# Students' Attitude Towards e-Learning : A Case Study

*Gunmala Suri , Sneha Sharma*

## Abstract:

*Technological advancement has led to important changes in the way education is being imparted. e-learning symbolizes an important, rising trend in the application of technology to assist student learning. It is one of the tools that has emerged from information technology and has been integrated in many universities. The study presented here focuses on the relationship between discipline of student and their response and attitude towards e-learning. In light of literature it is recognized that discipline of students does play a role in understanding the satisfaction and experience of students in the education environment. The effect of students discipline on their attitude towards computer technology and e-learning are being analyzed in this paper. Computer and e-learning attitude scale was constructed and validated and a questionnaire was further developed for collection of data. In this study 477 students enrolled in various courses across 6 major discipline in Panjab University Chandigarh, India were analyzed. To measure the attitude of students a new scale on computer and e-learning attitude (SCAELA) was developed and validated. The results of ANOVA for analyzing the impact of disciplines of student on Scale on computer and e-learning attitude showed that a significant positive relationship between discipline of student and factors of scale on computer & e-learning attitude. The results show that a significant relationship exists between discipline of student and the factors of scale on computer and e-learning attitude which falls in line with previous researches which lay emphasis on the role of department in learning and satisfaction level of students. Chi square test of association disclosed that there is no association between discipline of student and response towards provision for e-learning. A moderate association between discipline of student and weekly internet usage is also inferred. The research here thus puts forward that discipline does play a significant role in building the attitude towards computer technology and e-learning. This can be used as an input for framing the e-learning platform or tool for implementing virtual learning environment in an educational setting.*

**Keywords:** *e-learning attitude, department/discipline of student, computer attitude, internet usage.*

## Introduction

E-learning is the deliberate use of networked information and technology in teaching and learning. e-learning is usually defined as a type of learning facilitated ICT for improving the quality of teaching and learning. A number of other terms such as virtual learning, online learning, network and web-based learning, distributed learning are also used. Primarily, they all refer to educational processes that make use of information and communications technology. e-learning utilizes interactive technologies and communication systems to develop better learning experience. It has the potential to transform the way teaching and learning is done across the board. The changes in the field of Information and Communication Technologies (ICT) have revolutionized the business as well as the educational sector across the globe. Teaching and learning strategies have seen a radical revision with the sole aim of providing better service to the learners through the intensive use of the technology. Universities and corporations have expanded their use of e-learning in order to provide better and more cost effective ways of delivering instruction and training. The previous researchers have analyzed the effect of demographic variables such as age and gender on e-learning attitude of students. It also suggests the dependence of the demographic variable department/ background of student on internet usage and activities on computer. But not much research has been done to analyze the effect of department or discipline of student as a factor affecting attitude towards computer and e-learning. Literature suggests that department/discipline does play a key role in building attitudes of students. The satisfaction and learning is also affected by the discipline/department of student. This research builds an approach to examine individual's attitude toward the computer technology and e-learning based on the

discipline/department in which they are studying thus adding a new dimension to the literature.

## Statement of problem

Literature suggests no answer to the impact of department/ discipline of a student on their attitude towards e-learning.

## Objectives of the study

1. To analyze the effect of discipline of student on Scale on computer and e-learning attitude (SCAELA) of students.
2. To analyze the effect of discipline of student on students response towards provision of e-learning.
3. To analyze the impact of discipline of student on weekly internet usage.

## Hypothesis of Study

H1: There is no significant difference on computer and e-learning attitude scale on basis of discipline of student.

H2: There is no association between discipline of student and weekly internet usage.

H3: There is no association between discipline of student and response towards provision for e-learning.

## Period of Study

The study was carried out from July 2012 to Oct 2012 for collection of data and analysis.

## Research Methodology

### Participants

The study used a survey approach for examining computer and e-learning attitudes of the students. The target population for the research was the students studying in the Panjab

University campus. A total of 500 questionnaires were distributed among various discipline of the university. It included Arts, Science, Business Management, Engineering and Law. Ten departments were covered across the above mentioned five discipline.

## Measurement
Demographic profile of the respondents such as sex, age, discipline of student and response towards provision of e-learning were covered in first section. A scale on computer & e-learning attitude (SCAELA) was constructed and validated in order to draw a relationship between e-learning attitude and attitude towards computer. Computer Attitude Scale (CAS) [19] by Loyd and Gressard„s (1984) & „The Attitude towards Computer Instrument (ATCI)[20], developed by Shaft et al. (2004) were referred and modified for the purpose of current study. The scale on computer & e-learning attitude contained seventeen questions that covered variables on attitude and feelings towards computer/computer technology as well as e-learning.

## Data Analysis
Overview of data gathered
A total of 500 questionnaires were distributed across five discipline of the University. 477 questionnaires were received back and retained for the further analysis. Thus the response rate was over 95%. SPSS and Microsoft Excel were used for analysing the data. Statistical approach of one-way ANOVA and Chi-square test of Association was used for testing the hypothesis.

The details regarding the demographic characteristics (Table I), i.e. gender, age, discipline of study are discussed; the sample size consisted of sample units from all the major discipline of Panjab University. The gender distribution in the sample survey was not biased with 45.1 % males and 54.7 % female respondents. The discipline under study had 36.7 % representation from business management and 19.5 % from Arts followed by 15.5% and 15.1% from Law and Engineering technology. Representation from science discipline was 13.2 %. The students' response towards provision of e-learning when compared with the discipline to which the student belongs shows that students from all discipline are in favor of provision for e-learning facilities (Table II).

### Table I: Demographic statistics

| Descriptive Statistics | No of Respondents | Percentage |
|---|---|---|
| Discipline/Department | | |
| Arts | 93 | 19.5 |
| Business Management | 175 | 36.7 |
| Engineering Technology | 72 | 15.1 |
| Law | 74 | 15.5 |
| Science | 63 | 13.2 |
| Gender * | | |
| Male | 215 | 45.1 |
| Female | 261 | 54.7 |
| Age* | | |
| Less than 20 | 160 | 33.5 |
| 20-26 years | 299 | 62.7 |
| 26-30 years | 8 | 1.7 |
| Above 30 years | 4 | 0.8 |

*N≠477 due to missing values

### Table II: Discipline wise response towards provision for E-learning

| Department/Discipline | Yes | No |
|---|---|---|
| Arts | 85 | 6 |
| Business Management | 168 | 6 |
| Engineering | 61 | 11 |
| Law | 73 | 1 |
| Science | 54 | 8 |

The scale that was constructed for measurement of computer and e-learning attitude was validated and further factor analyzed. Factor analysis reduced the 17 variables into four factors after PCA with varimax rotation (Table III). The statement which had the maximum factor loadings under a factor were grouped together. The four factors were named as Sentiments towards computer/ computer technology, Attitude towards e-learning, Perceived usage of computers and Physical presence of teacher. 58 % variance was explained by these four factors which is near to 60 % i.e. the expected value.

### Table III: Rotated Component Matrix[a]

| | Component | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| I feel at ease learning about computer technology | **.715** | .218 | .062 | .124 |
| I am the type to do well with computer technology | **.790** | .138 | .159 | -.069 |
| The thought of using computers is not frightening | **.777** | .124 | .025 | .049 |
| I do not feel threatened by the impact of computer technology | **.759** | .089 | .017 | -.112 |
| I feel comfortable about my ability to work with computer technology | **.716** | .112 | .244 | -.036 |
| I like working with computers | **.629** | .244 | .341 | .091 |
| Once I get on the computer I find it hard to stop | .141 | .151 | **.562** | .266 |
| I would choose to use a computer in my spare time | .083 | .064 | **.773** | .220 |
| I prefer to use a computer to write my assignments | .167 | .175 | **.699** | -.238 |
| I would choose to use computers in my teaching | .254 | .427 | **.462** | -.186 |
| e-learning is a suitable alternative to the pen/paper based system | .161 | **.616** | .327 | -.353 |
| With e-Learning my course will be more enjoyable | .269 | **.695** | .227 | -.143 |
| Class notes of any lectures will be easily accessible even if I miss one | .108 | **.591** | -.052 | .330 |
| With e-learning I would interact more with other students | .135 | **.759** | .094 | .117 |
| Studying through online medium will help me retain more | .172 | **.757** | .161 | -.071 |
| Physical presence of teacher is extremely essential for learning the course | .002 | .010 | .145 | **.809** |
| More topics can be covered less time by use of e-learning as compared to conventional medium of blackboard and notes. | .079 | **.683** | .087 | .034 |

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 6 iterations

The fourth factor due to insignificant correlation with the other three was dropped. Cronbach"s

The fourth factor due to insignificant correlation with the other three was dropped. Cronbach's alpha value was 0.857(>0.7) which shows that the scale has good internal validity thus highly reliable. The three factors were highly reliable with Cronbach's alpha near to expected range (Table IV).

### Table IV: Cronbach's alpha

| Factor | Cronbach's Alpha | No of items |
|---|---|---|
| Scale on computer & e-learning attitude | .857 | 17 |
| Sentiments towards computer/computer technology | .854 | 6 |
| Attitude and feelings towards e-learning | .803 | 6 |
| Perceived usage of computers | .619 | 4 |

To analyze the impact of discipline (department) of student on the Scale on computer and e-learning attitude

ANOVA was used. For testing the association between discipline of student and response towards provision for e-learning and weekly internet usage Chi square test of association was used.

## Results and Discussion

The results of ANOVA for fulfilling objective-1 i.e. analyzing the impact of discipline of student on Scale on computer and e-learning attitude showed that a significant positive relationship between discipline of student and factors of scale on computer & e-learning attitude. The test of homogeneity was run for three factors on scale on computer and e-learning attitude the p-values depicted equal group variances (p = 0.711, 0.176, 0.137 > 0.05). The results of ANOVA (Table V) revealed that factor on attitude towards e-learning at p<0.05 level [F (4, 470) = 3.815, p = 0.005], for factor on sentiments towards computer/computer technology [F (4, 470) = 9.601, p = 0.000] and perceived usage of computers [F (4, 469) = 4.866 p = 0.001].

**Table V: ANOVA**

|  |  | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Attitude towards e-learning | Between Groups | 8.476 | 4 | 2.119 | 3.815 | .005 |
|  | Within Groups | 261.068 | 470 | .555 |  |  |
|  | Total | 269.544 | 474 |  |  |  |
| Sentiments towards computer/ computer technology | Between Groups | 21.639 | 4 | 5.410 | 9.601 | .000 |
|  | Within Groups | 264.825 | 470 | .563 |  |  |
|  | Total | 286.464 | 474 |  |  |  |
| Perceived usage of computers | Between Groups | 11.343 | 4 | 2.836 | 4.866 | .001 |
|  | Within Groups | 273.339 | 469 | .583 |  |  |
|  | Total | 284.682 | 473 |  |  |  |

The p-value for attitude towards e-learning, sentiments towards computer/computer technology, perceived usage of computers is 0.005, 0.000, and 0.001 respectively is less than .05 thus the null hypothesis are rejected. The results show that a significant relationship exists between discipline of student and the factors of scale on computer and e-learning attitude which falls in line with previous researches which lay emphasis on the role of discipline (department) in learning and satisfaction level of students. The radar diagram (Figure1) further depicts the overall attitude of students across the discipline under study. It clearly depicts that students from business management and law were having a high positive attitude as compared to discipline of science, engineering and arts.
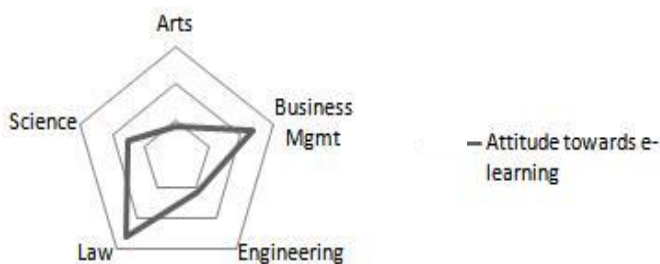


To achieve objective-2, chi square test of association was run to see if there is any association between discipline of student and response towards provision for e-learning. The output stated the Pearson chi-squared statistic as 18.038. The p-value is .001 which is less than 0.05 which means that we can reject the null hypothesis of no association between discipline of student and response towards provision for e-learning (Table VI).

**Table VI: Chi-Square Tests**

|  | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 18.038ᵃ | 4 | .001 |
| Likelihood Ratio | 17.966 | 4 | .001 |
| Linear-by-Linear Association | 1.260 | 1 | .262 |
| N of Valid Cases | 474 |  |  |

**Table VII: Symmetric Measures**

|  |  | Value | Approx. Sig. |
|---|---|---|---|
| Nominal by Nominal | Phi | .195 | .001 |
|  | Cramer's V | .195 | .001 |
| N of Valid Cases |  | 474 |  |

Phi and Cramer's V though significant have the statistic value .195 which shows a weak association between discipline of student and response towards provision for e-learning (Table VII). For examining the effect of discipline of student on their weekly internet usage chi square test of association was used for attaining objective three. The Pearson chi-squared statistic came out to be 90.872. The p-value is .000 which is less than 0.05 which means the null hypothesis of no association between discipline of student and weekly internet usage is rejected (Table VIII). Phi and Cramer's V though significant have the statistic value .438 and .253 which shows a weak to moderate association (Table IX). Thus a moderate association is observed between discipline of student and weekly internet usage by student.

**Table VIII :Chi-Square Tests**

|  | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Likelihood Ratio | 92.709 | 12 | .000 |
| N of Valid Cases | 474 |  |  |

**Table IX: Symmetric Measures**

|  | Value | Approx. Sig. |
|---|---|---|
| Cramer's V | .253 | .000 |
| N of Valid Cases | 474 |  |

The radar diagram further shows that weekly internet usage is maximum for the business management discipline in the current study (Figure2).
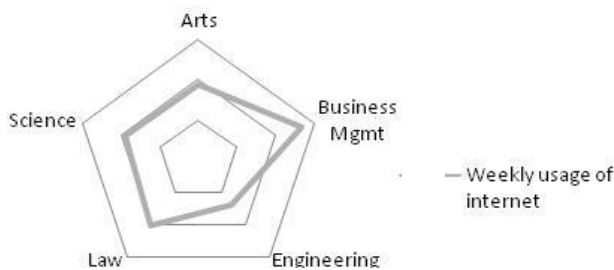
**Figure 2: Radar graph for discipline-wise weekly usage of internet**

## Literature Review

The term e-learning can be used to explain any electronic learning material from CDROMS on stand-alone PCs to intranet/internet networked systems with downloadable and interactive material [1] [2]. Adopting and implementing e-learning into an educational system can be categorised into three reasons; first, the growth of information technology has made e-learning an ideal delivery vehicle for education and learning. Second, it is information rich as e-learning allows access to "information rich" resources by both teachers and learners anywhere, anytime. Third, it is an alternative learning strategy it can get in touch with those who were previously denied access (e.g. students with physical disabilities) and further the blended learning approach proposes that e-learning can supplement traditional classroom off thus freeing up valuable resources and expanding the offering to greater numbers students [3]. e-learning concept is existent since decades and is one of the most significant recent developments in the Information Systems (IS) industry [4]. e-learning can be defined as a wide set of application and processes allied to training and learning that include computer based learning, online learning, virtual classrooms and digital collaboration [5]. These services can be delivered by a variety of electronic media, including the intranet, internet, interactive TV and satellite. Research on the impact of college on students suggests that sub-environments within the same institution can have very different influences on students [6]. Overall institutional culture is not significantly associated with student outcomes but that major departments are important in the study of the impact of college on students. Faculty continues to be one of the important factors that influence the students' experiences in college, and a debate continues over the impact of the opposing roles of faculty work [7]. Researchers have put forward that the research and teaching are complementary endeavours and that faculty who do research are more likely to produce satisfied, well-educated students [8], [9]. Researchers have also shown the impact that departmental culture and climate have on student learning and satisfaction [10]. The impact of academic departments on students' satisfaction and development has been researched. The characteristics of departments such as faculty contact with students, research emphasis, and proportion of female undergraduates had a significant impact on satisfaction with education in the major and the perceived impact that college had on skill development [12]. Research for demographic factors gender suggests that female students accept ICT use more than their male counterparts [13]. Contrary to

this another study demonstrated that male students have more positive e-learning attitudes than female students [14]. A gender difference exists for "affect" and "perceived usefulness", whereas no gender differences were indicated for attitude towards Physical activity [15]. Prior technical skills or computer experiences may be influenced by age and gender and may influence intent to use a variety of technology applications [15] [16]. The demographic variables such as gender, age and discipline (departments) have a considerable effect on the activities that students carry out with the help of computer [17] [18].

## Conclusion

The main contributions of this study are it successfully uses a newly constructed scale for measuring computer and e-learning attitude. The research further reveals that discipline of student (department) is a significant criterion that affects computer attitude and e-learning attitude. The association between discipline of student and response towards provision for e-learning also brings out that e-learning implementation will require discipline/department-vise focus for implementation. The connection/association between discipline of student and weekly internet usage hints at the varied comfort levels that students will have from various discipline with respect to usage of internet/computer technology. These results can be used as inputs for proper implementation of e-learning process at any education setting. Proper analysis of the various discipline w.r.t students comfort with technology/internet usage should be done before implementing any technology based learning methodology.

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**Acknowledgement**

**Dr Gunmala Suri**
Associate Professor,
University Business School,
Panjab University,
Chandigarh,
g_suri@pu.ac.in

**Sneha Sharma**
Research Scholar,
University Business School,
Panjab University, Chandigarh,
28snehasharma@gmail.com