Student Perceptions of Virtual Education: An Exploratory study

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ABSTRACT

Over the years instructors and administrators have worked together to provide education to students in academic institutions. The role of the participants in this educational system were well defined. Instructors and administrators were responsible for the dissemination of knowledge and the methodology used was simple, the instructor transferred the knowledge to the students. The merging of computers and communications technology is transforming the way we teach and learn. Physical classrooms are being replaced by electronic classrooms. The roles of the participants is being redefined where the instructor is becoming a facilitator in the electronic classroom and students are participating in these classes from anywhere and anytime. Questions that arise for universities include: Is this the future of higher education? Will electronic classrooms replace traditional classrooms. In this study we explore and discuss the perceptions of students in a mid-western rural university regarding virtual education. Implications for the participants in the educational system are also discussed.

INTRODUCTION:

The rapid advancements in computers and telecommunications technology in recent years, is impacting "where" and "how" instruction is taking place. It is changing the concept of a classroom with physical boundaries, as well as pedagogical approaches. Technological advances are making it possible for education to be delivered electronically anywhere at any time. The Internet provides access to courses, teachers, resources, and educational institutions for students who are located in different parts of the world. Educational and commercial institutions are using the Internet to deliver courses over the World Wide Web. These institutions store and transmit data digitally in different forms, e.g., text, voice, graphics, video etc., across geographical boundaries, over the Internet. Web based technologies are also enhancing the potential for two-way communication between students and teachers. This increases the richness of data that is transmitted over the Internet and helps in providing students an environment that promotes learning in real time.

In the March 10, 1997 issue of Fortune magazine, Peter Drucker predicted that "universities won't survive" 30 years from now. Already there are several schools that have begun offering courses over the Internet. On-line training or courses are becoming a big business worldwide. Many institutions are experimenting with electronic delivery of courses or entire academic programs and considering whether to make major investments in this tech-

nology. For example, The University of Phoenix is the largest private university delivering on-line degree courses to 56, 000 students. The traditional institutions of higher education are also moving towards virtual instruction. Penn State (World Campus), the University of Minnesota, UCLA (Home Education Network), Lansing Community College and Florida's Gulf Coast University are other examples of institutions delivering instruction electronically (Gladieux & Swail, 1999). California has developed its own California Virtual University, which offers about 700 courses online, but no degrees. Virtual education has become a billion dollar industry that will continue to grow in the future.

Higher education institutions are also forming partnerships with the private sector to support their move towards virtual classrooms. Western Governors University (WGU) which was formed by the governors of 17 states, in partnership with Microsoft, Sun Systems, IBM, and AT&T, started as the nation's first exclusively virtual university in 1998 (Blumenstyk, 1998). WGU offers three degree programs and certificate programs. Cardean University, an online "academy" established by UNext, an Internet education company includes as partners Columbia University, the University of Chicago, Stanford University, and the London school of Economics and Political Science. The Jones Education Company College Connections Online is a partnership of colleges and universities around the nation, including the George Washington

University, the University of Colorado, and the University of Delaware. It provides ten degree programs and two certificate programs in the areas of educational technology, business administration, communications, nursing, and hotel management. Instruction is provided via videotape and satellite feed, with Internet and email support.

Given the growing popularity of virtual education, in this paper we attempt to explore student perceptions about virtual education and their willingness to enroll in a virtual education degree program. It is important to note that we are determining student perceptions about a "degree program" and not just a few courses offered via virtual education. In this paper, virtual education is defined as "knowledge or skill transfer that takes place using the world-wide web as the distribution channel. In a virtual education environment there are no traditional classrooms. Students are not required to come to the classroom. All instruction and interaction takes place over the world-wide web." Other characteristics of virtual education include the following:

· The student has the choice to participate in the best program offered anywhere in the world, without being constrained to a specific geographic region.
· Knowledge dissemination is by way of computers and communications technology.
· The World Wide Web is used extensively for knowledge dissemination and to enhance the learning process. The students are provided the opportunity to interact with instructors, peers, and business professionals. The interaction is not subject to geographic and time limitations, unlike in a traditional classroom.
· The technologies utilized include among others, computer hardware and software (e.g. video conferencing, GroupWare, email etc.), communications technology (e.g. computer networks with access to the Internet), multimedia tools and virtual reality etc.

The study seeks to explore the following research question: "will students be willing to enroll in a virtual degree program?" Most of the studies so far have determined student opinions about a particular course they had taken to evaluate the course, this study takes a proactive approach and seeks to determine student opinions before a university spends millions of dollars to create the necessary infrastructure for virtual education. With all these advancements, the question is will virtual universities supplant traditional universities. If virtual education is so alluring, flexible, and student-centered as claimed by the proponents, then why do we find students enrolling for traditional programs. The students being the customers, it is important to consider what they feel or perceive about the value of this "product." We believe that it is critical to identify issues and identify student's perceptions before actually implementing or developing virtual degree programs. These perceptions can help the administrators and faculty members to use technology and develop programs that address these issues so that students are more willing to enroll for such programs.

The paper is organized as follows. In the next section we provide a review of the literature. In Section 3, we discuss the methodology used for the study. Section 4 presents the results and discussion. Finally we conclude the paper by discussing implications for the future for universities that plan to start virtual education degree programs.

LITERATURE REVIEW:

Technological advancements have necessitated a pedagogical paradigm shift from "teaching" to "learning" and from the traditional "teacher-centered" to a constructivist "student-centered" teaching approach. Traditionally, the instructor's role was to trans-

fer knowledge to the students and the primary method of delivering the course content was lectures and handouts. The very concept of teaching is changing from knowledge dissemination to knowledge creation (Leidner and Jarvenpaa, 1995) and the instructor is not considered the sole source of knowledge rather a facilitator of students' learning.

Virtual classrooms, where students and teachers located in different places communicate electronically in cyberspace without actually meeting each other, are replacing the traditional classrooms with blackboard, chalk, students and the instructor. The "web is being used as tool for learning, as opposed to a medium for predetermined content." (Owston, 1997, p 29) Classrooms are linked to the outside world using computers and communications networks and instructors are able to bring in the "world" into the classroom in real time. Knowledge is not transmitted from the instructor to the student, rather the students construct and create their own knowledge by solving problems, experimenting, discovering and working on hands-on projects.

Proponents of virtual education claim that it is learner-centered as it is flexible and students can choose where, how and when they want to learn. (Gladieux & Swail, 1999; Owston, 1997) In a virtual classroom setting, the text, lessons, assignments, product demonstrations and other course materials can be made available on the web for easy access any time of the day or night. This allows the students to learn at their own convenience and at their own pace. So in a way teaching and learning become on-going or perpetual in nature, rather than being confined to pre-specified hours in a week. (Hiltz, 1995)

The Internet is also changing the nature of student-student and student-teacher interactions. In virtual environments, there are no geographical boundaries, so students can interact and collaborate with students from all over the world. There is no face to face interaction among students and teachers. Class discussions take place at an electronic 'chit-chat' center at times convenient to each individual. A separate web site can be dedicated for this purpose. All such discussions made at different times throughout the duration of a course can be grouped by topics, dated, and linked to related topics for easy reference. (Peha, 1997) Guest speakers can join in class discussions easily, regardless of where the speaker lives or works. Further, instead of just one class session, he/she is able to participate for several weeks. (Burgstahler, 1997)

Virtual education learning environments provide opportunities for students to interact and collaborate with other students from all over the world, work on real life projects, and use the information available on the web to search for answers, and engage in on-going learning. Technology can also be effectively used to promote collaborative learning as it makes it possible for students to interact and work with students in different places (Alavi, Wheeler, Valacich, 1995).

Several studies have examined student perceptions in an attempt to evaluate the effectiveness of web based technologies. Usip and Bee (1998), determined undergraduate student perceptions about web based distance learning after they had taken a statistics course at Youngstown State University in which web based instruction was integrated into the traditional environment. Students who had used technology before, found integrating the web was useful in obtaining information and improving their performance in class. The nonusers did not feel that using Web instruction would improve their performance. In another study, Gifford (1998) examined the perceptions of graduate students who took a course in research on curriculum and instruction taught entirely via the web. Students felt that self-discipline and self-motivation were needed to complete a course on the Internet and

more time was spent on a web-based course compared to a traditional class.

There is no doubt that web based technologies have the potential of enhancing the student learning, but there is no empirical data to prove that students learn better in virtual environments compared to traditional classrooms. (Phipps and Merisotis, 1999; Owston, 1997) Most of these benefits are based on assumptions or perceived benefits as research has not proved that students learn better in virtual environments compared to the traditional environments. Phipps and Merisotis (1999), in a review of the current research on distant education contend that most of the research so far has focused on studying the effectiveness of individual courses rather than a complete degree program. They further note that research has not taken into consideration individual student characteristics such as gender, age, student experience, motivation etc. These characteristics may impact students' willingness to enroll in a virtual degree program. In our study we explore student perceptions on virtual degree programs rather than a single course.

METHODOLOGY:

This study was conducted in a rural mid-western university with approximately 10,000 students. The university has four colleges, education, business, arts and communications, and letters and sciences. Majority of the students enrolled in the university come from neighboring counties and cities within a 250-mile radius. The study was conducted in two phases. Phase I was a pilot study conducted to derive a list of questions that could be administered to students for the final survey. Fifty-nine undergraduate students in the business school (30 male and 29 female) were asked to respond to the following open-ended question.
Virtual education has been defined as the process of knowledge or skill transfer that takes place using the world wide web as the distribution channel.

· What would be the impact of virtual education on the future of the education system?
· What in your opinion are the pros and cons of this approach?

If given a choice would you be willing to enroll for a virtual education based program? Give reasons for your answer.

These students were not picked at random. Access to students as they were enrolled in a class being taught by one of the authors was the main criteria. Student responses were examined for common themes, which were used to develop a 15 item survey (appendix) for phase II.

In phase II of the study the common themes identified in phase I were structured in the form of a statement on a 5-point Likert scale. Respondents were asked to provide their responses ranging from strongly disagree (1) to strongly agree (5). Demographic questions were added to the 15-item survey from the previous phase. The final survey was administered to 431 students across campus from the four colleges. The sample was not randomly selected. Instructors from the four colleges were selected by the authors on the basis of acquaintance and requested to distribute the survey in class. Student participation was voluntary.

RESULTS AND DISCUSSION:

Of the 431 respondents 219 (50.8%) were male and 208 (48.3%) were female. Four respondents (.9%) did not provide a response for the gender question. Approximately 9.3% (N=40) of the respondents were graduate students and 89.5% (N=386) students were undergraduate students. Five respondents (1.2%) did not answer the question about their graduate/undergraduate status. 40 students were part-time and 385 students were full-time. Six students did not provide a response to this question.

When asked if they would be willing to register for a virtual education degree program 158 respondents (38.07%) replied in the positive. The total respondents for this question were 415. Sixteen people did not respond to this question. More than half (61.9%) of the respondents were not willing to enroll in a virtual education degree program. This result indicates that though students seem to be interested in virtual education they are not willing to enroll in virtual education degree programs at this point. What is interesting over here is the fact that a higher percentage of undergraduate students (39.57%) responded in the positive compared to graduate students (23.07%). This implies that universities with a predominantly undergraduate student body in similar settings should consider the option of providing virtual education degree programs in addition to the traditional programs. It would be interesting to find out if undergraduate standing (freshman, sophomore etc.) and/or major has an impact on this choice.

Of the 415 respondents, 214 were males and 201 were females. 44.39% (N=95) of the male respondents and 31.34% (N=63) of the female respondents said yes that they would be willing to enroll in a virtual education degree program. A possible explanation for this can be the fact that women in general do not feel comfortable using technology. In a recent study (Proost et. al., 1997) it was found that women compared to men have a negative perception of computer based technology and indicate a preference for traditional methods of learning. This fact is also reflected in the results of a study conducted by the American Association of University Women Educational Foundation (Information Week, April 2000) where it was found out that women constitute less than 20% of the IT workforce.

In the following paragraphs we explore the reasons that may provide further insights for the students response to this question. The table below provides a summary of these results.

Individual Survey Items	Overall means (N=431)	Strongly agree/agree (%)	Neither agree nor disagree (%)	Strongly disagree/disagree (%)
Virtual education increases flexibility for students to take classes at anytime	4.29	92.1	5.6	2.3
Virtual education increases flexibility for students to take classes from anywhere	4.37	93.8	3.9	2.3
Virtual education increases quality of education by allowing students to learn at their own pace	3.00	31.3	36.2	32.5
Virtual education increases quality of education by providing access to more knowledge on the web	3.11	35.5	36.7	27.8
Virtual education increases on-going learning by providing availability to resources on the web	3.50	57.1	27.8	15.1
Virtual education will increase understanding of concepts and issues as there will be no need to take notes	2.57	17.0	30.6	52.4
Virtual education increases the diversity in a classroom by allowing students from other parts of the world to enroll in classes	3.44	55.4	22.3	22.3
Virtual education changes the role of teachers to a facilitator rather than an instructor	3.61	59.2	32.0	8.8
Virtual education will be more effective for motivated and self-disciplined students	3.73	65.6	16.5	17.9
Virtual education increases 'free time' for students to develop skills	3.24	42.9	34.1	23.0
Virtual education increases one-on-one student-teacher interaction	2.33	14.4	26.7	58.9
Virtual education increases interaction among students	2.16	10.0	22.5	67.5
Students will learn more effectively using the web	2.60	14.4	41.2	44.4
Virtual education increases the thinking process of students	2.84	22.5	42.0	35.5
Virtual education reduces the cost of education for students	3.51	48.5	40.1	11.4

Table: Overall Mean Scores and Frequency Percent

An overwhelming number of respondents agree that virtual education degree programs increase flexibility for students to take classes at anytime from anywhere. When comparing the means this result is consistent for male/female, graduate/undergraduate, and full-time/part-time respondents. The flexibility provided by virtual education programs is supported in the literature (Daugherty & Funke, 1998) and is a possible explanation for 38.07% of the respondents willingness to register for such programs.

Approximately two thirds (67.5%) of the respondents strongly disagreed/disagreed with the statement that virtual education increases interaction among students and more than half (58.9%) of the respondents strongly disagreed/disagreed with the statement that virtual education increases one-on-one student teacher interaction. In both these cases the percent of respondents that agreed with these statements is less than 15. This result indicates that student-teacher and student-student interaction is an important criterion for respondents and they perceive that virtual education does not provide these interactions. Lack of interaction in a virtual education degree program, as perceived by respondents, possibly explains why 61.9% respondents were not willing to register for such programs.

Respondents (65.6%) strongly agreed/agreed that virtual education will be more effective for motivated and self-disciplined students. This result should be interpreted with caution and in our opinion the fact that majority of the respondents of this study were undergraduate students explains their perception. Undergraduate students generally speaking need structure, direction, and guidance in their education, which may not be adequately provided in a virtual degree program. Further the fact that respondents perceive virtual education to lack student-teacher interaction, activities such as student advising, may explain the respondents' opinions.

A surprising result was the respondents, only 14.4%, perception that in a virtual education program students will learn more effectively using the web. A possible explanation for this response can be the fact that there is a tremendous amount of information available on the web. Information overload caused by excessive data that needs to be scanned before a student can find relevant information may reduce the effectiveness of the web as a learning tool.

CONCLUSION:

In this study we tried to find out if students in a predominantly undergraduate rural university would be willing to register for a virtual education degree program. One of the key findings of this study was the fact that there is an interest, though limited, in virtual education degree programs. Students perceive flexibility to take classes anytime and anywhere as a key reason to register for virtual education degree programs. However there is strong evidence that students perceive interaction, student-to-student and student-to-instructor, to suffer as a result of virtual education. Further students perceive that virtual education programs place a heavy demand on students to be self-motivated and disciplined. Students also perceive that learning is not more effective using the web.

Universities need to be proactive in determining the need for virtual education degree programs in their regions and then prepare them selves for developing such programs. Care must be taken to ensure that these programs are designed and developed keeping in mind the social needs of students. A significant part of learning for students in a university environment comes from the interaction that takes place among themselves and with teachers. Students that are educated in isolated environments where interaction with peers and teachers is limited may be deprived of "true education." Education for students is a holistic experience and means more than an electronic package.

Designing and developing virtual education degree programs requires that it is a collective effort with all participants in the educational process contributing. There is a need for a champion at the highest level, such as the chancellor, who provides the motivation and incentives for faculty to be involved with this project. All faculty members should be involved willingly in this process and contribute their skills towards the success of this project. Finally universities should conduct studies on their campuses to determine the needs of students to ensure that their concerns are addressed and that they are willing to register for such programs.

In this paper we discussed the perceptions of students regarding virtual education. This study is unique as it is proactive unlike other studies where student perceptions are based on courses that have already been delivered electronically. Also in this study we focused on degree programs rather than individual courses that are offered on-line. Some of the factors that we believe can help explain the students perceptions such as their majors, individual experience with the use of technology before starting college, and educational standing, need to be investigated in future studies. This would enable universities to develop a framework that can guide the implementation of virtual education degree programs.

REFERENCES AVAILABLE UPON REQUEST

Appendix

Virtual education increases flexibility for students to take classes at anytime
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Virtual education increases the thinking process of students
Virtual education reduces the cost of education for students

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