

## RELATIONSHIP BETWEEN COMPUTER ATTITUDE AND TEACHING EFFICACY OF HIGH SCHOOL TEACHERS

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### ABSTRACT

*The study was conducted to find out the relationship, if any between the computer attitude and teaching efficacy and also to find out if the expressed variables were influenced by the teacher's characteristics like sex, age, degree, teaching experience, level of computer use, level of internet use, type of school, and location. Data has been collected from 100 high school teachers in Coimbatore educational district. Authors found that there is a relationship between computer attitude and teaching efficacy.*

### INTRODUCTION

Increasing number of computer is well established and powerful tool for interactive process in both educational and work setting. Computer instructional materials sort in the form of word processing, spreadsheets, database management, and statistical packages are used for the effective class room teaching. Computer is evolving as a tool to facilitate online teaching and learning, web based instructions, e-learning, which is carefully structured to replace the conventional mode of teaching. While taking advantages of these representations, teacher's plays dynamic role to integrate computer in his/her teaching. Teachers must be equipped with basic operating skills in computer hardware, software, Internet use, and telecommunication to foster positive computer attitude towards teaching.

Teachers' attitude towards computers can greatly influence the computer based teaching and learning. Attitude towards computers is an important factor related to the teachers role towards the effective use of computers in education.(Griffin,1988).Computer attitude is inferred from observed behaviour, as a tendency to act in a certain way towards computer and in turn it depends on computer confidence (Rovai & Childress, 2002), training (Tsitouridou & Vryzas, 2003), gender (Sadik, 2006), knowledge about computers (Yuen, Law & Chan, 1999), anxiety, confidence, and liking (Yildirim, 2000).

The successful use of computers might be achieved through positive attitude and teaching efficacy of teachers towards computers and it can bring the desirable changes in learner. "Teaching efficacy referred as a strong sense of efficacy are open to new ideas and are more willing to experiment with new methods to better meet the needs of their students" (Berman, Mclaughtin, Bass, Pauly and Zellman, 1977). Both attitude and efficacy of teachers towards computer embracing computer based teaching learning effectively. Hence, the teachers must have the ability to execute computer based teaching for the welfare of the learners.

### SIGNIFICANCE OF THE STUDY

Nowadays, the generated knowledge can be easily transmitted and shared through computer based teaching and learning. Computer has been helpful for the learners to compute mathematical concepts, scientific investigation, doing projects, downloading concepts in various subjects, developing communicative skills, and accounting and also eliminates tedious work in all levels of educational system.

Even though the teachers know the value of computer in teaching and learning they may be reluctant to incorporate them in their class room teaching. This may be due to negative attitude towards computer including computer anxiety, confidence, liking and lack of intension to use computer. Teachers need to be executing the wealth of specific information available on

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computer. However, teaching efficacy depends on many factors like, teacher's belief, availability of resources, time, experience, computer use at home and training. Thus, teachers should recognize the importance of computers and develop positive attitude for the numerous changes happening in the field of education. If they fail to utilize the given opportunities, the up gradation of computer competencies will be minimized in the class room teaching. Realizing the importance of computer in teaching-learning, in this article authors made an attempt to find out the relationship if any between computer attitude and teaching efficacy of high school teachers.

#### OPERATIONAL DEFINITION

**Computer attitude:** - It is referred as the tendency to react positive or negative attitude of teachers towards computer in teaching and learning process.

**Teaching Efficacy:**- It refers to judgment about capabilities to influence student's engagement and learning.

**High School Teachers:-** Teachers who are teaching the age group of 14 and 15 years old students.

#### OBJECTIVES OF THE STUDY

The present study has the following Objectives;

1. To find out whether there is any significant relationship between computer attitude and teaching efficacy of high school teachers.
2. To find out, if any, significant difference between male and female high school teachers with respect to computer attitude.
3. To find out whether there is any, significant difference among high school teachers degree, age, teaching experience, level of computer use, level of internet use, type of school and location with respect to computer attitude.
4. To find out if, any, significant difference between male and female high school teachers with respect to teaching efficacy.
5. To find out whether there is any significant difference among high school teachers degree, age, teaching experience, level of computer use, level of internet use, type of

school and location with respect to teaching efficacy.

#### HYPOTHESES OF THE STUDY

1. There is no significant relationship between computer attitude and teaching efficacy of high school teachers.
2. There is no significant difference between male and female high school teachers with respect to computer attitude.
3. There is no significant difference among high school teachers degree, age, teaching experience, level of computer use, level of internet use, type of school and location with respect to computer attitude.
4. There is no significant difference between male and female high school teachers with respect to their teaching efficacy.
5. There is no significant difference among degree, age, teaching experience, level of computer use, level of internet use, type of school and location of high school teachers with respect to their teaching efficacy.

#### DELIMITATIONS OF THE STUDY

- i. This study has drawn data from only high school teachers with small number of samples. This can be extended up to college level teachers with more number of samples from the same or other region.
- ii. Restricted with the choice of the questionnaire, this can be separated with the help other dimensions like computer confidence, liking, and anxiety scale.

#### METHODOLOGY

**Sample:-** Random sampling process was followed for data collection after consulting experts on statistics. The sample was random in the sense that the teachers were randomly selected from twenty schools at Coimbatore Educational District, Tamilnadu. This was done to ensure adequate representation of Male and Female teachers. Through this process a total of 100 teachers (45 Male and 55 Female teachers) was selected. Ten respondents were selected randomly from each school. Accordingly, 100 questionnaires (i.e. 10x10 =100) were distributed among the teacher.

### TOOLS

The following tools were used in the present investigation; (1) Computer Attitude Scale consists of 20 items and (2) Teaching Efficacy Scale consists of 25 items used to measure the teaching efficacy. The investigators used the items taken from the tools constructed by Knezek, Miyashita (1994), Loyd and Greessard,(1984), Riggs,I. Knochs.L.(1990) and Woolfolk A.E (1993) subsequently they validated the same for their research. Researchers used test-retest method to find out the reliability of the tools. The reliability of Computer Attitude Scale was found to 0.60 and the reliability of Teaching-Efficacy scale t was found to 0.67. The discriminant validity was worked out by them to establish validity of the study.

### DATA COLLECTION

All the high schools in Coimbatore District, Tamilnadu under study were visited personally by the investigators to collect the data from the respondents. The data were collected with the help of the developed tools. The investigators sought permission from the headmasters and approached the high school teachers in their respective schools and revealed the concept of the study. It is assured that their responses would be kept confidential and used for research purpose only. Clear instruction was given as to enable them to give their response meaningfully. The gathered responses were scored.

### STATISTICAL TECHNIQUES

Investigators used 't' test and 'F'test to find out significant difference of computer attitude and their teaching efficacy with reference to the background variables. Pearson's product-moment 'r' was computed between computer attitude scores and teaching efficacy scores of the high school teachers. They used the software "SPSS 10.1.0", standard version for data analysis.

### ANALYSIS AND INTERPRETATION

**Hypothesis-1:-** There is no significant relationship between computer attitude and teaching efficacy of high school teachers with

reference to background variables.

**Table-1**  
**Relationship between Computer Attitude and Teaching Efficacy of High School Teachers**

Variables	N	Df=(N-2)	Calculated r Value	S/NS
Computer attitude	100	98	0.471*	S
Teaching Efficacy	100	98		

#### \*Significance at 0.05 levels

The above table shows that the calculated 'r'-value (0.471) is greater than the table value (0.195). It is inferred from the table that there is significant relationship between computer attitude and teaching efficacy with reference to background variables.

**Table-1a**  
**Relationship between Computer Attitude and Teaching Efficacy of High School Teachers with Reference to the Background Variables**

Variables	Categories	N	Calculated r/S/NS Value	Level of Significance
Sex	Male	45	0.496	S
	Female	55	0.445	S
Degree	UG	18	0.496	S
	PG	60	0.528	S
	M.Phil	22	0.298	S
Age	>30 Yrs	43	0.636	S
	30-40yrs	41	0.387	S
	<40yrs	16	0.333	S
Teaching Experience	>10yrs	56	0.610	S
	10-20 yrs	38	0.323	S
	Above 20	6	-0.723	NS
Level of Computer use	Daily	26	0.738	S
	Occasionally	28	0.357	S
	Rarely	46	0.460	S
Level of Internet Use	Daily	14	0.568	S
	Occasionally	36	0.451	S
	Rarely	50	0.546	S
Type of School	Govt	31	0.579	S
	Aided	37	0.383	S
	Unaided	32	0.586	S
Location	Rural	42	0.539	S
	Semi Urban	20	0.198	S
	Urban	38	0.545	S

Significance at 0.05 levels, table value ( $r=0.195$  df, 98)

From the above table, it is clear that the relationship between computer attitude and teaching efficacy of male and female teachers was found to be moderate (male  $r=0.496$ , female  $r=0.445$ ). Teachers who has UG & PG degree were found to be moderate (UG  $r=0.496$ , PG  $r=0.528$ ) whereas, M.Phil degree was found to be low ( $r=0.298$ ).

Teachers who belong to the age group of below 30 years have substantial relationship ( $r=0.646$ ), whereas, teachers are having 30-40 years & above 40 years found to be low ( $r=0.387$  &  $r=0.333$ ).

Teachers belong to below 10 years of experience in teaching was found to be substantial (0.610) and teachers are having 10-20 years teaching experience found to be low (0.323) whereas, teachers are having above 40 years experience was found to be negative correlation between computer attitude and teaching efficacy at 0.05 level.

Teachers using computer daily was found to be substantial relationship (0.738) and occasional users found to be low relationship (0.357).

The relationship between the computer attitude and teaching efficacy of Government, unaided, rural school and urban school teachers was found to be moderate whereas, teachers working in aided ( $r=0.383$ ) & semi urban ( $r=0.198$ ) schools found to be low.

**Hypothesis-2:** - There is no significant difference between male and female high school teachers with respect to computer attitude.

**Table-2**  
**Difference in Computer Attitude of High School Teachers with respect to Sex**

Sample	Sub sample	No	Mean	SD	t value	S/NS
Sex	Male	45	50.00	6.718		
	Female	55	51.93	7.138		

(At 5% level of significance the table value of "t" is 1.96)

It is inferred from the above table that there is significant difference between the male and female high school teachers in their computer attitude, since the calculated 't' value is greater than the table value, 1.96 at 5% level of significance.

**Hypothesis-3:**-There is no significant difference among high school teachers degree, age, teaching experience, level of computer use, level of internet use, type of school and location with respect to computer attitude.

**Table-3**  
**Difference in Computer Attitude among High School teachers with reference to background variables**

Sample	Groups	N	Sources of variation	Sum of squares	df	Mean square	F	S/NS
Degree	UG	18	Between groups	131.856	2	65.928		
	PG	60	Within groups	4697.784	97	48.431	1.361	NS
	M.Phil	22	Total	4829.640	99			
Age	>30 Yrs	43	Between groups	12.773	2	6.386		
	30-40yrs	41	Within groups	4816.867	97	49.658	0.129	
	<40yrs	16	Total	4829.640	99			
Teaching Experience	>10yrs	56	Between groups	153.218	2	76.609		
	10-20 yrs	38	Within groups	4676.422	97	48.211	1.589	
	Above 20yrs	6	Total	4829.640	99			
Level of Computer Use	Daily	26	Between groups	271.810	2	135.905		
	Occasionally	28	Within groups	4557.830	97	46.983	2.892	
	Rarely	46	Total	4829.640	99			
Level of Internet use	Daily	14	Between groups	177.006	2	88.503		
	Occasionally	36	Within groups	4652.634	97	47.965	1.845	
	Rarely	50	Total	4829.640	99			
Type of school	Govt	31	Between groups	189.837	2	94.918		
	Aided	37	Within groups	4639.803	97	47.833	1.984	
	Unaided	32	Total	4829.640	99			
Location	Rural	42	Between groups	286.255	2	143.128		
	Semi Urban	20	Within groups	4543.385	97	46.839	3.056	
	Urban	38	Total	4829.640	99			

(At 5% level of significance the table value of "F" at 2, 97 df is 3.07)

From the table-3 it is inferred that the calculated F values for degree (0.477), age (1.353), teaching experience (1.270), level of computer use (0.422), level of internet use (0.562), and type of school (0.483) is not significant at 0.05 level. As it is less than the table

value (3.07), thus there is no significant difference among degree, age, teaching experience, level of computer use, level of internet use, and type of school in their computer attitude of high school teachers.

But it is inferred from the same table that the calculated F value for location (5.054) is significant at 0.05 levels. It is greater than the value of 'F' (3.07). Hence, there is significant difference among rural, semi urban and urban high school teachers in computer attitude.

**Table-3.a**  
**Difference in Computer Attitude of High School teachers with respect to Rural and Semi Urban**

Location	N	Mean	SD	t-value	S/SN
Rural	42	53.38	7.36	0.79	NS
Semi Urban	20	55.05	7.91		

From the table 3.a, the t value indicates that the mean score 53.38 of rural teachers and mean scores 55.05 of semi urban teachers do not differ significantly at 0.05 level.

**Table-3.b**  
**Difference in Computer Attitude of High School teachers with respect to Semi Urban and Urban**

Location	N	Mean	SD	t-value	S/SN
Semi Urban	20	55.05	7.91	1.66	NS
Urban	38	58.21	5.48		

From the table 3.b, the t value indicates that the mean score 53.38 of rural teachers and mean scores 55.05 of semi urban teachers do not differ significantly at 0.05 level

**Table-3.c**  
**Difference in Computer Attitude of High School teachers with respect to Rural and urban**

Location	N	Mean	SD	t-value	S/SN
Rural	42	53.38	7.36	3.33*	S
Urban	38	58.21	5.48		

But, It is inferred from the table 3c that there is significant difference between rural and urban high school teachers in their computer attitude, since the calculated' value is greater than the table value, 1.96 at 5% level of significance.

**Hypothesis-4:** - There is no significant difference between male and female high school teachers with respect to their teaching efficacy.

**Table-4**  
**Difference in Teaching Efficacy of High School Teachers with respect to Sex**

Sex	N	Mean	SD	t value	S/SN
Male	45	72.36	12.130	1.31	NS
Female	55	75.31	9.875		

(At 5% level of significance the table value of "t" is 1.96)

It is inferred from the above table that there is no significant difference between the male and female high school teachers in their teaching efficacy, since the calculated't' value is lesser than the table value1.96 at 5% level of significance.

**Hypothesis-5:-** There is no significant difference among degree, age, teaching experience, level of computer use, level of internet use, type of school and location of high school teachers with respect to their teaching efficacy.

**Table-5**  
**Difference in Teaching Efficacy of High School Teachers with Reference to Background Variables.**

Relationship between computer attitude and teaching efficacy of high school teachers

Sample	Groups	N	Sources of variance	Sum of squares	df	Mean square	F	S/NS
Degree	UG	18	Between groups	147.644	2	73.822	0.606	NS
	PG	60	Within groups	11808.316	97	121.735		
	M.Phil	22	Total	11955.960	99			
Age	>30 Yrs	43	Between groups	57.575	2	28.787	0.235	NS
	30-40yrs	41	Within groups	11898.385	97	122.664		
	<40yrs	16	Total	11955.960	99			
Teaching experience	>10yrs	56	Between groups	280.731	2	140.365	1.166	NS
	10-20 yrs	38	Within groups	11675.229	97	120.363		
	Above 20yrs	6	Total	11955.960	99			
Level of Computer use	Daily	26	Between groups	498.880	2	249.440	2.112	NS
	Occasionally	28	Within groups	11457.080	97	118.114		
	Rarely	46	Total	11955.960	99			
Level of Internet use	Daily	14	Between groups	164.059	2	82.030	0.675	NS
	Occasionally	36	Within groups	11791.901	97	121.566		
	Rarely	50	Total	11955.960	99			
Type of school	Govt	31	Between groups	40.955	2	20.478	0.167	NS
	Aided	37	Within groups	11915.005	97	122.835		
	Unaided	32	Total	11955.960	99			
Location	Rural	42	Between groups	632.715	2	316.357	2.710	NS
	Semi Urban	20	Within groups	11323.245	97	116.734		
	Urban	38	Total	11955.960	99			

(At 5% level of significance the table value of "F" at 2, 97 df is 3.07)

From the table-5 it is inferred that the calculated F values for degree (0.606), age (0.235), teaching experience (1.166), level of computer use (2.112), level of internet use (0.675), type of school (0.167) and location (2.710) is not significant at 0.05 levels. As it is less than the value of 'F' (3.07), thus there is no significant difference among high school teachers degree, age, teaching experience, level of computer use, level of internet use, and type of school with their teaching efficacy.

### FINDINGS

1. There is significant correlation between computer attitude and efficacy of high school teachers with reference to background variables.
2. There is a significant difference between male and female high school teachers with respect to their computer attitude.
3. There is no significant difference among high school teachers degree, age, teaching experience, level of computer use, level of internet use and type of school with respect to their computer attitude.
4. There is significant difference between rural and urban high school teachers in their computer attitude.
5. There is no significant difference between male and female teachers in their teaching efficacy.
6. There is no significant difference among degree, age, teaching experience, level of computer use, level of internet use, type of school and location of the high school teachers with respect to their teaching efficacy.

### DISCUSSION

From this investigation, the investigators found a significant correlation between computer attitude and teaching efficacy with reference to background variables. In most of the cases, correlation obtained as positive and significant at 0.05 levels.

The researchers have also found that the correlation co-efficient obtained between computer attitude and teaching efficacy of teachers whose age is below 30 years was found to be substantial. This is due to the fact that they might be well exposed to modern technology and might have learnt computer as one of their school/college subjects. Those whose age is above 30 years have low relationship. This may be due to the reason that they might not have any exposure to the modern technology, especially computer related technology. This may also be true in case of their teaching experience (Teachers who have less than 10 years teaching experience have substantial relationship whereas teachers who have 10-20 years teaching experience and above 20 years have low and negative relationship respectively).

Teachers who are using computer daily have substantial relationship. As they are well exposed to computer, they have good teaching efficacy than the teachers who use computer occasionally and rarely.

Table-2 shows that female teachers (57.65) have better attitude than male teachers (52.98); further, table-4 shows that female teachers (75.31) have more teaching efficacy than male teachers (72.36). This proves that there is a positive correlation between computer attitude and teaching efficacy. Table-3.c reveals that urban teachers have better attitude than rural teachers. The urban teachers might have been given orientation or training on computer and their schools may be equipped with computer lab. They may get better opportunity to use computer, in turn, it develops attitude.

### CONCLUSION

This study revealed that computer attitude directly contributes to the teaching efficacy of the teachers. Teacher's attitude towards computer

can be altered with the help of workshop, refresher courses, seminar etc. from this training programme we can promote awareness among the teachers. Hence the teachers have to be equipped with skills and abilities from time to time to handle the computers which will be conducive to a positive influence of our classroom teaching.

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