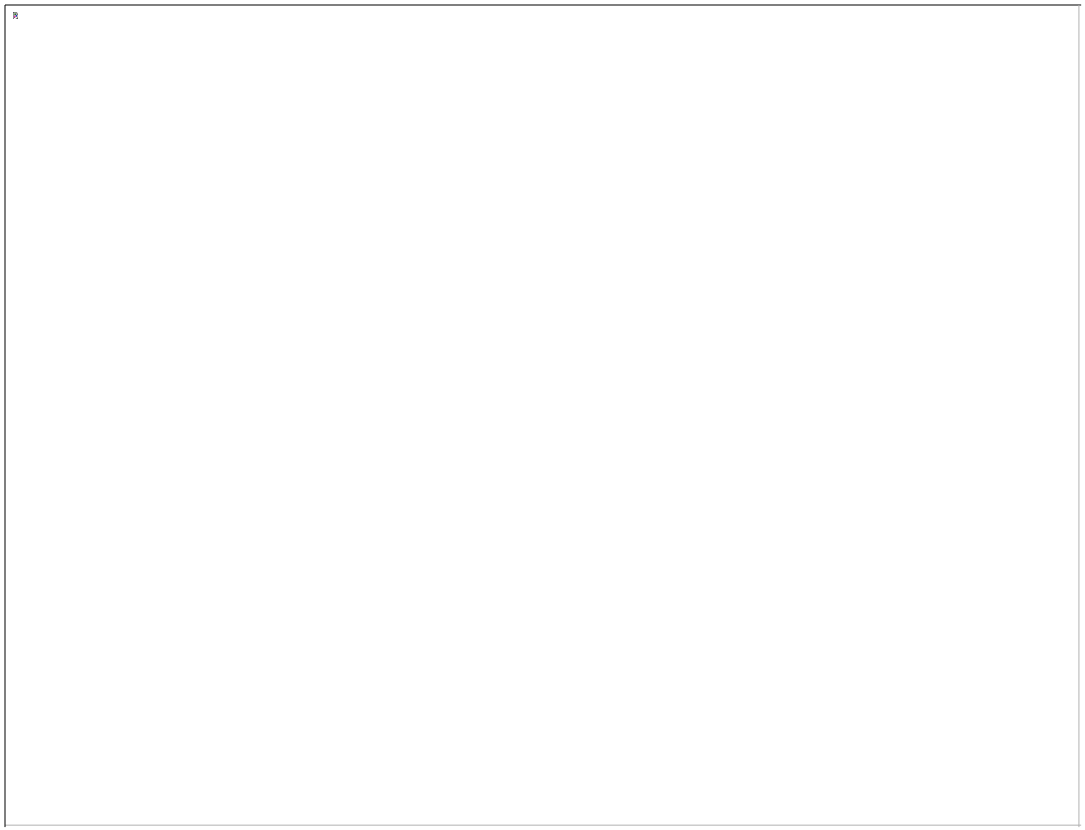

Figure 1. Virtual University Reference Model

The second outer ring in the model shows the types of services a student receives from each of the four noted component areas. The inner three rings represent (from the innermost): 1) the student and his or her relationship to each of these four areas; 2) transmission systems with which the services can be accessed by students; and 3) applications and tools to be used in offering the service elements in the outer ring. It is important to note that in this model students are the center of the model and all the service components and elements are depicted in relation to the students.

2.2 Transmission Systems

The basic assumption of a virtual university is that all the services and instructions are offered at a distance using some kind of transmission systems or telecommunications technology. In the early days of distance learning, postal mail and telephone were the

predominant systems of delivery. However, with the advancement of telecommunications technology and the prevalence of the Internet, a variety of delivery technologies become available though the cost is still the limiting factor for students to have access to the full array of technologies available. Still the most dominant mode of transmission systems used by students is plain old telephone lines with up to 33.6kbps modems. Some higher bandwidth technologies such as Integrated Services Digital Network (ISDN) and cable modems are becoming common among those who use the Internet very heavily for business, entertainment, or education from home.

As more and more high bandwidth applications utilizing voice and video capabilities become available and integrated into online educational delivery, the attention must be paid not to discriminate students based on their technological accessibility. There is a large difference in terms of technological accessibility between corporate students who have access to the Internet through a high-speed local area network and home-based students who only have access to the Internet through regular telephone lines with a modem. The students with a limited bandwidth should not be penalized with the limited technological accessibility in comparison to those who have a high-speed access. To ensure that, the technology of least common denominator has to be deployed or the institution has to be prepared to provide those less fortunate students with necessary technologies.

In future, it is foreseeable that the bandwidth will become less of an issue as many alternative telecommunications technologies provided by a variety of telecommunications companies, not limited to existing local telephone companies, will become widely available at an affordable rate.

2.3 Tools

In a traditional classroom, information is exchanged between the teacher and students, students and other students, and students to the teacher. Sights and sounds are used for exchanging the information. Communication is either direct between the teacher and students or mediated using various media such as overhead projector transparencies, video and audio tapes (Bray, 1995).

In distance learning information must be exchanged over a distance. Therefore, telecommunication technology is often employed. Teachers and students at different locations can no longer see and hear each other face-to-face; instead, telecommunications media such as video and audio tapes, bulletin boards, email, facsimile, chat rooms, audio and video conferencing, on-line applications over the Internet, etc., must now be used to facilitate communication. Similarly, information presented by the instructor must be communicated and support services must be provided over various telecommunications media to the distant students (Bray, 1995).

In a virtual university, classrooms, student services and resources are replicated into electronic lessons, discussions, processes and documents via asynchronous and synchronous delivery systems. According to Barry Ellis (1997), asynchronous delivery system offers us four advantages:

1) *flexibility* where students have access to materials anytime and anyplace;

2) *time to reflect* allows the learner the time to think about ideas and check references;

3) *situated learning* gives the student the opportunity to integrate ideas being discussed in the course with workers on the job; and

4) *cost-effective technology* asynchronous text based systems require very little bandwidth and low end computers access (Ellis, 1997).

Synchronous delivery systems offer us four different advantages:

1) *motivation* where the focus is on the energy of the group;

2) *tele-presence* real time interaction occurs;

3) *good feedback* allows feedback on ideas and support immediately; and

4) *regular meetings* encourages students to keep up-to-date with the course materials (Ellis, 1997).

Synchronous delivery systems demand relatively high bandwidth, sophisticated hardware and software and are usually more expensive than asynchronous delivery systems. The selection of the medium depends on the kind of interaction that is needed among teacher and students, students and students, students and administration (e.g., lecture, discussion, spontaneous discussions, advising, etc.); and whether the interaction needs to take place in "real time" or not.

2.4 Four Component Areas

The face of higher education is changing rapidly. The integration of facilities, systems and departments of an entire campus must be examined in order to allow for the university to cut costs and improve productivity. The integration of departments and systems is necessary to keep everyone in touch and information flowing smoothly.

The Administrative Component of the VURM consists of the services traditionally offered by the following departments: admissions, counseling, student records, financial aid, bursars, and graduation. Under the traditional system, distant students would be at a disadvantage because of the physical separation. They would need to contact each office individually leaving messages and frequently being forwarded from department to department to have their questions answered.

Systems and services need to appear seamless under the administrative component. Students need to be able to access their personal information on-line through some self-service technology. With self-service applications using the Internet and touch-tone phone technology, students can have access to their personal records and information 24 hours a day 7 days a week. This reengineering of service processes gives the student access to the right information quickly and efficiently.

The Students Component of the VURM consists of the interaction that happens amongst students in a class. In a traditional classroom environment, students at a distance miss out on the social interaction that occurs among on-campus students in the student union, coffee shop, or in special interest clubs. A virtual university needs to provide a student with a system that allows the student to interact with other students either in discussion groups or on an individual level. With the design of special interest groups, threaded discussions and chat rooms, new on-line communities can be formed which will help create a better learning environment.

The Resources Component of the VURM provides students and faculty members with library facilities and technical support. The distant student must have on-line or 800 number access to library material and services. This includes checking out materials, being able to access reserved materials and reference materials on-line. If the library performs research services and copying services for on-campus students, they then need to provide the same services to the distance learner. Access to database searches for books, journals, newspapers, encyclopedias, and other resources can be provided through Internet or telnet services. Technical support is also under the realm of resource services. This area encompasses technical question regarding access codes, connectivity problems, hardware specification, etc. In order for these services and resources to be effective in the virtual university environment, they need to be available to students 24 hours a day, 7 days a week.

The Faculty Component of the VURM involves pedagogical issues and student services. The faculty member needs to be able to provide academic advising, mentor students, assess course work and facilitate discussions with students at a distance. There are many different course delivery systems available in today's market. Choosing the right one that offers the level of interaction necessary to deliver the course material is critical.

3. ADMINISTRATIVE SERVICES

Administrative services for distant students are an area that has lagged behind the other three components of this model in most distance learning settings. The virtual university can not succeed unless these systems and services are provided to the distant students in a comprehensive and seamless way. Web-enabled administrative student systems are now gaining attention among several major companies. Those companies offer students' self-service applications for higher education, utilizing the Internet, Intranet, and touch-tone phone technologies. They offer similar functional products, but they differ greatly with their selection of technology. When evaluating a product for its self-service functional components, the following services need to be considered:

Admissions: Students can apply electronically and inquire the status of their application online.

Course Catalog: Provides a complete list of course offerings along with each of the course descriptions.

Course Schedule: Provides a complete listing of courses and the times when they are offered.

Registration: Allows students to perform on-line / real-time registration of their courses**.**

Transcript: Allows students to securely access their academic records and transfer credits.

Payment: Gives students a secure method of making tuition payments and provides them with their billing information online.

Financial Aid: Gives students a secure method of applying for financial aid online and inquiring for the status of their application.

Grades: Allows students to have access to their grades online and for faculty members to assign grades to their students online.

Biographic- demographic: Allows students to view and update personal information on file.

Degree Auditing: Allows students to monitor and self advise their academic progress in their career program. Capabilities to perform "what if" analyses on potential program changes.

Arbitration: Allows students to make an electronic formal complaint that will be acted upon in a reasonable time frame and by the appropriate administrative personnel.

Bookstore: Allows students to look up required textbooks and materials needed for their course selections. An online method of purchasing may be provided. If the books and materials are not provided in an electronic form, then a method of delivery needs to be established. Distant students should also have the opportunity to purchase university logo goods, software and supplies.

Scholarships: Allows students to review available scholarships and be able to apply for them online.

Under the administrative services, students should be able to have access to critical student information such as integrated admission, student records, billing, financial aid and degree requirements under one interface. Faculty members can quickly process and give grades and up-to-the-minute data help them effectively counsel students. By allowing students and faculty members to have access to this information 24 hours a day, it will eliminate the frustration and isolation many distant students feel by the physical separation from the campus, and in return increase retention of the students.

4.STUDENT SERVICES

Student services provide distant learners with a means to engage in social interaction with their fellow students. This gives the distant students similar opportunities to meet new people that on-campus students enjoy. This type of online interaction can be accomplished by creating online communities through the use of online bulletin boards, web enabled applications, and groupware. These online communities can be created for specific discussion topics or for unstructured interaction such as student lounge, special interest subjects, study groups, etc. A faculty member can use open-ended discussion questions to stimulate dialogue or collaboration among students. Interactive chat rooms can be used for groups or for private conversations between students. Other ways of promoting interaction among students are by providing email services, look-up access to college directories, and by providing an area to exchange "bios" which contains personal and professional information about them. This will allow students to find other students with similar interests.

Even after students graduate, it is important to link the past students with the current students. Alumni want the opportunity to stay in touch with their classmates. Alumni can open the doors for other alumni and current students with new career opportunities. Providing an online system that allows alumni to search a database for new career opportunities or post job openings for other alumni, can be a great service. A service can be offered to students to whom alumni can volunteer as a mentor or provide internship opportunities that are in their career field.

There is no question that a key to the success of an online course is the interaction between faculty and their students, and among students. Interaction outside the classroom give the distant student a great sense of belonging to the institution.

5. FACULTY SERVICES

In any educational environment, teachers and instructors play the most significant role in providing quality education. In a traditional setting, faculty members interact with students inside and outside classrooms and the interaction takes many different forms; one-to-many classroom presentation, one-on-one face-to-face interaction during office hours, mediated interaction through assignments and exams/quizzes. Any of those are critical elements of instruction and has to be included in a virtual university environment.

In a virtual university not only students but also faculty members may be also geographically separated from one another and services and resources a faculty member needs to prepare for his/her class instruction may not be immediately available physically. It is important to create a forum for faculty members to exchange pertinent information and to provide them with technological resources to better prepare for their class presentation. As noted in Bray (1995), spontaneity is limited in a virtual university classroom as the lack of immediate feedback from students makes difficult for an instructor to adjust the course materials on the fly. In addition, there is a pressure to best utilize the time in a synchronous instructional delivery as it involves expensive air time or telephone connection, which often discourage instructors from being spontaneous.

Presentation of the course materials at a distance has been the most discussed topic in literature on distance leaning. There are a variety of technologies exist for the course material presentations which can be chosen depending on budget, subject matters being presented, the instructor's style or preference, and institutional infrastructure.

Another critical aspect of faculty/students interaction is assignments, including tests and exams. Assignments are used to assess the degree to which a student has mastered the class materials. Assignments usually are a delayed two-way communication process in which faculty have to communicate clearly what is expected and how they are evaluated while students complete and submit the assignments based on what is communicated by the faculty. Besides formal communication about what is expected, the informal communication channel should be kept open for a student to ask for clarification. Lastly, timely feedback on the completed assignment should be given to students as this is a critical part of the student learning process.

As in a traditional educational setting, the interaction between a faculty member and students should not be limited to those related to the class materials. There is a larger educational environment than a regular class setting; a faculty member serving as a mentor, an advisor, and a supervisor of the student's academic progress. In this sense, additional communication channels between a faculty member and students need to be established for advising and mentoring students.

6. RESOURCE SERVICES

In most universities and colleges, traditional on-campus students have access to library resources and services by visiting the library in person. A student may visit a university library for many purposes: accessing the reserved materials; doing research on specific topics; browsing through the library aisles to find some interesting books to read; doing assignments; asking a librarian for an advice on how to find the right material; browsing current journals; copying articles which interest the student; having access to databases; looking up reference materials; and so on. Many university and college libraries also offer information literacy courses to introduce library services to students and faculty. Students in a virtual university should have the same access to library support and information services as students in a traditional environment have.

A virtual university student has to have the online library catalog through telnet or the Web browser. Upon finding the materials the student looks for, the student should be able to get the material without any additional charge. If the material is in an electronic format, the delivery is instant using file transfer protocol. Though many major universities and colleges are undertaking digital library projects and more and more journals and magazines are becoming available online, still most materials are not in an electronic format, and thus they have to be physically delivered to the student. If a student want a material that is not held in the library, interlibrary loan services need to be provided.

There are several ways to meet the information needs of distant students: 1) region-wide borrowers cards; 2) consortia membership between academic libraries; 3) toll-free telephone numbers; 4) fax capabilities for the timely document delivery; 5) capabilities of using multiple databases and online public access catalog; and 6) the Internet (Rodrigues, 1996). Several university libraries have piloted interactive reference assistance through desktop videoconferencing to students located somewhere on campus other than the library (Folger, 1997; Lessick, Kjaer, and Clancy, 1997). Though the cases have been limited to those connected through campus wide networks, it will be the natural extension to offer such services to remote students in near future when the high-speed wide area network connection such as ISDN, cable modems, and ADSL, becomes more prevalent.

Another important element of resource services is the technical support. In the virtual university, as students have to utilize telecommunications technologies to access a variety of resources including the instruction itself, it is important to ensure that the technology won't become an obstacle in the students' learning. Once a specific technology or tool is chosen for the creation of a learning environment, adequate training must be given to students as well as faculty members and any technical trouble needs to be resolved in a reasonable amount of time.

7. CASE STUDIES

For the purpose of illustrating the Virtual University Reference Model using real examples, the following sections describe two case studies of the virtual university: the Western Governors University and the University of Phoenix. These two institutions are chosen mainly due to their wide publicity in the U.S. Both institutions can be called virtual universities as they offer degree programs completely online. In the following sections, the four components of the VURM are discussed for each of the two institutions. The intention here is not to elaborate all the elements of the four components, but to highlight some innovative or unique applications and service provisions offered by the two institutions.

7.1. Case Study One: The Western Governors University

The Western Governors University (WGU) is an independent consortium of higher education institutions and private corporations in 18 Western states, one commonwealth and two Pacific-rim territories. Its mission is to explore ways for collaboration in the development and delivery of distance learning courses and systems using information technologies. Though the university itself just started its first two degree and certificate programs in the summer of 1998, its implementation plan of the virtual university has attracted a great deal of attention from those who wonder the future of higher education since the idea for a western virtual university was born at a meeting of the Western Governors' Association (WGA) in June 1995. As its mission and design principles have been written elsewhere, only its implementation and operation in the framework of the Virtual University Reference Model are discussed in this paper.

7.1.1. Administrative Services

Incorporated on January 15, 1997, the WGU's corporate administrative headquarters have been in Salt Lake City, Utah, and in Denver, Colorado, which are sited as the administrative office and the academic office respectively. Though the WGU separate those two functions, administrative services and academic services, both services fall in under the category of administrative services in the VURM. As a provider of "competency-based education", the WGU carefully prescribes its academic operations step by step: admissions, initial advising and pre-assessment, registration, ongoing advisement, service provision, completion of assessments, and award of certification (WGA, 1996).

The core of the WGU's administrative and academic service provision lies in its *SmartCatalog™,* an online catalog which is designed to help students find the courses, programs, and other learning opportunities students desire through sophisticated online searches. The *SmartCatalog™* is more than just an online catalog of courses. Through the *SmartCatalog*™, students can apply, enroll, review their records, apply for financial aids, work with their advisor, interact with other students, go to the library, purchase books, contact WGU personnel, etc. (Student Handbook). In other words, the *SmartCatalog*™ is the virtual campus itself where most critical information for students' academic life can be found and most necessary transactions can be made. It is the critical tool which lies in the second inner ring of the VURM, upon which a variety of service provisions are made.

7.1.2. Student Services

WGU students can interact with other students through a virtual student union. There are two features in the student union: "Café" and "discussion groups". "Café" is a place where a student can interact with other students in real time through a chat room capability, while a discussion group is a place for a student to talk online about common issues and concerns asynchronously. In addition, the student union is used to post news or announcement about WGU, its course and program offerings, services and special events.

Analogous to the student union in a traditional campus, the virtual student union provides students with access to online bookstore, career and academic counseling, and financial aid information. In the original implementation plan (Sparks, 1996), a two-tiered approach was proposed: a centralized WGU with its virtual catalog and locally controlled WGU centers. The central function guarantees a certain level of instructional and service quality and accountability while the locally controlled WGU centers would

provide direct learner support and one-stop centers for easy student access. As of July 1998, such locally controlled centers have not been implemented yet, demonstrating the difficulties of physical arrangement of a virtual university.

7.1.3. Faculty Services

As WGU is a consortium of existing higher education institutions and private corporations, it does not have its own faculty in a traditional sense. There are two groups of faculty associated with WGU: instructors of various courses and advisers/mentors of individual students. The first group of faculty is distributed as the courses are offered by member institutions and corporations, called education providers. They may be faculty members of those existing institutions and corporations, but not the faculty of WGU. The second group of people are the core WGU faculty whose duties includes: "a) staffing the program councils associated with each WGU credential, b) supervising assessment and advisory activities associated with students admitted to the program, and c) engaging in academic planning to extend and develop WGU's array of programs in a particular area" (WGA, 1996). In addition, those faculty members are to serve as advisors and mentors of students, providing advisement and academic counseling services to students enrolled in WGU programs via telephone, and e-mail.

In order to provide "competency-based education", WGU has two other groups of academic staff: the program councils and the assessment council. Program councils, which are comprised of experts from the program field, examine the competency-based degrees and certificates, and approve them prior to inclusion in the *SmartCatalog*™. Faculty on the assessment council, who are national assessment authorities, are responsible for reviewing credentialing assessments to ensure that they are valid measures of the competencies related to a given degree or certificate (Student Handbook).

7.1.4. Resource Services

There is a virtual library in WGU, called WGU Central Library, which is a Web-based site supporting a variety of Web browsers and related applications. It is operated by the University of New Mexico. Three kinds of resources are available through the library: web page resources, full-text and citation databases, and reference requests and document delivery. Through the WGU Central Library students can access reserved materials prepared by the instructors or get assistance from reference librarians via e-mail, phone, fax, or by completing the web-based reference form in identifying and acquiring appropriate instructional and research materials.

Though the WGU Central Library also provides students with the Internet access, the technical support seems to be minimal at present, relying mostly on the technical support of education provider institutions for the course-related matters. It still remains to be seen how well WGU and education provider institutions coordinate to provide seamless resource services to the students.

7.2.Case Study Two: The University of Phoenix

John Sperling, a one-time fully tenured humanities professor at San Jose State University, launched University of Phoenix (UOP) in 1975 as a private, for-profit higher education institution. It started as a distributed university, having campuses in eight states, now it has more than 35,000 students enrolled at 51 campuses in 13 states. In 1989 it started its online program in San Francisco with one class and a handful of students and now it has some 2,600 students tuning in to its virtual classrooms via modem from around the

country. Accredited in 1978 by the Commission on Institutions of Higher Education of the North Central Association of Colleges and Schools, UOP currently employs approximately 6,000 faculty and staff and offers five graduate and five undergraduate degree programs. (University of Phoenix Catalog, 1998).

In addition to UOP, its parent company, the Apollo Group Inc., owns the Institute for Professional Development which provides program development and management services under long-term contracts at 39 campuses, and Western International University, Inc., which offers certificate, undergraduate, and graduate-degree programs on campuses in Arizona and the UK. Apollo recently acquired another professional school, the College for Financial Planning, Inc.

7.2.1. Administrative Services

As a large number of UOP students are still taking courses at one of their local campuses, the infrastructure for its virtual campus is not as extensive as that of WGU. There is no online registration system yet, and a student has to contact a University Enrollment Counselor to register. In order to apply for a financial aid, a student has to visit one of the UOP campuses. Though still limited, UOP is rapidly adding its online administrative functions and now students can view their demographic and academic information and request transcripts online. In near future, UOP claims that it will provide such online information services as: admission and matriculation statuses, transfer credit status, degree program summary, update address and phone numbers, e-mail messages to communicate with staff, and obtain course modules/descriptions (University of Phoenix Online Campus, 1998).

Course textbooks can be purchased online through its virtual bookstore. UOP sells a variety of university logo goods ranging from polo shirts to baseball caps. Though the catalog of those goods is online, any of those items cannot be purchased online at present and a buyer has to call a 1-800 number to place an order.

7.2.2. Student Services

As UOP is an adult education institution to which only students who are 23 year-old or older and who work full-time can be admitted, the student network plays an important role. One noteworthy service among many student services offered by UOP is its extensive alumni network. The Alumni network itself is a not-for-profit organization, providing services and benefits to UOP graduates, including current degree and certificate seeking students. It maintains a scholarship program that may assist students in meeting their educational expenses while enrolled at the university. It also provides career opportunity referral service featuring SkillSearch, a career planning service that links students and alumni with potential employers (University of Phoenix Catalog, 1998).

UOP utilizes the study group format throughout their curriculum. Students can interact with other students through a computer conferencing system called the Apollo Learning Exchange (Alex). In most courses, students form study groups of between 8 and 13 and group members become acquainted through an exchange of professional and academic backgrounds through Alex. To ensure complete privacy, a study group is assigned a special "Meeting Place" or conference on the Alex system to which only the members of the study group have access.

7.2.3. *Faculty Services*

All teaching faculty members are part-time and tenureles, who are dispersed all over the U.S. UOP claims that all faculty "hold earned master's or doctoral degrees from a regionally accredited institution, and possess an average of 15 years current practical experience in the field related to the subjects they are approved to instruct" (University of Phoenix Catalog, 1998). UOP accepts a faculty application online, but to be accepted as a member of the faculty, the applicants must participate in an assessment conducted jointly by peer faculty and staff to ascertain the quality of their academic preparation and professional experience, and their aptitude to instruct in the university's teaching/learning model. Those faculty members who teach online receive a minimum of eleven weeks of special instruction and mentoring on how to teach online classes effectively. Continuing education workshops, as well as faculty meetings, are regularly held online through "Online Campus Faculty Resource Web" (University of Phoenix Online, 1998).

As discussed in the Student Services section, the online computer-based educational delivery system called Alex is the major platform for all the online courses. Online faculty and students interact through Alex, email, telephone and facsimile.

7.2.4. *Resource Services*

One noteworthy online resource service offered by UOP is an electronic library called the Learning Resource Center. Accessible only by those affiliated with UOP, it performs bibliographic searches and document retrieval for students, staff, and alumni. The Center has electronic access to millions of citations in hundreds of on-line databases to which students have access online or through professional librarians. There is also a web-based resource collection called the UOP Online Collection. It indexes thousands of journals and contains nearly 3,000,000 full text articles from 3,000 journals and magazines (University of Phoenix Catalog, 1998).

8. CONCLUSION

Though criticisms on this new form of higher education, the virtual university, are abundant, it seems to be an inevitable force to reevaluate the traditional form of higher education and to restructure it in order to meet the rapidly changing needs of students. With the prevalence of the Web, many higher education institutions have begun to realize its potential to reach the educational market that they have not been able to tap before. It has become almost the fad to put courses online, whatever it means, among those who teach college courses. However, putting courses online without a careful planning of constructing the entire learning environment for students will frustrate those students who take online courses with the expectation that they will receive the same benefits as students in the traditional classroom environment. The Virtual University Reference Model proposed in this paper is intended to help design a virtual university that provides students with the complete learning environment which equal to or exceed that of the traditional campus environment.

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