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Research Article

A Study of Panjabi University Students on relationship between their Age and Attitude Towards E-learning

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Abstract: The evolution in ICT have revolutionized the process of learning where electronic devices are used for the process of effective learning. The introduction of e-learning has led to rapid changes in the way education is being imparted. The aim of this study is to understand the relationship between age and attitude towards e-learning. Literature shows that age plays a key role in understanding the differences in perception towards usefulness of technology and ease of use w.r.t technology adoption. This study was conducted in Punjabi University Patiala, to assess the impact of age on students' attitude towards computer technology and e-learning collectively. It also analyses the usage of the basic e-learning forms like uploading/downloading course content, interactive videos and pod casting. The instrument used in collecting data was the questionnaire. This study analyzed 306 students enrolled in various courses across many departments in Punjabi University, Patiala. The results showed that no significant relationship exists between age and attitude towards computer and e-learning. The results of this study also show that students of Punjabi University are well versed with the latest tools and forms of e-learning. The findings of this study could serve as a predictor of the attitudes of future students towards e-learning. The future developments in e-learning can take note of this finding while developing e-learning tools which are efficient.

Keywords: Attitudes, Age, E-learning, ICT, Students

INTRODUCTION

In this new technological age, the world is fully equipped with electronic devices which have opened up new vistas for people. Information communication technology (ICT) exemplified by internet and interactive multimedia is obviously of great significance for education. The use of ICT have revolutionized the process of learning where electronic devices are used for the process of effective learning. As education becomes a ubiquitous service delivered anywhere and anytime over the global network, the higher education institutions are using modern ICTs and computers to support learning, in order to prepare themselves for future participation in education.

The term *e-learning* covers new approaches in teaching and learning and a broad gamut of pedagogical tools to meet diverse needs of students. Web content has grown richer and more interactive for users with the global communication and internet connection speed. E-learning is self-paced and it enables students to interact easily with each other which make it highly flexible and convenient system. E-learning is a highly efficient and cost-effective way of learning. It has changed the entire concept of learning by reducing a lot of training and learning related costs, saving travel costs of trainer and trainee, reducing travel time, saving a great amount of opportunity costs, integrating lots of media used to teach and learn and allowing informal communication. It not only enhances student knowledge but also helps in saving the cost.

E-learning is dynamic as compared to the text-book, as it offers individualized instruction. In conjunction with assessing needs, e-learning can target specific needs. It also allows students to take better control of the process of learning. This research builds a multiple approach to examine individuals' attitude towards computer technology and e-learning. Based on age of students and the access and usage of internet by the students, this research will examine attitudes of university students toward e-learning and computer technology.

REVIEW OF LITERATURE

Homan and Macpherson¹ and Sambrook² in their research used the term e-learning to cover any electronic learning material from CDROMs on stand-alone PCs to intranet/internet networked systems with downloadable and interactive material. Various other researches to study the effect of demographical variables such as ownership of PC, gender, age, field of study, ethnicity, academic qualifications, and skill and use of the computer and Internet etc on the attitude of students towards e-learning have been carried out³⁻⁶. Keller and Cernerud⁷ have identified variables such as gender, age, previous experience of computers, individual learning styles and technology acceptance as major predictive factors when analysing acceptance of technology by students.

E Taghavi⁸ examined undergraduate college students' attitudes toward computers. The results showed that age was not significantly related to computer attitudes. Prior technical skills or computer experiences may be influenced by age and gender and may influence intent to use a variety of technology applications⁹. Bhuvanewari and Padmanaban¹⁰ examined the attitude towards e-learning of secondary students of Delhi and found that demographic variables play a significant role for e-learning. No significant difference between gender and use of the computer; how long one has been using the internet and frequency of internet usage¹¹. With respect to perceived ease of use, the study found that age and level of students had no significant relationship with perceived ease of use.

Suri and Sharma^{12, 13} conducted a study in Panjab University and found that age is not a significant criterion that affects computer attitude and e-learning attitude. Higher age and study year, usage of the Internet in education, more regular usage of Facebook and more number of e-courses demonstrated a

significant influence on positive attitude towards e-learning G. Brumini *et al.*¹⁴. Dr. Stephen, Dr. Joyce Asiimwe¹⁵, in their study concluded that, attitude towards use of internet is not dependent on the age difference. Contrary to this Abedalaziz, Jamaluddin, Chin¹⁶ in their study indicated the existence of significant differences between postgraduate students' age and their perceptions toward computer and Internet. Thus the study aims to analyze the effect of age on attitude towards computer technology acceptance and e-learning.

Internet as a medium for uploading and downloading of course content is an important part of e-learning platform¹⁷. Zhang *et al.*¹⁸ inferred that Students in the e-learning environment that provides interactive video achieve significantly better learning performance and a higher level of learner satisfaction than those in other settings. The findings suggest that integrating interactive instructional video into e-learning systems is important. Walls *et al.*¹⁹ in their study had concluded that students may not be as ready or eager to use podcasting for repetitive or supplemental educational purposes as much as we think they are, but they could be persuaded. Hence it also aims to investigate the level of use of various e-learning forms by the students in Punjabi University that are being researched previously.

OBJECTIVES AND SCOPE OF THE STUDY

Objectives of the study:

1. To analyze the effect of age on Scale on computer and e-learning attitude (SCAELA) of students.
2. To analyze the usage of various e-learning tools in Punjabi University, Patiala.

Hypothesis of Study: H1: There is no significant difference on computer and e-learning attitude scale on basis of age.

Period of Study: The study was carried out from 1 March 2014 to 31 March 2014 for collection of data and analysis.

RESEARCH AND METHODOLOGY

Participants: The study used a survey approach to examine e-learning attitudes of the students. The target population was the students studying in the Panjabi University, Patiala, India. A total of 400 questionnaires were distributed among various faculties of the university. It included Faculty of Commerce, Faculty of Fine Arts, Faculty of Engineering, Faculty of Science, and Faculty of Law.

Measurement: Demographic profile of the respondents such as name, sex, age, and faculty (Department) of student was covered in the first section. To draw a relationship between e-learning attitude and attitude towards computer technology a new scale; scale on computer & e-learning attitude (SCAELA) developed by Suri and Sharma (2013)^{12, 13} was used, 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. This was constructed to measure the attitude of students towards computer technology and e-learning on Likert scale.

DATA ANALYSIS

Overview of data gathered: A total of 400 questionnaires were distributed, on final scrutiny 94 were dropped because they were incomplete and the remaining 306 questionnaire were retained for the

further analysis. Thus the response rate was over 77% which is a good rate. **Table-1** illustrates the overview of the sample profile. Microsoft Excel and SPSS were used to analyze the questionnaire data and the subsequent data analysis were undertaken using statistical approach i.e. one-way ANOVA.

Data Analysis: Section one discusses about demographic characteristics, i.e. gender, age, faculty of study. The sample size under study had students from all the major faculties of Panjabi University.

The distribution of males and females in the sample survey 32.4 % males and 67.6% female. All of the respondents of the survey were below the age of 26 years 34.9 % were less than 20 years and 63.2 % were between 20-26 years. (**Table-1**)

Table-1: Demographic Statistics

Descriptive Statistics	No. of Respondents	Percentage
Faculty		
Commerce	106	34.6
Fine Arts	25	8.2
Engineering	50	16.3
Science	85	27.8
Bio tech	40	13.1
Gender *		
Male	99	32.4
Female	207	67.6
Age*		
Less than 20	106	34.9
20-26 years	192	63.2
26-30 years	6	2.0

*N≠306 due to unmarked fields by respondents (Treated as Missing values in spss)

The research also reveals that social networking is the most used web facility by the students, followed by using web for educational purpose. Entertainment and E-mail stand at rank three and four. Online shopping is ranked the least by most of the respondents. (**Figure-1**)

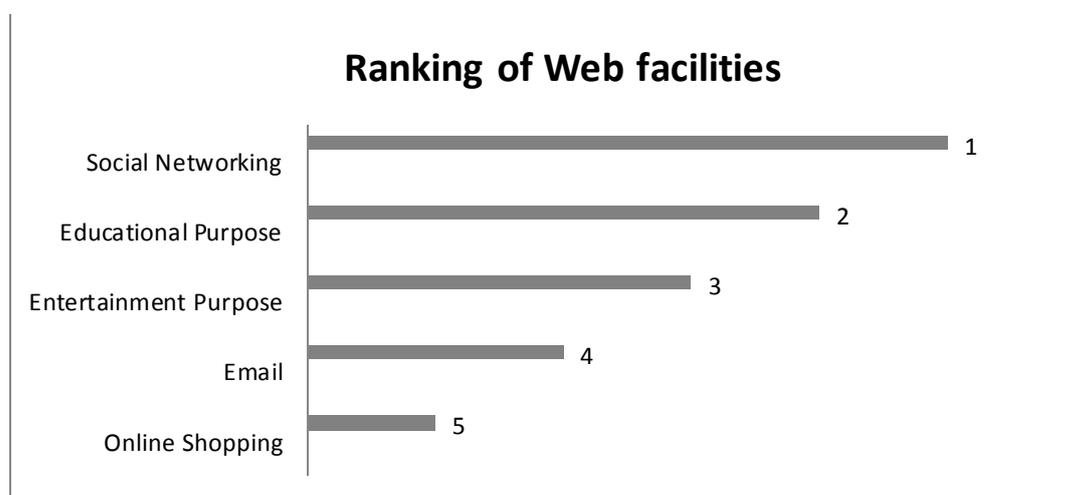
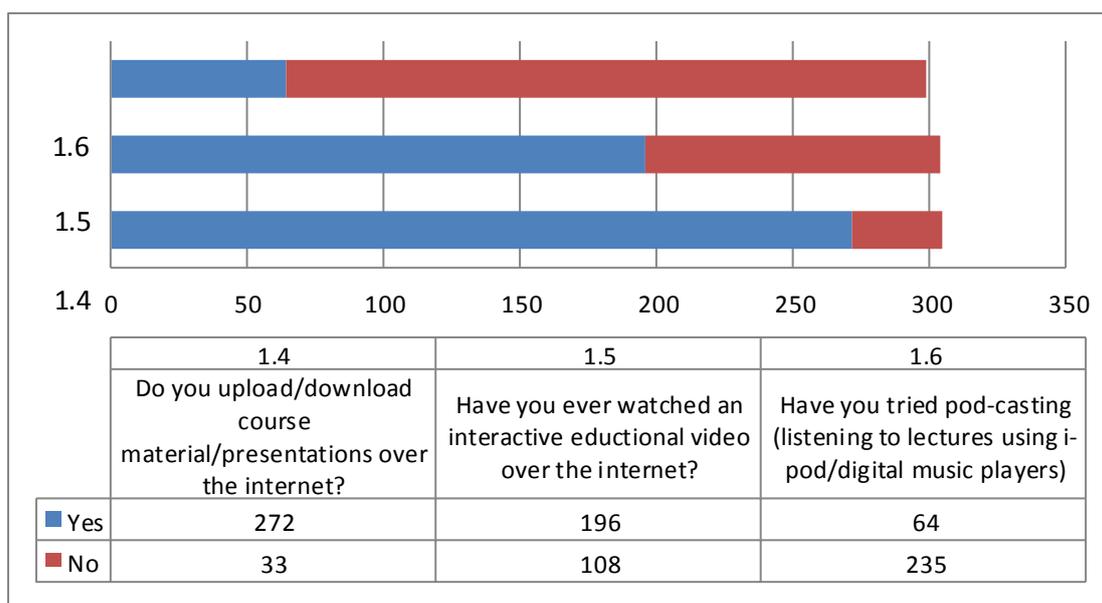


Figure-1: Ranking of Web Facilities

With respect to the use of e-learning forms the survey shows that majority of the respondents i.e. 89 % have uploaded/downloaded the course material and content from internet. It suggests that the students are already well adapted to this e-learning format. An interactive education video over internet was also seen by over 64 % of the respondents for some course. It suggests that majority of students find it a possible method of learning. Pod casting that refers to listening of lectures using i-pods or digital music players. In the survey only 21 % students had ever tried pod-casting as medium of learning (Table-2). This suggests that audio modes of e-learning are not yet familiar amongst students as compared to audio visual modes like videos or presentations.

Table-2: Usage of various e-learning tools



The scale used for measurement of computer and e-learning attitude (SCAELA) was factor analyzed. The process reduced the 17 variables into five factors after PCA with varimax rotation (Table-3). The five factors were named as Sentiments towards computer/computer technology, Attitude towards e-learning, Perceived usage of computers, Computer/technological fear and Physical presence of teacher (Table-3). The four factors together resulted for 58 % variance which is near 60 % expected value. The fifth factor due to insignificant correlation with the other four was dropped.

Table-3: Rotated Component Matrix

		Component				
		1	2	3	4	5
V2.1	I feel at ease learning about computer technology	.216	.755	.031	-.055	-.108
V2.2	I am the type to do well with computer technology	.200	.755	.008	-.083	.190
V2.3	The thought of using computers is not frightening	.116	.144	.734	.087	.225
V2.4	I do not feel threatened by the impact of computer technology	.157	.217	.690	-.012	-.009
V2.5	I feel comfortable about my ability to work with computer technology	.065	.720	.338	.057	.069
V2.6	I like working with computers	.115	.622	.271	.233	-.007
V2.7	Once I get on the computer I find it hard to stop	-.088	.237	.073	.618	-.256
V2.8	I would choose to use a computer in my spare time	.100	-.194	.097	.763	.082

V2.9	I prefer to use a computer to write my assignments	.283	.172	-.311	.557	.375
V2.10	I would choose to use computers in my teachings	.521	.300	-.084	.110	.053
V2.11	e-learning is a suitable alternative to the pen/paper based system	.763	.083	.008	-.027	.186
V2.12	With e-learning my course will be more enjoyable	.805	.237	-.041	-.043	.044
V2.13	Class notes of any lectures will be easily accessible even if I miss one	.533	.072	.251	.008	.259
V2.14	With e-learning I would interact more with other students	.644	.040	.216	.020	-.287
V2.15	Studying through online medium will help me retain more	.607	.232	.194	.116	-.421
V2.16	Physical presence of teacher is extremely essential for learning the course	-.036	.104	.256	-.001	.680
V2.17	More topics can be covered in less time by use of e-learning as compared to conventional medium of blackboard and notes.	.629	.028	.137	.122	-.135

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 7 iterations.

Cronbach's alpha for checking the reliability of scale was calculated. The value was 0.789 (>0.7) which shows that the scale has good internal validity and is highly reliable. The three factors internally were reliable with Cronbach's alpha near to expected range.

Table-4: Factors after PCA on SCAELA

Factor	Factors	No. of items
I	Attitude towards e-learning	4
II	Perceived usage of computers	3
III	Sentiments towards computer	7
IV	Computer/Technological fear	2

ANOVA was used to analyze the impact of age on the Scale on computer and e-learning attitude.

DISCUSSION

The hypothesis of the study was tested by employing one way ANOVA.

Table-5: ANOVA (Age and factors on SCAELA)

		Sum of Squares	df	Mean Square	F	Sig.
Attitude towards e-learning	Between Groups	2.021	3	.674	1.496	.216
	Within Groups	128.760	286	.450		
	Total	130.781	289			
Perceived usage of computers	Between Groups	.280	3	.093	.179	.910
	Within Groups	144.315	277	.521		
	Total	144.595	280			
Sentiments towards computer	Between Groups	.285	3	.095	.213	.887
	Within Groups	121.076	271	.447		
	Total	121.362	274			
Computer/Technology fear	Between Groups	1.000	3	.333	.538	.657
	Within Groups	167.286	270	.620		
	Total	168.286	273			

The results of ANOVA revealed that factor on attitude towards e-learning at $p < 0.05$ level [$F(3,286) = 1.496, p = 0.216$], for perceived usage of computers [$F(3,277) = .179, p = 0.910$], for factor on sentiments towards computer [$F(3, 271) = .213, p = 0.887$] and for Computer /Technology fear [$F(3,270) = .538, p = 0.657$] is greater than .05 thus the null hypothesis were accepted (**Table-5**). There is no significant age difference on four factors of scale on computer and e-learning attitude. Thus the age is not a significant criterion that impacts the computer and e-learning attitude. The radar diagram (Figure 2) further depicts the overall attitude of students among the age group under study. It clearly depicts that students from 26-30 age-group are having a high positive attitude as compared to below 26 age group.

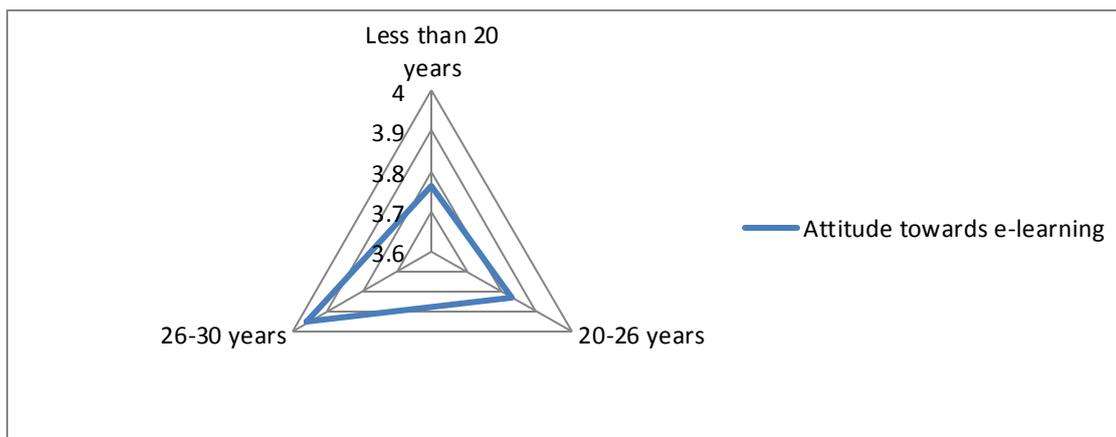


Figure-2: Radar diagram

CONCLUSION

The study fulfilled the objective of understanding the impact of age on computer attitude, e-learning attitude and usage of various e-learning forms. The results are in line with works of Suri and Sharma (2013) and Dr. Stephen (2013) that age is not a significant criterion that affects computer attitude and e-learning attitude. The results also show that the various forms of e-learning are known to the students of university. This implies that students of Punjabi University are well versed with the latest tools and forms of e-learning. So, the university can think about applying the e-learning format as the students irrespective of their age are receptive towards the various forms of e-learning.

REFERENCES

1. G. Homan and Allan Macpherson. "E-learning in the corporate university" *Journal of European Industrial Training* 29.1, 2005: 75-90.
2. S. Sambrook, E-learning in Small Organizations, *Education + Training*, 2003, vol.45, no.8/9, pp. 506-516.
3. Shashaani, "Gender Differences in Computer Attitudes and Use among College Students." *Journal of Educational Computing Research*, 1997, 16(1):37- 51.
4. J.C. Roca, C.M. Chiu & F.J. Martinez, Understanding e-Learning Continuance Intention: An Extension of the TAM, *International Journal of Human-Computer Studies*, 2006, 64, 683-696.
5. P.G. Paris, E-Learning: A Study on Secondary Students' Attitudes towards Online Web-Assisted Learning, *International Education Journal*, 2004, 5(1), 98-112.

6. P. Berteau, Measuring Students' Attitude towards E-Learning: A Case Study, *Proceedings of 5th International Scientific Conference on eLearning and Software for Education*, Bucharest, 2009, April 9th-10th.
7. C. Keller & L. Cernerud, "Students' perception of elearning in university education", *Journal of Educational Media*, 2002, 27, 1-2, 55-65.
8. S.E. Taghavi, The Effects of Age, Access to a Computer, and College Status on Computer Attitudes, *Journal of Information Technology Impact*, 2006, Vol. 6, No. 1, pp. 1-8
9. K.A. Pituch & Y. Lee, The Influence of System Characteristics on E- Learning Use. *Computers & Education*, 2006, 47(2), 222–244.
10. A.S. Bhuvanewari and T. Padmanaban. Attitude of senior secondary students towards e-learning, *Elixir Educational Technology* 51, 2012, pp. 10886-10888.
11. M. Taoge, Students' perceptions on incorporating e-learning into teaching and learning at the University of Ghana, *International Journal of Education and Development using Information and Communication Technology*, 2012, Vol. 8, Issue 1, pp. 91-103
12. G. Suri & S. Sharma, "Impact of Age and Internet Access and Usage on Student's Attitude Towards E-Learning: A Study on Panjab University." *International Journal of Applied Services Marketing Perspectives* [Online], 2012, 188-194.
13. G. Suri & S. Sharma. The Impact of Gender on Attitude towards Computer Technology and E-Learning: An Exploratory Study of Punjab University, India.
14. G. Brumini et al. Attitudes towards e-learning amongst dental students at the universities in Croatia. *European Journal of Dental Education*, 2013.
15. Dr. Ndawula Stephen, Dr. Ayikoru Joyce Asiimwe "Exploring User Attitudes towards Internet Use: The Role of Gender and Age Difference" *Science Journal of Psychology*, Volume 2013, Article ID sjpsych-248, 7 Pages, 2013, doi: 10.7237/sjpsych/248
16. N. Abedalaziz, S. Jamaluddin, H.L. Chin. Measuring attitude about ICT among postgraduate students in Malaysia. *Turkish Online Journal of Educational Technology* (TOJET), 12 (2) (2013), pp. 200–216
17. University of Alaska F Course Bulletin 2012-2013. E-Learning and Distance Education. Accessed on Aug 23rd 2012
18. Zhang et al. "Instructional video in e-learning: Assessing the impact of interactive video on learning effectiveness", *Information & Management*, 2006, 43, 15–27. Accessed on Sep 02nd 2012
19. Walls et al. "Podcasting in education: Are students as ready and eager as we think they are", *Computers & Education*, 2010, 54, 371–378. Accessed on Aug 21st 2012

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