

Faculty and Students perception Towards Introducing e Learning in engineering colleges of Karnataka.

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Abstract

E Learning is an important tool for delivery, interaction, and facilitation of both teaching and learning processes. Faculty members and students of premier engineering colleges are being encouraged to become involved in e-learning activities. To assess faculty and student opinions on e-learning, a questionnaire was sent to 120 faculty members & 200 students of the premier engineering colleges of Bangalore to determine how they perceive e-learning, and how they might choose to integrate it into their everyday teaching activities. Data was collected and analyzed by using descriptive statistics. Results indicate that faculty & students generally perceive e-learning as a positive force in helping students achieve their learning objectives. Answers to this questionnaire, however, also indicated areas of weakness: specifically that baseline technological and human resource prerequisites are necessary to support eLearning at premier engineering colleges of Bangalore, and that these baseline prerequisites are not yet available at the engineering colleges of Karnataka. Other baseline prerequisites are: staff training, well prepared online courses and learning materials, sufficient groundwork for the smooth transition from traditional modes of learning towards e-learning delivery, and the implementation of a more robust technological infrastructure to support all the technical aspects necessary to launch and sustain e-learning.

Introduction and Literature Review

Educational processes have undergone many of changes during the last century. From print learning materials, to interactive CBT, Web-based e-learning, ongoing technological changes have been reflected in the evolving role of teachers and students in the learning equation. Technological changes – particularly Web-based e-learning technologies – have resulted in new curriculum design and teaching strategies, new and emerging organizational structures, and it has even transformed learning itself. McKenzie (1998)¹ said that technology would transform the act of teaching, whether or not teachers or students are ready for this inevitable change. According to McKenzie, when faced with new technology, students and/ or teachers would likely adopt one of two approaches: they would either embrace it or they would dismiss it. In other words, teachers and students will either learn how to use new technology, or they would ignore it – the later of which would put them at disadvantage compared to their more technologically literate peers. Ballard opined that technology is reshaping

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today's school systems and educational institutions by offering students new ways of seeing and learning; giving teachers new ways of teaching and imparting knowledge; and administrators new ways of organizing our educational system (Ballard, 2000).²

Innovations in teaching and learning have emerged, and educators are in the midst of becoming more adept at using new educational technologies. This fact is reflected in our changing language. Terms such as "open education," "distance education," "distance learning," "virtual learning," "remote learning," "online learning," and "e-learning" are now part of educators' everyday lexicon. Use of such terminology helps to define and shape the creative innovations taking place. However, many overlaps can be seen within these terms. Urdan and Weggen (2000)³, for instance, found that that online learning constitutes just one part of e-learning; and further define it as learning processes that take place via the Internet and in blended classroom contexts. They specified that e-learning covers a wide spectrum of applications and processes, including virtual classrooms and digital collaboration.

To explain what "exactly" is taking place, terms are helpful. However, terms are still being defined. The term "e-learning," for example, has generated many different definitions according to Carry and Willis (2001)⁴, who broadly define e-learning as any form of learning that utilizes a computer or technological network for delivery, interaction, or facilitation. Becker (1991)⁵ opines that e-learning covers a wider set of applications and processes, which include Web-based learning and virtual classrooms. Hall and Snider (2000)⁶ define e-learning as the process of learning via computers over the Internet and Intranets. For the purposes of this article, the author will say that e-learning can be defined as "acquisition and use of information distributed and perceived by technological means."

Definitions are important, and when one adds the ability of the Internet to bridge time and space, e-learning truly has the ability to re-invent itself again and again, particularly when it is applied in different cultural contexts. Digital educational delivery knows few, if any, boundaries. e-Learning has the ability to bridge cultures and open doors to new ways of thinking.

Cultural implications aside, there are several cogent reasons for adopting and implementing e-learning into an educational system:

1. **The growth of information technology:** e-Learning has become an ideal delivery vehicle for education and learning
2. **It is information rich:** e-Learning offers both teachers and learners access to any where, any time "information rich" resources
3. **Alternative learning strategy:** e-Learning can reach those previously denied access (e.g., students who are interested in acquiring in knowledge without formal education.)
4. **Blended learning:** e-Learning can augment traditional classroom offerings, thereby freeing up valuable resources and expanding the offering to greater numbers of campus-based students (Spender, 2001).

In light of e-learning's flexibility, Spender (2001)⁷ asserts that e-learning is the next generation of learning. However, Spender also cautions that the shelf-life of knowledge is usually very short in today's globalizing economy; therefore, one way students can meet the demands of their continuous learning curve, is to engage in e-learning a time and place convenient to them. e-Learning thus derives numerous benefits to meet the objectives of continuous learning. It:

- Offers links to useful learning materials
- Provides online materials and self-assessments to guide students' learning processes
- Increases access to content-rich learning materials
- Facilitates interest via increased interaction
- Provides immediate feedback and positive reinforcement
- Creates a flexible learning environment conducive to students' busy lifestyles and employment schedules
- Provides ongoing support for teachers
- Creates balance between different sources of information
- Facilitates dialog between and among teachers and students (Haugland and Wright, 1997).⁸

The literature examines the importance and benefits of e-learning as an educational tool. The literature also shows that educators are concerned with increasing student access to educational resources and communication processes (Hartly and Robertson, 2001)⁹. Nonetheless, when introducing e-learning into a new context, "buy-in" from teachers is essential. Put simply, even though there is a recognized need for increased access, e-learning technologies cannot be used effectively without the full support of those who will use them (e.g., faculty and staff). For example, teachers must transition away from traditional methods of teaching, towards a more constructivist pedagogy that will enable students to derive full benefit from e-learning (O'Donnell, 1991)¹⁰. The literature also shows that teachers who hold "less traditional" views on education, are more likely to perceive e-learning a viable approach in their everyday teaching activities (Becker, 1991; Hannafin and Savenye, 1993; Kook, 1997; O'Donnell, 1991; Salmon, 2000) and that in general, teachers tend to hold positive attitudes towards e-learning (Kleiman, 2000; Minton, 2000; Teather, 2000)¹¹.

But the process is more complicated than simply saying teachers are "open to e-learning." According to Mason (2001)¹², comprehensive staff training initiatives are necessary to allow those involved to become proficient in the technical and educational aspects of e-learning. Training initiatives must integrate "learning about educational design" with hands-on "learning how to use the technological devices and tools" to teach. Teachers therefore must be encouraged to become active participants in the design and implementation of e-learning processes, instead of having it imposed upon them. Involving teachers in the design and implementation phases compels them to become proactively involved, and more importantly, supportive of e-learning initiatives at the institutional level (Mason, 2001).

For e-learning to take root and grow, a robust technical infrastructure must also be in place to support all the technical aspects necessary for the production of course materials, delivery of e-learning courses, and teacher and student support (Mason, 2001).

Implementing e-learning in an institutional setting therefore requires comprehensive strategic planning. Davidson and Schofield (1997)¹³ stated that changing the educational offering through technology requires employing effective implementation plans and strategies. For example, sound e-learning course planning requires attention to developing course contents that include sound pedagogical underpinnings, and are suited for e-learning delivery (Biddara and Dias, 2003). Attention to various sub-strategies to facilitate the adoption of e-learning is also required to ensure seamless integration of e-learning across an organization. Planning is clearly a complex process, one which should ideally be institution-specific (Davidson and Schofield, 1997).

At engineering colleges adoption of an e-learning model should not happen quickly, nor should it be based on an inflexible transition process. Instead, the transition to e-learning at the engineering colleges should be flexible, gradual, and integrate with existing structures, processes and organizational cultures. According to Jamlan, “buy-in” among those individuals needed to bring about such transition at the engineering colleges is essential. It therefore is best to combine old processes with new (e.g., educational strategies, etc.), and by substituting the old with the new, until a final “desired” model of e-learning emerges that “fits” the educational and cultural contexts unique to the engineering colleges. Jamlan also asserts that to successfully implement e-learning, a supportive technological infrastructure must be in place, and it must be resourced with the human expertise necessary to design curriculum, offer student support, teach effectively, etc (Jamlan, 2000)¹⁴.

Collaboration with other institutions engaged in similar e-learning initiatives is also desirable to lower costs of introducing such a system. Laurillard (2002)¹⁵ concluded that collaboration with external organizations is a “must” for educational institutions contemplating introducing e-learning into its educational offerings. McKenzie (1998) furthers Laurillard’s work, contending that the implementation of e-learning educational offerings and supportive infrastructure must not be rolled out piecemeal, but instead be an entrenched element of an overall educational budget in order realize economies of scale (i.e., leveraging work and resources to lower human resource costs and expenditures on space, resources, and equipment).

Implementation of e-learning also requires that quality assurance procedures be put in place, including regular measurements such as surveys to determine if students do, in fact, receive adequate access to technology and are recipients of effective e-learning (Magnusson and Svensson, 2000)¹⁶.

The Case for the Engineering colleges of Karnataka.

It is clear from the brief literature review above, that “buy-in” from faculty and students – those who will be using the system – is central to its long-term success. This paper presents the results of a survey undertaken to gauge how the faculty members and students perceive e-learning. Results of this investigation are anticipated to add engineering colleges of Karnataka perspective to current literature on this subject. It is suggested that

other educational institutions in the region, and throughout the country, might also benefit from the findings of this survey.

Background

Engineering colleges of Karnataka, like other countries around the world, is exposed to the Internet and its various technical applications. As such, engineering colleges of Karnataka are seeking to maximize their potential in all sectors of its economy, from government to the private sector. It is easy to access the Internet in engineering colleges of Karnataka, and its popularity has now grown beyond that of a plaything or luxury, to that of necessity.

There have been few attempts over the past decade to utilize and integrate the Internet into engineering colleges of Karnataka educational system, beginning with the introduction of computer literacy courses. First emphasis was placed on courses examining the history of computers, its components, and keyboarding skills. Many Teachers attended workshops to learn how to use computers on a personal level and in their teaching activities.

Currently, attempts are being made by VTU(Visveshvaraih Technological University) to teach some aspects of curriculum online, delivered via network. To date, however, there has been no integrated attempt to convert courses for online delivery in a coherent manner. Nonetheless, efforts are being made by VTU Vice-Chancellor to deploy an integrated infrastructure and processes dedicated to e-learning. In the meantime, ad hoc attempts are underway in some colleges to deliver some didactic materials online to targeted groups of students. But these ad hoc attempts are piecemeal and exploratory, and will eventually be superceded by a more comprehensive system. However, certain technological – and more importantly cultural conditions – must be accessed and addressed before a coherent e-learning strategy in engineering colleges of Karnataka can be successfully introduced.

Purpose

It was felt that by undertaking a detailed study, hidden issues could be brought to light and addressed to ensure these issues do not impede the adoption of e-learning at the Engineering colleges of Karnataka.. By identifying both the obstacles and the positive attitudes held by faculty members and students, the results of this study could form the basis for a College-wide e-learning implementation plan. The results could also be used to build future efforts aimed at implementing e-learning not only in the Engineering colleges of Bangalore , but in other Colleges throughout Karnataka. It is anticipated that with the implementation of e-learning at the Engineering colleges, the role of faculty members will be transformed from that of traditional dispensers of knowledge (sage on the stage), to learning facilitators (student-centric model). It is also anticipated that by involving staff in building a e-learning modality unique to Engineering colleges of Karnataka, this “collaborative approach” would greatly improve faculty opinion towards e-learning, and give rise to grassroots level confidence building as faculty work hands-on to integrate e-learning into their current course mix and teaching strategies.

Objectives of the Study.

The present study was undertaken with the objectives of seeking answers to following questions.

1. What are the opinions of the faculty members and students at the Engineering colleges of Bangalore towards introducing e-learning in their teaching Methodology?
2. What are the basic problems associated with present system of Learning ?.
3. What is the extent of readiness the instructors' and the students' have on adopting E- learning?.
4. What are their preferred Teaching/ Learning modules in the minds of the Instructors and the Students ?.
5. What are the perception of the instructors' and the students' on benefits and limitations of E- learning.

Methodology

The data for the present study was collected from secondary as well as the primary sources. The primary data were collected through formal interaction with leading e-learning content providers and the heads of premier engineering institutions in Bangalore. The study being mainly based on the cross perceptions of the instructors and the students, data was also collected through a well-structured questionnaire from 120 instructors (faculty) and 200 students from 10 selected engineering colleges in Bangalore. Enough care was taken by the researchers to select a representative sample. The details of the sample selected to conduct the cross-perception analysis is as shown in table-1. The tools used for data analysis were simple mean and percentages.

Table-1: Details of the Sample Selected for the Study

Instructor	Students (Lecturer)
<p>I. Designation</p> <p>Professors- 16.66%</p> <p>Associate Prof./Asst. Prof.- 22.5%</p> <p>Lecturers- 45%</p> <p>Teaching assistants- 15.83%</p> <p>II. Stream</p> <p>Information science- 22.5%</p> <p>Computer science- 23.33%</p> <p>Electronics- 18.33%</p> <p>Mechanical- 15%</p> <p>Industrial Production- 13.33%</p> <p>Civil- 7.51%</p> <p>III. Experience using computers</p> <p>Less than one year- 5.83%</p> <p>One to three years- 16.66%</p> <p>Four to Six years- 39.16%</p> <p>Seven to 10 years- 25.83%</p> <p>Above 10 years- 12.50%</p> <p>IV. Internet skills</p> <p>Beginners- 10%</p> <p>Intermediate- 45%</p> <p>I. Experienced- 36.66%</p> <p>Experts- 8.33%</p>	<p>I. Studying in</p> <p>First year- 12%</p> <p>Second Year- 25%</p> <p>Third year- 29%</p> <p>Fourth year-34%</p> <p>II. Stream</p> <p>Information science-20%</p> <p>Computer science- 19%</p> <p>Electronics- 24%</p> <p>Mechanical- 19%</p> <p>Industrial Production-12%</p> <p>Civil- 6%</p> <p>III. Experience using computers</p> <p>Less than one year- 14.5%</p> <p>One to three years- 61%</p> <p>Four to Six years- 20%</p> <p>Seven to 10 years-5.5%</p> <p>Above 10 years- 0</p> <p>IV. Internet skills</p> <p>Beginners-7%</p> <p>Intermediate- 52%</p> <p>Experienced- 25%</p> <p>Experts- 16%</p>

Findings :

I. Problems associated with the traditional learning system

Based on the formal interaction with the leading content providers and the heads of the Engineering Institutions in Bangalore the following problems were found to be associated with the present system of learning:

- The syllabus that is being taught is not revised/updated frequently that is it not changed according to the trend or requirements of the present market. Old and outdated subjects are still been taught under various courses for the reason being that it is practically difficult to update the subjects as per the requirements in the traditional education system.
- There is less interaction in traditional teaching system, as the number of students is more and with only one instructor for a course, it is very difficult to pay attention to each and every student in the class.
- Few students cannot speak out in the class as they hesitate to give their views in front of their colleagues, as he/she may be scared of criticism.
- Some subjects which have lots of graphics to be displayed such as machine drawing, computer networks, engineering drawing etc., consumes a considerable amount of time to sketch a design of a machine or a network, which otherwise could be utilized efficiently in knowing more about the subject.
- Students' dependency on the Instructor is more which hampers self-learning.
- Tendency for discrimination among the students is high in case of traditional classroom teaching.

II. Extent of Readiness among the Instructors and the Students for E-Learning

It can be observed from the data shown in table-2 that a very high proportion of Instructors (90%) and Students (86%) are ready to go for E-Learning mode of education and a very small portion of the sample are not willing to go for E-Learning or are indecisive on their readiness. The proportion of the sample those are not willing to go for E-learning or are indecisive at present shared that E-learning cannot substitute a teacher,

Table-2: Extent of Readiness Towards E-Learning

Readiness	Instructors	Students
Yes	90%	86%
No	08%	09%
Can't say	02%	05%

as it provides no physical face-to-face interaction between student and teacher, no nonverbal expressions are shared and there still exists a certain amount of unawareness on E-learning.

III. Preferred Teaching modules by the Instructors and the Students

It can be observed from the data shown in the Table-3a that Classroom lecture with electronic support systems (viz., TV, OHP, PPT etc.) is the most preferred teaching/learning module in the present context for both the groups followed by Classroom lecture and web (45.5%) in case of students and the traditional Classroom lecture (20.83) for Instructors. It can be further examined that even though a large proportion of the sample respondents are ready to go for E-Learning mode of education as revealed earlier, their present preferences are

conflicting. This may be because of the basic reason that the sample selected for the present study has not undergone any E-learning course and are not acquainted with the E-learning environment.

Table-3a : Preferred Teaching/ Learning Modules (General)

Delivery Mode Preferred	Instructors	Students
Classroom lecture	20.83%	35%
Classroom lecture with electronic support systems (viz., TV, OHP, PPT etc.)	71.66%	53.5%
Classroom lecture and web based instructions	13.33%	45.5%
Web based instructions	4.16% 3.5%	
Other	-	-

Note: Multiple responses allowed

A further analysis was made by the researchers to know the content of the E-Learning module (Web content) preferred by the instructors and the students if courses are offered online. The data from Table-3b reveals that the students expect every aspect of learning to be online whether it is text and instructions, online discussion (two way), Self-assessment activities or Audio/video content. Whereas, the instructors feel that there should be more scope for Online Discussions (63.33%) followed by audio/video content (45%). Instructors feel that as engineering courses demand a lot of interaction between the two groups so that there is conceptual clarity they would like to avail every possible opportunity to be with the students and therefore majority of the respondents must have opted for the above two options.

Table-3b: Teaching Strategies that would be preferred in E-learning

Web Content	Instructors	Students
Online text and instructions	24.16%	78%
Online discussion (two way)	63.33%	84%
Self assessment activities	10%	70%
Audio/video content	45%	81%
Other	3.33%	5%

IV. Instructor and Student Perceptions on various aspects of E-Learning

To study the perception of the Instructors and the Students five- point Likert scaling technique was employed. The responses collected were analyzed using mean scores, based on which the perception ranks were obtained as shown in Table-4a and Table-4b. **Instructor and Student Perceptions on Benefits of E-Learning:** Table-4a reveals that both the Instructors and students perceive E-Learning to be a beneficial medium for easy understanding and execution of the course, which also adds to the enhancement of technical knowledge and personal effectiveness. Further we can observe that the mean scores and the ranks obtained for majority of the factors are different for Instructors and the students (the difference being small), which implies that there exists a very little gap in the perceptions of the two groups

Benefits of E-learning	Instructor		Student	
	Mean score	Mean rank	Mean score	Mean rank
Making students understand by visual aid.	4.04	I	4.06	III
Convenience to supply course material to students.	3.96	II	3.5	IX
Flexibility (e.g. Access the web anytime, anyplace)	3.95	III	4.12	I
Linking course information to external resources (hyperlinks)	3.94	IV	3.74	VII
Communicating with a larger audience/students	3.9	V	3.88	V
Contributions can be saved for future references	3.76	VII	3.92	IV
Learning from others contributions	3.74	VII	3.63	VIII
Guiding students to become independent Learners	3.6	VIII	3.81	VI
Improving the use & understanding computer technology.	3.57	IX	4.12	II
Enhancing students to instructor communication.	3.34	X	3.39	X

Table-4b: Perceptions of the Instructor and student on Problems of E-learning

Problems of E-Learning	Mean Score	Rank	Mean Score	Rank
Voluminous Text based Learning Materials	2.95	VI	2.86	VI
Not enough content for good understanding	3.59	III	2.99	V
Lesser Interaction between the two groups	3.83	II	3.49	IV
Lack of User Flexibility	2.99	V	3.81	III
Isolated environment	3.2	IV	3.88	II
Infrastructure constraints (like bandwidth, Computer facility, Internet connection etc.)	3.98	I	4.12	I

Instructor and Student Perceptions on Problems of E-Learning: Table-4b reveals that both the groups perceive the infrastructure constraint as the major problem with E-Learning. Further it can be inferred that the Instructors are more concerned with the interaction between the groups and sufficiency of the data in understanding the concepts whereas the students perceive that the major problem with e learning is the isolated environment it tends to create and the lack of user flexibility.

Implications of the Study

Based on the findings presented above, it can be clearly stated that E-Learning is a revolution that is presently emerging. It seems sense that rather replacing the traditional classroom teaching E-Learning should be used as a complementary tool. Our study implies that both the Instructors and Students have a positive attitude towards E-Learning and are interested in virtual education but are not willing to impart/enroll in full-fledged online education programs as they feel that only a part of course and not entire course should be online and the most preferred mode of delivering the course would be classroom lecture with technical support systems. Further it implies that there exists a very little perception gap between the Instructors and the Students on various aspects of E-learning, which is definitely a good sign for the E-learning revolution. Both the groups equally understand and perceive the benefits and the challenges facing the e-learning education system.

Conclusion

E-Learning in its present form has been an expensive experiment but with the increased use of networked computers and development in the field of telecommunications the internet technology have been widely accepted as the medium for transferring information, knowledge and skills which has enabled E-Learning geared itself in the knowledge era. Consistent development in the field of telecommunication is surely going to increase the flow of multimedia materials, streaming audio and video at reduced costs. At the end it can be said that E-Learning is going to be a very important component of education at all the levels in our society.

References:

- Ballard, R. (2000). *Networking K-12 Education*. Retrieved April 25, 2004: <http://www.abegs.org/fntok/htm>
- Becker, H. (1991). When Powerful Tools Meet Conventional Beliefs and Institutional Constraints. *Computing Teacher*, 18(8), 6 – 9.
- Biddara, J., and Dias, A. *International Review of Research in Open and Distance Learning*, 4(2). Retrieve April 22, 2004 from: <http://www.irrodl.org/content/v4.2/bidarra-dias.html>
- Carry, D., and Willis, J. (2001). Technology and Teacher Education. *Association of Advancement of Computing in Education*. USA.
- Fahy, P. J. (1999). Reflections on the Productivity Paradox and Distance Education Technology. *Journal of Distance Education* 13(2). Retrieved July 14, 2004 from: <http://cade.icaap.org/vol13.2/fahy.html>
- Fournier, B. (2002) e-learning in Europe. *Noir Sur Blanc*, 3(1), 1-24.
- GE Source World Guide (2004). Bahrain Demographics. Retrieve July 14, 2004 from: http://www.gesource.ac.uk/worldguide/html/821_people.html
- Hauben, M. (2002). History of ARPANET: The “Open” History of the ARPANET/Internet. Retrieved November 19, 2003, from: <http://www.dei.isep.ipp.pt/docs/arpa.html>
- Haugland, S., and Wright, J. (1997). *Young Children and Technology: A World of Discovery*. Boston: Allyn and Bacon.
- Hall, B., and Snider, A. (2000). Glossary: The Hottest Buzz Word in the Industry. *Learning*, 44(4), 85-104.
- Hannafin, R., and Savenye, S. (1993). Technology in the Classroom: The Teachers’ New Role and Resistance to it. *Educational Technology*, 33(6), 26 – 31.
- Hara, N., and Kling, R. (2000). Students’ Distress with a Web-based Distance Education Course: An Ethnographic Study of Participants’ Experiences. *Information, Communication and Society* 3(4), 557 – 579.
- Hartly, J., and Robertson, D. (2001). e-learning in Schools. *Times Educational Supplement*, 12(5), 16 – 20.
- Jamlan, M. (2002). Distance Learning Between Current Practice and Future Perspectives. *Journal of Educational and Psychological Sciences*, 3(1), 138 – 162.

- Kleiman, G. (2000). Myths and Realities About technology in K-12 Schools. LNT Perspectives. *The Online Journal of the Leadership and the New Technologies Community*. Retrieved April 25, 2004 from: <http://www.edc.org/LNT/NewsIssue14/feature1.htm>
- Kook, J. (1997). Computers and Communication Networks in Educational Settings in the Twenty First Century: Preparation for Educator's New Roles. *Educational Technology*, 37(2), 56 – 60.
- Laurillard, D. (2002). *Rethinking Elementary Teaching*. London: Routledge.
- Magnusson, M., and Svensson, L. (2000). Technology and Pedagogy in e-learning: A Case Study of Attitudes Among Teachers. *Proceedings of the First International Conference on Knowledge Management*. 1 – 14.
- Mason, M. (2001). *Globalising Education: Trend and Applications*. London: Routledge.
- McKenzie, J. (1998). The Information Literate School Community. From Now On. *The Educational Technology Journal*, 8(1), 22 – 27.
- Minton, M. (2000). Is Your Organization Ready for e-learning? *Communication Project Magazine*, 15(3), 1 – 8.
- Nitko, A. J. (1996). *Educational Assessment of Students*. Second Edition. New Jersey: Merrill, an Imprint of Prentice Hall.
- O'Donnell, J. (1991). *Teacher Perception of Their e-learning Needs to Integrate e-learning into Classroom Instruction*. Unpublished doctoral dissertation, University of Southern California, Los Angeles.
- Salmon, G. (2000). *e-Moderating the Key to Teaching and Learning Online*. London: Clays Ltd.
- Schofield, J. (1997). *Internet, Classroom Cultures and Changes*. Cambridge, MA: Cambridge University.
- Spender, D. (2001). e-learning: are Schools Prepared? *Proceedings of the Annual Washington conference on e-learning in A Borderless Market*. 21 – 33.
- Teather, D. (2000). How to Learn the Hardware Way. *The Guardian*, 23(3), 77 – 79
- Urdan, T., and Weggen, C. (2000). Corporate e-learning Exploring. A New Frontier. *Computer News*, 53(11), 35 – 36.