IMPACT OF E-LEARNING ON TEACHER EFFECTIVENESS

By

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ABSTRACT

Technology offers tremendous opportunities for increasing the effectiveness and efficiency of education. Students, faculty and administrators now use technology extensively in their daily activities and have become technologically literate. The trend of using e-learning as learning and teaching tool is now rapidly expanding into education. Many educators and researchers have high hopes for e-learning, believing that it would provide more access to information and communication, and would ultimately lead to a new revolution in education. This paper focuses on impact of e-learning environment on the teacher effectiveness, with reference to Personal effectiveness, Teaching skill and Research and academic activities. This study intends to find the relationship between the teacher effectiveness and the selected background variables, to identify the background variables which are contributing to the impact of e-learning on teacher effectiveness and to estimate the extent of the contribution of the background variables to the impact of e-learning on teacher effectiveness. In order to measure this researcher developed a research tool to measure the teacher effectiveness. The tool was administered to 250 teachers serving in colleges of engineering and technology and university departments. The finding of the study reveals that the teacher effectiveness of the teachers on the whole is high with the assistance of e-learning environment.

Key words: Teacher effectiveness, e-learning, Blog.

INTRODUCTION

Need for the Study

Education in the digital world of today can actually make the meaningful shift by ensuring that if students do not learn the way they are taught, they can be taught the way they learn. This pedagogical shift, when integrated into educational software and appropriate technology, can make learning exciting and enjoyable while securing successful learning outcomes in shorter time frames. While colleges and universities globally lend to use asynchronous or delayed technologies with an instructor as the basis of e-learning and thereby include tools like online discussion forums, electronic books, online exams and grading, online mentoring, web-linked etc. Modern day learning environments are characterized by their place and time independence, their integrated presentation and communication facilities, and their opportunities for re-use of learning technologies in the form of learning objects. Technology offers tremendous opportunities for increasing the effectiveness and efficiency of education in the future. Students, faculty, staff and administrators now use technology extensively in their daily activities and have become reasonably technologically literate. E-learning is the changing trend of education. The modern technologies particularly the Internet have made education no longer limited to the four walls of the classroom.

The trend of using e-learning as learning and teaching tool is now rapidly expanding into education. Many educators and researchers had high hopes for e-learning, believing that it would provide more access to information and communication, and would ultimately lead to a new revolution in education. Several studies have been conducted to examine attitudes towards e-learning in the West and other parts of the world. But in the Indian context research in this direction were very few. E-learning in India, is still at an experimental stage Murahari, B (2008).

This necessitated the researcher to develop research tools to measure the Attitude of teachers' of Higher Education towards E-learning, as well as the impact of e-learning on

teacher effectiveness.

Review of Related Studies

Through innovative use of modern technology, e-learning not only revolutionizes education and makes more accessible, but also brings formidable challenges to the instructors and learners. Shu-Sheng Liaw., Hsiu-Mei Huang., Gwo-Dong Chen. (2007). E-learning environments increasingly serve as important infrastructural features of universities that enable teachers to provide students with different representations of knowledge and to enhance interaction between teachers and students and amongst student themselves. Mahdizadah, H., Harm, Biemans., & Martin Mulder. (2008). Benefits of e-learning have a favourable impact on the organizations profitability. Deepak,K., Srivastava. (2005). Kuzmicic (2006) explain that attitudes, efficacies and confidence levels combine to influence teacher motivation for using and integrating technology. Those who are more experienced with technology and have the associated comfort levels "find the time" to implement and to enhance their skills and know how. The study on Challenging Hierarchies: The Impact of e-learning Norah Jones and John O'Shea, (2004) focused on new developments in e-learning and increasingly sophisticated learning technologies are beginning to make a major impact in U.K. universities. It is clear that universities need to change to accommodate the impact of technology on learning. Hamdan Mubarak Al-Khashab (2007) Peters explored the possible benefits provided by e-learning. Results show great conformity to deriving benefits of e-learning in both teaching and research. e-learning will help faculty members to develop better teamwork and inter-personal skills.

Definition of The Terms

Electronic learning or e-learning

Electronic learning or e-learning is an all-encompassing term generally used to refer to computer enhanced learning, although it is often extended to include the use of mobile technologies such as PDAs and MP3 players. It may include the use of web-based teaching materials and hypermedia in general, multimedia CD-ROMs or web sites, discussion boards, collaborative software, e-mail, blogs, wifis, text chat, computer aided assessment, educational animation, simulations, games, learning management software, with possibly a combination of different methods being used. Along with the term e-learning technology and educational technology, the term is generally used to refer to the use of technology in learning in a much broader sense than the computer-based training or computer aided instruction of the 1980s. It is also broader than the terms Online Learning or Online Education which generally refer to purely web-based learning. In cases where mobile technologies are used, the term M-learning has become more common.

Teacher effectiveness

In this research the concept teacher effectiveness was identified with reference to three dimensions namely personal effectiveness, teaching skills and research and other academic activities of teachers in relevance to the use of various electronic media. The development among teachers in all these aspects have been analysed in relation to the support of various electronic media.

Teachers of higher education

Teacher's of Higher Education in the study refers to the Teachers working in Engineering Colleges, University Departments.

Colleges and Universities

Colleges in this study refer to Colleges of Engineering and Technology which offers B.E., M.E.,and other engineering related courses. Universities refer to Technical universities for example Anna University, Vellore Institute of Technology.

Objectives of the study

- To find out the distribution of the scores of teacher effectiveness of teachers.
- To find out whether there is any significant relationship between the teacher effectiveness and the selected background variables namely.

  Gender, Educational Qualification, Employment status, Type of Institution, Department, Experience of Teachers, E-mail ID, Knowledge in Computer, Course attended in Computer, Access to Net, Blogs.
- To identify the background variables which are contributing to the impact of e-learning on teacher effectiveness.

- To estimate the extent of the contribution of the background variables to the impact of e-learning on teacher effectiveness.

Hypotheses of the study

- The distributions of the scores of teacher effectiveness of teachers do not form a normal distribution.
- There is no significant relationship between the teacher effectiveness and the background variables namely Gender, Educational Qualification, Employment status, Type of Institution, Department, Experience of Teachers, E-mail ID, Knowledge in Computer, Course attended in Computer, Access to Net, Blogs.
- To identify the background variables which are contributing to the impact of e-learning on teacher effectiveness.
- To estimate the extent of the contribution of the background variables to the impact of e-learning on teacher effectiveness.

Methodology

In the present study the survey method was adopted. In order to study the impact of e-learning on teacher effectiveness, tool entitled "Impact of e-learning on the Teachers of Higher Education" (IELTH) developed by the researcher was used. It consists of 30 statements. (i) Personal effectiveness with 10 statements (ii) Teaching skill with 13 statements and (iii) Research and academic activities with 7 statements. It is a five point scale with a maximum score of 150 and a minimum of 30. The dimension personal effectiveness consists of the factors pride, prestige, self learning capabilities, soft skills and problem solving skills of the teachers. The dimension teaching skills consist of the factors preparing teaching materials, interactivity between teacher and learner, linguistic capabilities and evaluating learner's performance. Research and other academic activities refer to exchange of ideas on research, opportunity to collaborate with expert from outside the institution, scope of better understanding about areas of research, and the sources of research.

The Reliability co-efficient of the tool was found by using split half-method, which was found to be 0.68. In the beginning of the process of tool construction the selected statements were given to experts for their approval. They judged the appropriateness of the statements. The statements were modified with their suggestions prior to administration and thereby the content validity was ensured.

In order to collect data for the present study the researcher administered the tool to 255 teachers working in colleges of engineering and technology and university departments in Tamil nadu, India. Descriptive Analysis, Differential Analysis, Two-way Analysis of Variance and Step-wise regression Analysis were the statistical treatment used.

Analysis

The teacher effectiveness of teachers were found to form a normal distribution with a mean of 130.06 and a standard deviation of 7.46. The coefficient of skewness of the distribution is found to be -0.08, which negatively skewed and consequently the scores were amassed at the right end of the distribution. The coefficient kurtosis of the distribution is found to be -0.15 which is a leptokurtic distribution (Table 1).

Teacher effectiveness and the variables with two categories

The mean difference in the teacher effectiveness due to the variable namely, teachers who have blogs and those who do not have, is found to be 2.65 which was significant at 0.01 level for the df 253 as its t-value is computed to be 2.77. Similarly the mean differences in the teacher effectiveness of the variables namely type of institution was 2.04 whose t-value is 1.99 which was significant at 0.05 level for its df 253 (Table 2).

In the above cases rejecting the respective null hypotheses, it is concluded that with 95 percent confidence interval that teachers working in universities and colleges differ significantly with respect to teacher effectiveness.

Teachers differ in their teacher effectiveness based on those who have blogs and those who do not have blogs.

Variables	Mean	Std. Error Mean	N	SD	Skew	Kurt
Teacher effectiveness	130.06	0.47	255	7.46	-0.08	-0.15

Table 1. Total Distribution of the Scores of Teacher Effectiveness

Variables	Type	N	Mean	Std Devi.	Std Err mean	Mean Differ	df	t	Sig level
Gender	Male	120	129.83	7.88	0.72	0.43	253	0.46	N.S
	Female	135	130.27	7.10	0.61				
Institution	Uni-depts	173	131.07	7.42	0.56	2.04	253	1.99	0.05
	Colleges	82	129.02	8.13	0.89				
Department	Electrical	130	130.15	7.40	0.65	0.19	253	0.53	N.S
	Non-Elect	125	129.97	7.56	0.68				
Experience	Below 10	182	130.12	7.33	0.54	0.18	253	0.17	N.S
	Above 10	73	129.93	7.82	0.91				
e-mail id	Yes	239	130.03	7.50	0.48	0.53	253	0.27	N.S
	No	16	130.56	7.15	1.79				
Knowledge in Computer	Yes	221	130.07	7.41	0.49	0.07	253	0.05	N.S
	No	34	180.00	7.93	1.36				
Course attended in Computer	Yes	134	130.19	7.86	0.68	0.26	253	0.27	N.S
	No	121	129.93	7.03	0.64				
Blogs	Yes	100	131.87	8.22	0.82	2.65	253	2.77	0.01
	No	155	129.21	6.91	0.55				
Net Access	Institute	119	129.69	7.69	0.70	0.70	253	0.74	N.S
	Both	136	130.39	7.28	0.62				

Table 2. Teacher Effectiveness and Variables with two Categories

With the help of the mean difference it is understood that teachers who are having their own blogs are more effective than teachers who do not have their own blogs.

There exists no significant mean difference in the teacher effectiveness of the teachers due to the variables gender, department of working, experience of the teacher, teachers who have e-mail id, teachers who posses knowledge about computer, courses attended in computer and net access as their corresponding t-values were 0.46, 0.53, 0.17, 0.27, 0.05, 0.27 and 0.74 respectively which were not significant at 0.05 level for its df 253. Accepting the respective null hypotheses, it is concluded that there is no significant mean differences in the teacher effectiveness based on the teachers gender, department of working, teaching experience, teachers who have e-mail id, teachers who posses knowledge about computer, teachers who have attended courses in computer and have net access facility.

There exist significant mean differences in the teacher effectiveness with respect to their educational qualifications and employment status for the respective F-values 3.23 and 3.30 which were found to be significant at 0.05 level for the respective df (Table 3). Educational qualifications and employment status caused the mean differences in teacher effectiveness.

Variables	Sub samples	N		Sum of squares	df	F ratio	Sig level
Educational qualification	B.E	20	Between groups	566.93			
	M.E	122	Within groups	14679.47	(3,251)	3.23	0.05
	M.Phil	51	Total	15246.40			
	Ph.D	62					
Employment status	Assi-prof	97	Between groups	389.43			
	Asso-prof	94	Within groups	14856.971	(2,252)	3.30	0.05
	professor	64	Total	5246.40			

Table 3. Teacher Effectiveness and Variables with more than two Categories

Making a microanalysis of the significant variables, the significant sub-samples are identified. The significant f-value 3.23 at 0.05 level in the teacher effectiveness with respect to the teacher's educational qualification indicates that there may be at least one pair, which was significantly different from another. The mean difference between the teachers with degree M.E and Ph.D is found to be significant at 0.01 level for the respective t-value 2.90 for the df 182. Hence the teacher with M.E and Ph.D category differ significantly than the remaining four categories (Table 4).

The F-value of 3.30 which was significant at 0.05 level in teacher effectiveness with respect of their employment status indicates that there must be at least one pair which differs significantly from others. The mean difference between the assistant professors and associate professors with respect to teacher effectiveness is found to be significant at 0.05 level for the 't'-value, namely 2.54 for df 189. The other remaining possible pairs were not significant at 0.05 level. The Associate Professor category possess the higher mean and standard deviation than the later. It is therefore concluded that the Associate Professors differ with greater mean gain from Assistant Professors in their teacher effectiveness (Table 4).

Variable	Sub-sample	N	Mean	SD	Md	t-value	df	Sig level
Educational qualification	B.E	20	129.45	6.70	Md2, 4=3.47	t2,4=2.90	182	0.01
	M.E	122	128.88	7.13				
	M.Phil	51	131.24	7.85				
	Ph.D	62	132.35	8.66				
Employment status	Assist-prof	97	128.77	7.03				
	Associ-prof	94	131.62	8.37	Md1, 2=2.84	t1,2=2.54	189	0.05
	Professor	64	130.44	7.54				

Table 4. Significant Sub-samples of Teacher Effectiveness

Regression

There are eleven background variables viz. gender, educational qualifications, employment status, type of the institution, department, teaching experience, e-mail ID, knowledge in computer, course attended on computer, blogs and internet access. Teacher effectiveness is treated as dependant variable(y) and background variables as the independent variables. The impact was studied in terms of the extent of contribution made by the background variables to the teacher effectiveness. Step-wise regression was performed on the background variables to find out the degree of contribution of background variables on the teacher effectiveness. In the process of treatment of step-wise regression analysis it was found that only the variables type of institution have contributed to teacher effectiveness significantly (Table 5).

The extent of relationship between variables predicted and the dependant variables, viz, teacher effectiveness was determined by the coefficient of multiple R. The value of multiple R was found to be 0.363. The teacher effectiveness predicted by the combined effects of the contributing variable the type of institution is to the extent of 0.132 (R^2) which is found to be significant at 0.00 level for df (4,250) (Table 6). The R^2 implies that 13.2 percent of variance in the teacher effectiveness was due to the cumulative effect of the variable namely the type of institution.

Results

The teacher effectiveness among teachers' was found to form a normal distribution with a mean of 130.06 and a standard deviation of 7.46 The teachers working in universities and colleges differ significantly with respect to teacher effectiveness as the mean difference of the teachers working in universities were more than the teachers working in colleges.

Model	Unstandardized co-efficient		Std. co-efficient	t	Significant Level
	D	Std. error	Beta	B	Std. error
(Constant)	98.518	6.228	-	15.818	0.000
Institution	-1.934	0.943	-0.121	-2.052	0.041

Table 5. Regression Co-efficient of Contributing Variables

Variables entered / retained	R	R^2	df	F	Significance Level
Institution	0.363	0.132	(4,250)	9.465	0.000

Table 6. Regression of the Teacher Effectiveness on Background Variables

Teachers, differing in their teacher effectiveness have been confirmed on those who have blogs and those who have no blogs. With the help of the mean difference it is understood that the teacher effectiveness, among the teachers who have their own blogs, is more than those who do not have their own blogs.

There was no significant mean difference in the teacher effectiveness, on the basis of gender, departments they belong to, teaching experience, teachers who have e-mail id, teachers who posses knowledge about computer, and teachers who attended courses in computer and net access facility.

Educational qualifications and employment status caused the mean differences in teacher effectiveness aspect. The teachers, with M.E and Ph.D category, differ more significantly than the remaining four categories. The Associate Professors differ with greater mean gain from the Assistant Professors in their teacher effectiveness.

Discussion

Teacher effectiveness is an important criterion that would affect the success of the teacher. The teacher effectiveness of the teachers on the whole was high with the assistance of e-learning environment.

Teachers working in the universities and colleges differ significantly with respect to teacher effectiveness, as the teacher effectiveness of the teachers working in the universities was better than the teachers working in the colleges.

Teachers differ in their teacher effectiveness based on those who have blogs and who did not have blogs. Teachers who are having their own blogs were more effective than those who did not have their own blogs. These findings were supported by the following findings: e-learning helps the faculty members to develop better team work and interpersonal skills and deriving benefits of e-learning in both teaching and research Hamdan Mubarak Al- khashab (2007). Majority of the lecturers surveyed, used e-learning in their teaching practice, for

research, and to create teaching materials and lesson plans. Sarah Golden et al (2006).

Educational qualifications and employment status caused the significant differences in teacher effectiveness. The teacher's with M.E and Ph.D category differ significantly in teacher effectiveness.

Conclusion

Efforts must be taken for technology to make a difference. The impact of e-learning or any technology depends on the scope for access and the usability of the technology. Moreover, the institutional facility with regards to e-learning causes change in the effectiveness of teaching. Hence, the institutions should try to maximize the potential benefits of ICT by adopting and promoting a strategic approach in the formal educational set up, so, that it will enable the teachers to provide different dimensions of knowledge and enhance interaction between teachers and students. Teachers need to be allowed to use technology as a tool, which will enable them to collect information, analyze and disseminate to the students. Teacher's first-hand experience has a positive effect on his or her use of e-learning environments. Therefore, teachers should be encouraged to try e-learning strategies in their own courses. For example, they could be assisted in preparing e-content for their courses. There must be scope for knowing and making use of modern technologies like interactive white boards, blogs, etc. Teachers need the support from the institution in order to make use of new technologies in the teaching learning process. It is necessary that, in the near future, e-learning environments are to be made popular among college and university teachers.

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