

Key Factors for Determining Student Satisfaction in Distance Learning Courses: A Study of Allama Iqbal Open University (AIOU) Islamabad, Pakistan

Afzaal Ali, Muhammad I. Ramay & Mudasar Shahzad

Department of Management Sciences, International Islamic University, Islamabad
Afzaal_ciit@yahoo.com

Abstract

In this paper, the primary objective of the research team was to find out the relationship between student satisfaction and the following variables of the distance learning environment: instructors' performance, course evaluation and student-instructor interaction. The sample consisted of 245 students of Allama Iqbal Open University of Pakistan. The purpose of this study was to address the most recent problem of AIOU students relevant to their distance learning. The problem was that most of the people in Pakistan perceived distance learning as poorer quality. Therefore, the researchers conducted this study to find out whether it is only people perception or there is any thing in reality about the poorer outcome of the distance learning students as compared to traditional students. By using correlation, regression and descriptive analysis, it was found that just like the traditional education, in distance learning education at AIOU, enough interaction takes place between students and their instructors, courses are up to date and well designed, instructors are devoted, motivated and equipped with the required skill and knowledge. Moreover, the faculty at AIOU is delivering distance learning courses that meet the students' needs in regard to students-instructor interaction, instructor performance and course evaluation.

Keywords: distance learning, student-instructor interaction, course evaluation, instructor performance, AIOU Islamabad

Abstrak

Objektif utama kajian ini adalah untuk melihat hubungan di antara kepuasan pelajar dan pemboleh ubah persekitaran pembelajaran jarak jauh berikut: prestasi pengajar, penilaian kursus dan interaksi pelajar-pengajar. Sampel adalah terdiri daripada 245 pelajar di Allama Iqbal Open University (AIOU), Pakistan. Tujuan kajian ini diadakan adalah untuk mencari penyelesaian kepada cabaran bagi pelajar jarak jauh di AIOU kebelakangan ini yang mana kebanyakan khalayak di Pakistan memandang rendah kualiti pembelajaran secara jarak jauh. Oleh itu, kajian ini dilakukan untuk mengenal pasti sama ada ia hanya

merupakan persepsi masyarakat atau wujud secara realiti sebarang kelemahan hasil pembelajaran secara jarak jauh berbanding secara tradisional. Dengan menggunakan analisis korelasi, regresi dan statistik perihalan, keputusan menunjukkan bahawa sama seperti pembelajaran biasa, pembelajaran jarak jauh di AIOU mempunyai interaksi yang cukup antara pelajar dan pengajar, kursus adalah sentiasa dikemas kini dan dirancang rapi dan pengajar-pengajar adalah berdedikasi, bermotivasi dan dilengkapi dengan kemahiran serta pengetahuan yang diperlukan. Oleh itu, AIOU didapati menyediakan kursus jarak jauh yang memenuhi keperluan para pelajar dari segi interaksi pelajar-pengajar, prestasi pengajar dan juga penilaian kursus.

Kata kunci: pembelajaran jarak jauh, interaksi pelajar-pengajar, penilaian kursus, prestasi pengajar, AIOU Islamabad

Introduction

The world wide web has become a valuable educational means and offer new educational experience for students which were not earlier possible. In recent years the growth of online educational programs has been fueled by the advancement of the internet and modern information technology that changed the face of education. Due to advancement of the latest technology, online education has emerged as an alternative or at least a considerable supplement to traditional mode of teaching and learning (Waits & Lewis, 2004). Especially, in higher education online education is increasingly becoming common and emerging as an opportunity for delivering entire education online. In academia through online classes, universities now have the ability to provide distance learning opportunities for students — Full-time or part-time, traditional or non-traditional and international, who perhaps have had limited access to advanced educational opportunities (Bartley & Golek, 2004).

The rising demand and growing consumer experience with flexible education programs to support career development and life long learning increase people expectations for quality instructions, effective educational outcomes, and finally satisfaction for learning (Debourgh, 1999). Allen et al. (2002) and Wang (2003) argued that in any educational institution, satisfaction of a student can be determine from his level of pleasure as well as the effectiveness of the education that student experience. Since, students with higher levels of satisfaction towards various aspects of e-

learning courses are also reported considerably higher levels of learning, than students with low level of satisfaction (Fredericksen, 2000). In this regard, management specifically instructors of e-learning courses can increase their students' satisfaction by considering the primary factors of student satisfaction (Ho et al., 2002).

No doubt, telecommunications hardware and software create many opportunities of communication and collaboration for students and instructors, separated with each other due to time and space (Belanger & Jordan, 2000). However, besides perception of the technological innovation, interaction among students, quality and timely interaction between student and teacher, flexibility of online courses, technical support availability, and consistent course design across courses are also important to assure the development of distance learning education (Swan et al., 2000; Lao & Gonzales, 2005).

Conrad (2006) argued that distance learning occurs when students and instructor do not meet personally in the same physical space. Similarly Roffe (2002) described that distance learning refers to the way people communicate and learn by electronic means which has emerged as a key source of competitive advantage in the information society. The term distance learning also used interchangeably with terms e-learning, online learning, online collaborative learning, virtual learning, web based learning and technology-mediated learning. In the past, few relevant studies have been conducted on the use of distance learning environment in Pakistan. Though, current research paper deals with several factors as influencing students satisfaction with distance learning in Pakistan. In this perspective, the primary objective of this research paper was to find out the relationship between student satisfaction and the following variables of the distance learning environment: instructors' performance, course evaluation and student-instructor interaction.

This study was carried out by keeping in view the increasing demand of distance education not only in Pakistan but all over the world. Right now there is only one degree awarding universities in Pakistan which is providing distance education i.e. Allama Iqbal Open University (AIOU). In this paper we focused on AIOU. The Allama Iqbal Open University was established in May, 1974 at Islamabad, Pakistan and was the first Open University in Asia, and the biggest university in the country with

course enrolment of 1,806,214 by the year 2004–2005. The AIOU established over 1400 study centers, 9 regional campuses, 23 regional centers, 90 part-time regional coordinating offices throughout Pakistan. Basically, AIOU is a distance education institution, which provides multi disciplinary education from basic to doctoral level programs. In AIOU more than 70% students are employed and the rural-urban distribution of the students are 58% and 42% respectively. Moreover, female enrolments are more than 50%. Internet, audio and video lectures, along with correspondence of the instructors are used as a medium of instruction as well as a source of information. In addition, these lectures are broadcasts on television and radio, and also CDs of these lectures are available for the students.

Background of the Problem

Actually this study was carried out to address the most recent problem of AIOU students, relevant to their distance learning. The fact is that most of the people in Pakistan perceived distance learning as poorer quality. Entrepreneurs, private employers and many corporate companies' executives have the same mentioned perception. Moreover, they are not ready to accept this argument that distance learning students do just or even better than face to face classroom students. Instead of the fact that AIOU degree is accepted and recognised by the government, getting jobs, particularly good jobs are very difficult for these students. Therefore, the researchers conducted this study to find out whether it's only people perception or there is any thing in reality about the poorer outcome of the distance learning students as compare to traditional students. That's why we asked different questions to AIOU students about their satisfaction regarding instructor performance, student-instructor interaction and course evaluation.

Literature Review

Student satisfaction

The dynamic expansion of online teaching and learning has been boosted significantly by the rapid development of the internet and various web resources, having a tremendous impact on the quality of teaching and learning. Modernised way of communication came in to being, which

change the preference of students from face-to-face to online education. Further more, the availability of distance education, the course offerings, and the increasing number of students enrolled, all speak to the importance of this method of instruction. Besides, Johnson et al. (2000) made a comparative research study and did not find any significant difference in the effectiveness of online learning versus face to face course learning for students.

Furthermore, distance education provides independent, student center and tutor facilitated engagement that facilitate interactions with instructors and students which may not always be possible within the traditional classroom setting (Michailidou & Economides, 2003). Astin, (1993) defined student satisfaction in term of student's perception towards his/her college/university experience, and perceived significance of the education that (s)he received from an institution. Levy (2003) argued in his research study, conducted over 200 students attending e-learning courses to find out the relationship of students satisfaction and e-learning effectiveness. He found that students satisfaction with e-learning is a key factor to measure the effectiveness of e-learning.

Instructor performance and student satisfaction

In online learning environment, instructor again requiring a new set of skills for success since latest technologies brings as much change to instructors as they do to students (Jones, 2003). Now, the roles of the instructors change from being the primary source of students' knowledge to being the manager of the students' knowledge resources (Romiszowski, 2004). Moreover, in an effective online learning environment instructor plays a central role, and it is not because of technology but practical accomplishment of the technology that determines the effects on learning (Collis, 1995).

An instructor has a definite role to make online environment successful. For this purpose, instructors must ensure required level of interactions and discussions with their students (Hong et al., 2003). However, interaction is different in this environment (Walker & Hackman, 1991) with more emphasis on the instructor's role as a mediator between the student and the materials (Beaudoin, 1990) or between the student and the technology. Therefore, instructor must understand the increased diversity of learners, and then accordingly determine test formats, assessment practices, and

assessment strategies (Banerjee & Brinckerhoff, 2002), which might persuade and motivate students to accept e-learning environment (Selim, 2005).

In e-learning, there are some certain factors and conditions which are closely related to the professional development of an instructor, and to enhance the teaching quality of instructors, it is necessary for the instructors to consider these factors (Louden, 2000). Jensen (1993) conducted a research in which he collected data together from students and instructors, and concluded that distance learning instructions requires a different set of skills and involves different responsibilities.

Student-instructor interaction and student satisfaction

In distance education, interaction appears frequently as a defining characteristic of quality learning experiences. Also in the education literature, researchers' belief in the importance of student-teacher interaction is so widespread that it is assumed to be a basic need for learning to occur (Anderson & Garrison, 1995; Picciano, 2002). In addition, it is recognised as a driving force for persuading student's motivation and the achievement of learning outcomes (Du et al., 2005; Lam et al., 2005; Sargeant et al., 2006). Moore (1989) reported three types of interactions: student-content; student-instructor; and student-student. For student satisfaction with distance education; timely and quality interaction among students and between student and their instructor, and finally between students and their course content.

According to many researchers, the overall effectiveness and success of online education depend upon the interaction which is an essential element to student learning (Fresen, 2007; Moore, 1993; Northrup, 2001). Therefore, Volery & Lord (2000) suggested that in order to boost student's interactions, instructor may give a participation mark. Furthermore, instructors should be able to understand the diverse nature of the student; involved them in online discussions and encouraged student to student interactions (Durling et al., 1996).

In an online course, the immediate accessibility of the information, assistance, and feedback by the instructor determined the students' satisfaction. Whenever, due to technical problems this accessibility is

interrupted or denied, students get frustrated (Wilson & Whitelock, 1998). In fact, success in online learning environment depends on the level of interaction between students and instructors that is required to stimulate good results (Kershaw, 1996). Due to online learning environment the instructor gets more time to directly interact and spend on each individual student. As, mostly students follow a pre-defined and pre-developed e-learning course (Morgan, 2000). Therefore, instructors should remain in contact with students through email and online forum discussions (Poon et al., 2004)

Course evaluation and student satisfaction

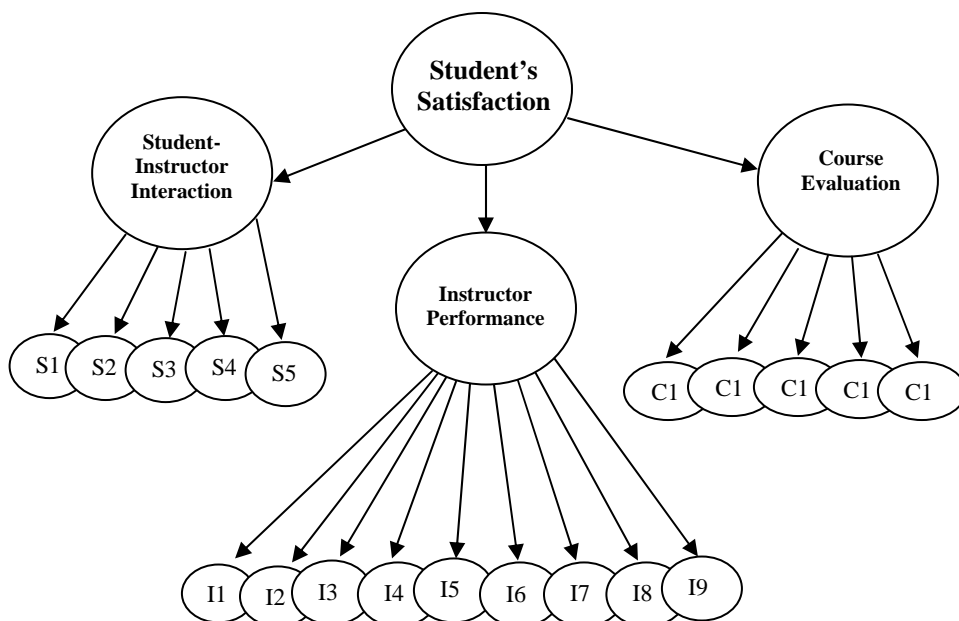
The development of an online environment allows students to participate in the educational process and by exploring and playing with the lesson material (Michailidou & Economides, 2003). Particularly those subjects are best suited to the online format that involves discussion, brainstorming, and reflection. As students interactions through course discussions appear to be one of the most important features of distance courses (Swan et al., 2000). Along this, course design must have rich communication potential, as the level of communication heavily impact upon students' learning, satisfaction, and retention in online courses (Irani, 1998).

Northrup (2002) defined interaction as interaction with course content, discussion and group effort, interpersonal skills, and need for support. Furthermore, Northrup added that students demonstrated a preference for innovative course delivery such as collaboration through ongoing interaction with peers and instructors, case studies, readings followed by discussions. According to Inman et al. (1999), students expect three things from an instructor in the distance learning environment, which are helpful materials for interacting with the distance learning medium, some on-campus session and finally his availability at the time when they needed. Besides, Swan (2001) also reported three factors i.e. interaction with instructors and active discussion among course participants and clarity of course design which significantly influenced students' satisfaction and perceived learning. Similarly, Shea et al., (2003) argued that following issues are highly correlated with students satisfaction level in e-learning courses; instructional design and organisation of the e-learning courses,

instructors direct interaction with students and instructors discourse facilitation.

According to Levin et al. (1990), students perceive that discussions in distance learning are more equitable and democratic than face-to-face classroom discussions. While Swan et al. (2000) argued that students preferred consistent course structure so that navigation does not change from one course to another. Yang and Cornelius (2004) found that students became frustrated when their courses were poorly designed, and when instructors did not participate in discussions or responded to questions within a very limited time (Zeng & Perris, 2004). There may be a possibility that this frustration may translate into a poor learning outcome for students. Therefore, in online learning environment, getting student feedback about their needs and preferences is crucial for the successful design and implementation of this environment (Sahin, 2007).

Theoretical Frame Work



Research Hypothesis:

The following hypotheses have been developed from the literature review:

- H1: Instructor performance will be positively related to the student's satisfaction.
- H2: Student-instructor interaction will be positively related to the student's satisfaction.
- H3: Course evaluation will be positively related to the student's satisfaction.

Methodology

Subject

In order to investigate the relationship between key factors for determining student satisfaction in distance learning courses, a structured questionnaire was circulated among students of AIOU in Pakistan, using convenience sampling method. As AIOU was the only university which are providing distance learning education in Pakistan, that's why researcher chose it. The sample size comprised of 245 students of AIOU.

Procedure

Research team made a visit of AIOU main campus in Islamabad and collected data from the students. For this purpose, firstly researchers briefed them about the purpose of this study and the variables along with their item, which were in the questionnaires.

Measure/Instrument

To measure the student satisfaction, six items were adapted from the study of Arbaugh (2000). These items focus on students' satisfaction, their perceptions of its quality and their intention of taking future courses via distance learning. To measure the student-instructor interaction, five items were adopted from the study of Johnson et al., (2000). Likewise, a College of Education, Texas Tech University teaching evaluation scale items of fall 2001 were used to measure instructor performance and course evaluation (Tallent-Runnels et al., 2005).

The questionnaire comprised of 26 items. It has two parts. First part contained demographic information and the second part contained the variables and their items. The demographic profile included four items: Gender, age, student type and educational level. Each of the items was measured using five-point Likert-type scales, ranging from 1 as strongly disagree to 5 as strongly agree. Table 1 reveals the demographic profile of the respondents.

Table 1 Respondents' demographic

Profile	Frequency	%
Gender		
Male	131	53.5
Female	114	46.5
Age		
Between 20 to 25	168	68.6
Above 25	77	31.4
Student's type		
Part time	156	63.7
Full time	89	36.3
Academic program		
Intermediate	18	7.3
Bachelors	48	19.6
Master	167	68.2
Others	12	4.9

Analysis and Results

Reliability Analysis

Prior to further data collection, in the pilot study, the reliability coefficient alpha was used to measure the reliability of the constructs. The sample for the pilot study comprised of twenty three respondents. Table 2 show the items and Cronbach alpha of each variable respectively, which are acceptable for research.

Table 2

	No. of Items	Cronbach Alpha
Students satisfaction	6	0.680
Student-instructor interaction	5	0.737
Instructor performance	9	0.882
Course evaluation	6	0.680

Test of Hypothesis

To investigate the relationship between the dependent variable, student satisfaction, and the following three predictor variables were tested: student-instructor interaction, instructor performance and course evaluation, the data were subjected to regression and correlation analysis. The results are shown in Table 3 which clearly demonstrates that there is significant relationship between the independents and the dependent variable.

Table 3 Student satisfaction

Student-instructor interaction	Pearson Correlation	0.413**
	Sig. (2-tailed)	.000
	N	245
Instructor performance	Pearson Correlation	0.616**
	Sig. (2-tailed)	.000
	N	245
Course evaluation	Pearson Correlation	0.637**
	Sig. (2-tailed)	.000
	N	245

Note: **Correlation is significant at the 0.01 level (2-tailed).

Table 4 Regression analysis

	Beta	t-value	Sig.
Constant		11.774	.000
Student-instructor interaction	-.583	-6.590	.000
Instructor performance	.721	7.660	.000
Course evaluation	.510	7.068	.000

Continued on next page

Table 4 (*continued*)

n = 245 ;	R Square = .528;	Adjusted R Square = 0.522;
F = 89.897;	Significance F = 0.00;	
Dependent variable = Student satisfaction		

The correlation matrix (Table 3) indicates that student-instructor interaction is positively and significantly correlated with students satisfaction (0.413(**), $p < 0.05$, H1 supported). The results reveal that instructor performance positively and significantly influence the students' satisfaction (0.616(**), $p < 0.05$, H2 supported). Likewise, there is also a significant and positive relationship between the course evaluation and student satisfaction (0.637(**), $p < 0.05$, H3 supported).

Table 5 Key factors for determining student satisfaction

Student-Instructor Interaction:	SD%	D%	N%	A%	SA%
The instructors encouraged me to become actively involved in the courses discussions	17.6	11.4	2.4	37.6	31.0
The instructors provided me feedback on my work through comments	7.3	12.7	7.8	20.8	51.4
I was able to interact with the instructors during the courses discussions	5.3	9.8	9.8	33.5	41.6
The instructors treated me individually	5.3	18.4	26.1	23.3	26.9
The instructors informed me about my progress periodically	14.7	13.5	19.2	35.1	17.6
Instructor Performance:	SD%	D%	N%	A%	SA%
Overall this instructors were effective	2.4	12.7	12.7	33.5	38.8
The instructors were available for consultation during office hours or by appointment.	4.9	18.8	15.5	29.4	31.4
The instructors stimulated students learning	0	12.2	10.2	21.6	55.9
The instructors treated all students fairly	9.0	15.1	21.6	22.4	31.8
The instructor treated all students with respect	4.9	6.5	9.8	43.7	35.1
The instructor welcomed and encouraged questions and comments.	4.9	14.3	2.9	34.7	43.3
The instructor presented the information clearly	2.4	23.7	7.8	39.2	26.9
The instructor emphasised the major points and concepts	11.8	7.3	9.8	29.4	41.6
The instructor demonstrated knowledge of the subject	2.4	23.7	7.8	39.2	26.9

Continued on next page

Table 5 (*continued*)

Course Evaluation:	SD%	D%	N%	A%	SA%
Overall, I have valuable learning experiences from my courses	4.9	2.4	4.5	33.9	54.3
The assignments were relevant and useful	9.0	2.4	7.3	53.5	27.8
Courses materials were relevant and useful	2.4	9.8	4.9	38.4	44.5
Expectations were clearly stated either verbally or in the syllabus	12.7	7.3	4.5	47.8	27.8
The testing and evaluation procedures were fair	16.7	9.8	4.9	51.0	17.6
The workload was appropriate for the hours of credit	7.8	14.7	18.4	44.5	14.7

Where SD means strongly disagree, D means disagree, N means neutral, A means agree and SA means strongly agree

Student-Instructor Interaction

Student-Instructor Interaction is the first strongest variable in predicting students' satisfaction. Students were asked about their courses discussions, feedback and interactions with instructors, instructor ability to treat them individually and lastly informing about their progress periodically. Approximately 68% of the students queried agreed that instructors encouraged them to become actively involved in the courses discussions. The following student comments support the need for instructor's encouragement to actively involved students in the courses discussions. These were substantiated by the findings of Durling & Johnson (1996). Furthermore, the majority of the students, 71% and 75% reported they liked discussion and feedback from their instructors. Although almost 51% of the respondents agreed that instructors treated them individually and also informed about my progress periodically, on average 26% disagreed with these statements. As, distance education is a learner-centered instruction, this finding confirms that instructor support, such as useful feedback, easy communication and timely help is still an important factor for student satisfaction in distance learning. Timely interaction with students regarding their performance enhances their productivity in distance learning courses. Furthermore, in terms of achieving overall student's satisfaction, distance learning instructors should be able to understand the diversity of the students and treat each student accordingly (Banerjee & Brinckerhoff, 2002).

Instructor Performance

The second significant predictor of student satisfaction is instructor performance. In this section students were asked, “Overall these instructors were effective”. Approximately 72% of the students queried agreed that during their degree program, overall the instructor were effective. The following student comments support the need for experienced professional instructors for the student’s satisfaction (Hong et al., 2003). Moreover, students were asked about teachers availability during office hours, their motivation to learn, giving them respect, encouraging question and comments, presenting the information clearly, highlighting the major points and concepts, and demonstration of knowledge. On average about 68% of the respondents were agreed about all these points and considered these things important in order to enhance their satisfaction level with distance learning courses. Therefore, instructors of distance education should be available, provide prompt responses, and encourage their students through online learning activities. These findings also suggest that interaction with the instructor in distance learning environment affects student success and learning.

Course Evaluation

Students were queried about their feelings regarding learning experiences, assignments, courses materials, achievement of courses targets, workload, and evaluation criteria in their distance courses. According to Table 5, majority of the students agreed that they learned a lot from their courses, assignments and courses materials were relevant and useful, courses targets was achieved during the semester, and that evaluation criteria and workloads were satisfactory. This finding indicates that students are expected to be more satisfied in distance learning environments if the course materials are relevant and useful, and involves real life examples, facts, and cases (Northrup, 2002).

Concluding Remarks

The results of this study indicated that majority of the students at this campus showed high level of satisfaction regarding students-instructor interaction, instructor performance and course evaluation. This reveals that just like the traditional education, in distance learning education at AIOU,

enough interaction take place between students and their instructors, courses are up to date and well designed, instructors are devoted, motivated and equipped with the required skill and knowledge. Further more, the availability of distance education in Pakistan, increasing number of degree program offered and the increasing number of students enrolled, all speak to the students satisfaction and the effectiveness of the distance learning education. This implies that faculty at AIOU is delivering distance learning courses that meet the students' needs in regard to students-instructor interaction, instructor performance and course evaluation. After the findings of this research study, it will not be logical to presume that distance learning students do not perform well as compare to traditional students. Moreover, the research team hopes that these findings may change the pessimistic perceptions of those people in Pakistan who perceived distance learning as poorer quality.

Besides, the research team suggests, there is a need of this; AIOU increase the number of its sub-campuses to the remote areas of Pakistan where literacy rate is still low. Because students of these areas also have the desire to get education but due to financial, geographic and cultural reasons they cannot get it. Therefore VU can play its vital role in order to improve literacy rate in Pakistan.

Limitations and Future Research Direction

There are certain limitations of this study. The small sample may not be completely representative of the majority of students of distance learning at AIOU. Additionally, the main campus of AIOU i.e. Islamabad was selected. This may not reflect the results of the whole AIOU campuses. For future point of view one can consider the students of other campuses and sub campuses of AIOU, especially those established in small and undeveloped cities in order to find out their satisfaction level towards distance learning. Secondly, to explore the reasons why students select distance learning for higher education in Pakistan is also an important point for future research viewpoint.

References

- Allen, M., Bourhis, J., Burrell, N. and Mabry, E. 2002. Comparing student satisfaction with distance education to traditional classrooms in higher education: A meta-analysis. *American Journal of Distance Education* 16(2): 83–97.
- Anderson, T. D. and Garrison, D. R. 1995. Transactional issues in distance education: The impact of design in audio conferencing. *The American Journal of Distance Education* 9: 27–45.
- Andria Young and Chari Norgard. 2006. Assessing the quality of online courses from the students' perspective. *Internet and Higher Education* 9: 107–115.
- Arbaugh, J. B. 2000. Virtual classroom characteristics and student satisfaction with internet-based MBA courses. *Journal of Management Education* 24: 32–54.
- Astin, A. W. 1993. What matters in college? Four critical years revisited. San Francisco, CA: Jossey-Bass.
- Banerjee, M. and Brinckerhoff, L. C. 2002. Assessing student performance in distance education courses: Implications for testing accommodations for students with learning disabilities. *Assessment for effective intervention* 27(3): 25–35.
- Bartley, S. J. and Golek, J. H. 2004. Evaluating the cost effectiveness of online and face-to-face instruction. *Educational technology & society* 7(4): 167–175.
- Beaudoin, M. 1990. The instructor's changing role in distance education. *The American Journal of Distance Education*, 4(2): 26–34.
- Belanger, F. and Jordan, D. H. 2000. *Evaluation and implementation of distance learning: Technologies, tools and techniques*. Hershey, PA: Idea Publishing Group.
- Collis, B. 1995. Anticipating the impact of multimedia in education: lessons from the literature. *Computers in adult education and training* 2(2): 136–49.
- Conrad, D. 2006. E-Learning and Social Change: An apparent contradiction. In *Perspectives on higher education in the digital age*, ed. M. Beaudoin. New York: Nova Science Publishers, 21–33.
- DeBourgh, G. A. 1999. Technology is the tool, teaching is the task: Student satisfaction in distance learning. *Proceedings of Society for Information Technology and Teacher Education International Conference* 131–137.
- Du, J., Havard, B. and Li, H. 2005. Dynamic online discussion: Task-oriented interaction for deep learning. *Educational media international* 42(3): 207–218.
- Durling, D., Cross, N. and Johnson, J. 1996. CAI with style. Paper presented at the 18th Annual Design Conference-Computer-Aided Design Education, University of Bristol, England, June 26–27, 1997.
- Fredericksen, E., Pickett, A., Shea, P., Pelz, W. and Swan, K. 2000. Student satisfaction and perceived learning with on-line courses: Principles and examples from the SUNY learning network. *Journal of Asynchronous Learning Networks* 4(2): 7–41.
- Fresen, J. 2007. A Taxonomy of factors to promote quality web-supported learning. *International Journal on E-Learning* 6(3): 351–362.

- Ho, C., Leong, P. and Saromines-Ganne, B. 2002. An empirical investigation of student satisfaction with web-based courses. In Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education, eds. M. Driscoll & T. Reeves, 1792–1795.
- Hong, K. S., Lai, K. W. and Holton, D. 2003. Students' satisfaction and perceived learning with a Web based course. *Journal of Educational Technology and Society* 6(1).
- Inman, Elliot, Kerwin, Michael and Mayes, Larry. 1999. Instructor and student attitudes toward distance learning. *Community College Journal of Research and Practice* 23(6): 581–591.
- Irani, T. 1998. Communication potential, information richness and attitude: A study of computer mediated communication in the ALN classroom. *ALN magazine* 2(1) [Online]
- Jensen, R. E. 1993. The technology of the future is already here. *Academe* 79: 8–13.
- Johnson, S. D., Aragon, S. R., Shaik, N. and Palma-Rivas, N. 2000. Comparative analysis of learner satisfaction and learning outcomes in online and face-to-face learning environments. *Journal of Interactive Learning Research* 11(1): 29–49.
- Jones, A. J. 2003. ICT and future teachers: Are we preparing for e-learning? Paper presented at the IFIP Working Groups 3.1 and 3.3 Conference: ICT and the Teacher of the Future, January 27–31, 2003, Melbourne, Australia. *Journal of Distance Education* 4: 21–29.
- Kershaw, A. 1996. People, planning, and process: The acceptance of technological innovation in post-secondary organizations. *Educational technology* 44–48.
- King, K. P. 2002. Educational technology professional development as transformative learning opportunities. *Computers & education* (39): 283–297.
- Lam, P., Cheng, K. F. and McNaught, C. 2005. Asynchronous online discussion: Empirical evidence on quantity and quality. Norfolk, VA: *Association for the advancement of computers in education*, 3209–3215.
- Lao, T. and Gonzales, C. 2005. Understanding online learning through a qualitative description of professors and students' experiences. *Journal of Technology and Teacher Education* 133: 459–474.
- Levin, J. A., Kim, H. and Riel, M. M. 1990. Analyzing instructional interactions on electronic message networks', in online education: Perspectives on a new environment, ed. L. Harasim, Praeger, New York, 16–38.
- Levy, Y. 2003. A study of learners perceived value and satisfaction for implied effectiveness of online learning systems. *Dissertation Abstracts International*, 65(03), 1014A.
- Louden, W. 2000. Standards for standards: The development of Australian professional standards for teaching. *Australian Journal of Education* 44(2): 118–134.
- Michailidou, A. and Economides, A. 2003. Elearn: Towards a collaborative educational virtual environment. *Journal of Information Technology Education* 2: 131–152.
- Moore, M. G. 1989. Editorial: Three types of interaction. *The American Journal of Distance Education* 3(2): 1–6.
- _____. 1993. Three types of interaction. In *Distance education: New perspectives* (ed.). K. Harry, M. Hohn, & D. Keegan, 12–24. London: Routledge.

- Morgan Brian, 2000. Is distance learning worth it? Helping to determine the cost of online courses.
- Northrup, P. 2001. A framework for designing interactivity into web-based instruction. *Educational technology* 41(2): 31–39.
- Northrup, P. T. 2002. Online learners' preferences for interaction. *Quarterly review of distance education* 32: 219–226.
- Picciano, A. G. 2002. Beyond student perceptions: Issues of interaction, presence, and performance in an online course. *Journal of Asynchronous Learning Networks* 6(1): 21–40.
- Poon, W. C., Low, L. T. and Yong, G. F. 2004. A study of Web-based learning (WBL) environment in Malaysia. *The International Journal of Educational Management* 18(6): 374–385.
- Roffe, I. 2002. E-learning: engagement, enhancement and execution. *Quality assurance in education* 10(1): 40–50.
- Romiszowski, A. 2004. How's the e-learning baby? Factors leading to success or failure of an educational technology innovation. *Educational technology* 44(1): 5–27.
- Sahin, I. 2007. Predicting student satisfaction in distance education and learning environments. *Turkish Online Journal of Distance Education* 8(2): 1302–6488.
- Sargeant, J., Curran, V., Allen, M., Jarvis-Selinger, S. and Ho, K. 2006. Facilitating interpersonal interaction and learning online: Linking theory and practice. *The Journal of Continuing Education in the Health Professions* 26: 128–136.
- Selim, H. M. 2005. Critical success factors for e-learning acceptance: Confirmatory factor models. Computers and education. <http://mail.phy.bg.ac.yu/~marijam/filos/science7.pdf>. (accessed 9 February 2007).
- Shea, P. J., Pickett, A. M. and Pelz, W. E. 2003. A follow-up investigation of teaching presence in the SUNY learning network. *Journal of Asynchronous Learning Networks* 7(2): 61–80.
- Swan, K. 2001. Virtual interaction: Design factors affecting student satisfaction and perceived learning in asynchronous online courses. *Distance education* 22(2): 306–316.
- Swan, K., Shea, P., Fredericksen, E., Pickett, A., Pelz, W. and Maher, G. 2000. Building knowledge building communities: Consistency, contact and communication in the virtual classroom. *Journal of Educational Computing Research* 234: 359–383.
- Tallent-Runnels, T. M. K., Lan, W. Y., Fryer, W., Thomas, J. A., Cooper, T. S. and Wang, K., 2005. The relationship between problems with technology and graduate students' evaluations of online teaching. *Internet and higher education*, 8: 167–174.
- Volery, T. and Lord, D. 2000. Critical success factors in online education. *The International Journal of Educational Management* 14(5): 216–223.
- Vonderwell, S. 2003. An examination of asynchronous communication experiences and perspectives of students in an online course: A case study. *The internet and higher education* 6: 77–90.
- Waits, T. and Lewis, L. 2004. Distance education at degree granting postsecondary institutions: 2000–2001.

- http://nces.ed.gov/programs/quarterly/vol_5/5_3/4_4.asp (accessed 19 November 2004).
- Walker, K. B. and Hackman, M. Z. 1991. Information transfer and nonverbal immediacy as primary predictors of learning and satisfaction in the televised course. *ERIC document reproduction service, ed.* 344 266.
- Wang, Y. S. 2003. Assessment of learner satisfaction with asynchronous electronic learning systems. *Information and management* 41(1): 75–86.
- Wilson, T. and Whitelock, D. 1998. Monitoring the on-line behavior of distance learning students. *Journal of Computer Assisted Learning* 14: 91–99.
- Yang, Y. and Cornelius, L. F. 2004. Students' perceptions towards the quality of online education: A qualitative approach. *Association for Educational Communications and Technology* 27: 861–877.
- Zeng, W. Y. and Perris, K. 2004. Researching the efficacy of online learning: A collaborative effort amongst scholars in Asian open universities. *Open learning* 193: 247–264.