

Impact of Reading Behaviour on Teacher Efficacy among Arts and Science College Teachers – A Predictive Model

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Abstract : *The objective of the study was to examine the reading interest and reading behaviour among Arts and Science College teachers and to develop a model to predict Teacher Efficacy. Data was collected from a total of 1,305 teachers in Tamil Nadu state. Results showed that male teachers mostly read newspapers and female teachers preferred reading magazines and novel/fictions. English was the preferred language for male and Tamil for female teachers. Attitude towards reading was positively and significantly correlated with time spent for reading. Average time spent for reading by female teachers per day was significantly less ($1.1 \pm .6885$ hrs.) compared to male teachers (1.893 ± 1.1218 hrs.). Stepwise regression revealed a best fitting model with four predictor variables, they were: Attitude towards teaching (44.49%), Teaching experience (14.21%), Time spent for reading (32.83%) and Attitude towards reading (34.93%), which combined together explained about 69.1 per cent of variations of Teacher Efficacy. Gender and age did not make significant contribution in predicting Teacher Efficacy.*

Keywords: *Reading attitude, Reading behaviour, Regression model, Teacher efficacy, Teaching attitude*

I. Introduction

A teacher is considered as a source of knowledge, inspiration and innovation [1]. The effectiveness of education depends upon the quality of teachers and the quality of teachers', in turn, depends upon the knowledge and attitudes of teachers [1]. Scholars recognize the need for adequate preparation in understanding and applying the knowledge in teaching. Subject content knowledge alone does not adequately prepare teachers for the challenges they face in today's classrooms. Effective teaching requires teachers with in-depth subject knowledge [2] and recent developments, not only on the subject limited to the syllabus, but also extended to related fields.

Reading is one of the important aspects in enriching one's knowledge and widening one's perspective [3], particularly for teachers. Reading is also one of the most useful tools in improving teaching skill and also improving the understanding of students [4]. The importance of reading habit among teachers was emphasized by a number of studies [5], [6], [7]. Reading skill continues to be one of the basic skill areas to improve knowledge [8] and a basic tool of learning and one of the important skills necessary in day-to-day life [9], though more technologies have evolved. The purpose of this study is to analyze Arts and Science college teachers' reading attitude, reading habit and to examine how it is associated with teaching attitude and teacher efficacy, and to develop a predictive model through quantitative assessment.

II. Statement of The Problem

1.1. Lack of Passion for Reading

For teaching to be effective, continuous learning is expected to be at the centre of the teacher's role. Continuous learning can be achieved through reading. Reading not only contributes to an individual's well-being, self-development and progress, but also to the whole nation and the world [3]. The quality of reading habits and interest of teachers has vital importance in order to be a good example for students [10]. In spite of the importance, interest in reading and reading habit is declining. Raman (2007) cautioned that lack of attitude towards reading and absence of reading habit, underlines the problem of educational growth [11]. Teachers, who are the role models for students, have great responsibility and should have reading habit. Developing good reading habit is very important for teachers, as they are training the future generations [12] because the students will be as literate as their teacher [13]. But, teachers themselves have not developed the habit of reading [14]. Despite its importance, the interest in reading is diminishing [15], [16]. Teachers do not read much and they have negative attitude towards reading [17], [18], [19].

1.2. Significance of Teacher Efficacy

Teachers' efficacy significantly affects the teachers' outcome and students' performance [20]. Beliefs and attitudes of teachers significantly influence students' performance and a predictor of teachers' teaching effectiveness [21]. Success in teaching is significantly and positively associated with the teacher self-efficacy [22]. Teacher efficacy guides the teachers in their performance, decisions and inspiration with respect to

precept; related to greater expectations for students [23]. Student inspiration and performance are presumed to be profound reinforces for teaching behaviours [24]. Goddard *et al.* (2006) asserted that student achievement can be improved by improving the teacher efficacy [25].

III. Review of Literature

Researchers have examined the relationship between extensive reading and creativity. For example, study conducted by Renandya & Jacobs (2002) emphasized the importance of extensive reading in development of topical knowledge [26] – is the most effective means of information improving one's comprehension and thinking skills [27]. Reading shapes good personality, ideas, right thinking and change of attitude. Reading influences the extent and accuracy of information as well as attitude, moral belief, judgment and action of the reader [28], which are essential virtues for the best performance of a teacher. Hanushek (1986:116) concluded that teachers, who perform well on verbal ability tests, do better in the classroom [29]. Manveet (2002) found that even well-educated individual's future is imperiled as they do not read well enough to equip them with knowledge and latest development in the field [30]. In a study on the impact of teacher subject knowledge on student achievement by Metzler & Woessmann (2010) recommended that teacher subject knowledge should be clearly on the agenda of educational administrators and policy-makers [31]. The work of Noor (2011) emphasized the need for good reading habit for a healthy, intellectual growth, which is crucial in achieving practical efficiency [32]. Benvides (2006) questioned how the students will gain the habit of reading while their teacher lacks reading attitude [33].

Kanti (2013) demonstrated that academic qualifications and subject knowledge alone did not significantly influence the relationship between the teacher attitudes and teaching aptitude, but, a person with higher qualification can be a better teacher unless he/she has positive attitude towards the profession [1]. Attitude is an "effective and intellectual state of readiness which is organized as a result of experiences and has a direct and active effect on the responses of individuals towards a relative state or subject" [34]. (Bektaş & Nalçacı, 2012) examined to what extent person values held by a teacher predicted his/her attitude towards teaching among 305 teacher candidates [35]. Their study confirmed that personal values were significant predictors of attitude towards teaching profession. Litt & Turk (1985) found that teachers who were indifferent towards their profession were more distressed than teachers who were enthusiastic and also established association between teacher's attitude towards teaching and the learning and understanding ability of students [36]. Tschannen-Moran & Hoy (2001:783) defined teacher efficacy as the "teacher's judgment of his or her capabilities to bring about desired outcomes of student engagement and learning – even among those students who may be difficult or unmotivated" [24].

Reading habit is influenced by a number of intrinsic and extrinsic/demographic factors, such as age, gender, educational level, status, home environment etc. [37]. Babu & Raju (2013) found that male and female teachers significantly differed in their attitude towards teaching profession [38]. Mavi & Çetin (2008) found that female candidate teachers exhibited higher level of attitude towards reading than compared to male candidate teachers [39]. Özşaker *et al.* (2012) found evidence of higher reading desire and adoption of effects of reading for female teachers than male teachers [40].

IV. Objectives of the study

The aim of this study was to critically analyze the reading behaviour, preference and attitude towards reading among Arts and Science College teachers in Tamil Nadu state and how these associate with teacher efficacy. The specific objectives were:

1. To examine how demographic factors (gender, age, discipline) associate with reading behaviour.
2. To study the effect of gender, age and experience over teacher efficacy
3. To propose an effective model to predict teacher efficacy

V. Measures and Methods

1.3. Survey Instrument

A well-structured close-ended questionnaire was used for data collection. Attitude towards Teaching (AT) was measured with a 17-item construct developed by adapting statements from previous studies. The construct had three dimensions viz. cognitive, affective and behavioural. Cronbach's alpha .893 ($M = 3.74 \pm .613$). A 17-item scale developed from constructs used in various studies and were adapted to this study was used to measure the subject's Attitude towards Reading (AR). Cronbach's alpha .862 ($M = 862 (M = 3.37 \pm .694)$). The 10-item short form Teacher Efficacy Scale (TES), used by Hoy & Woolfolk (1993) [41], which was originally based on the Teacher Efficacy Scale (TES) developed by Gibson & Dembo (1984) [42] was employed to assess the efficacy of the teachers – comprised of two sub-scales: Teaching Efficacy and Personal Efficacy. Cronbach's alpha was .811 ($M = 3.13 \pm .760$). The above mentioned three psychometric scales used

five-point Likert scales ranging from 1 = strongly disagree to 5 = strongly agree to measure the respondents' level of agreement. The negative items were reversely coded. Reading preference scale items were developed after a number of focused group discussions with the subjects. Four reading materials and two languages emerged as most popular and most read. The respondents ranked their preference of reading materials from 1 to 5 and the preferred language from 1 to 3 according to their priority of preference.

1.4. Participants

The population of this study was the Arts and Science College teachers in Tamil Nadu State, India. Data was collected by administering the questionnaire by three modes viz. (i) in person, (ii) by regular post and (iii) through E-mail. A total of 165 teachers were interviewed in person. A total of 965 hard copies of questionnaires were sent by regular post, out of which 226 were returned and 201 were usable. A total of 1312 soft copies of questionnaires were sent through E-mail. Out of which 989 were returned and 939 were found to be complete in all respects. Thus the total sample for this study was 1305 teachers from 32 districts of Tamil Nadu State, out of which, 48.27 % were males and the remaining 51.73% were females. The average age of the participants was 34.24 ± 9.272 years. The respondent teachers were from five discipline groups: Humanities (24%), Social Science (24%), Natural Science (10%), Formal Science (28%) and Professional (14%).

VI. results and discussion

1.5. Reading Behaviour

Examining the reading behaviour of the teachers included preference over reading material and reading language; time spent for reading per day; attitude towards reading and also difference in the above mentioned behaviours between male and female teachers, age, and their teaching discipline.

Table 1: Preference of reading materials

Reading Material	Mean	SD	Mean Rank		Mann-Whitney	
			Male	Female	U	Sig.
Newspapers	4.41	.892	738.18	573.50	158962.500	.000
Magazines	2.72	.784	582.29	719.00	168075.000	.000
Novel/Fiction	2.24	1.278	591.93	710.00	174150.000	.000
Subject-related books/ journals	3.10	1.155	672.29	635.00	200475.000	.062
Other	2.52	1.654	656.21	650.00	210600.000	.750

The mean score for both male and female teachers indicates that *Newspaper* was the most read ($M = 4.41 \pm .892$) and *Novel/Fiction* was the least preferred reading material for the teachers surveyed ($M = 2.24 \pm 1.278$) compared to other reading materials. The second most preferred reading material was *Subject-related books and journals* ($M = 3.10 \pm 1.155$), followed by *Magazines* ($M = 2.72 \pm .784$) as the third priority. The fourth in the order of preference was *Other* categories of reading materials ($M = 2.52 \pm 1.654$). The order of preference for male teachers based on the Mean Rank was: *Newspapers*, *Subject-related books/journals*, *Others*, *Novel/Fiction* and *Magazines*. The order of preference for female teachers was different: *Magazines*, *Novel/Fiction*, *Others*, *Subject-related books/journals* and *Newspapers*.

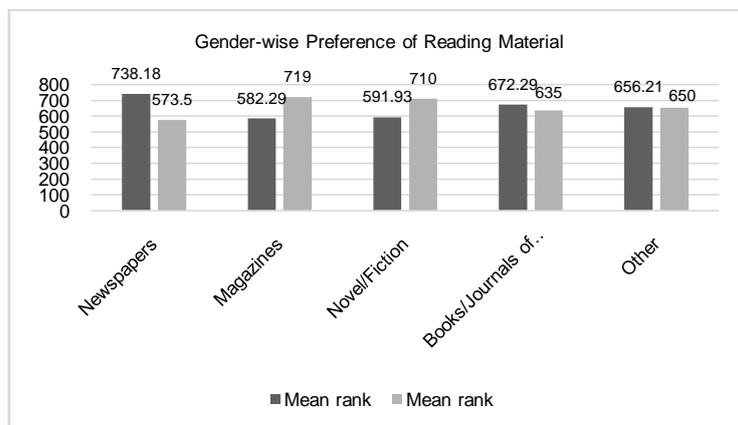


Figure 1: Gender-wise Preference of Reading Material

Statistical significance of differences in the preference of reading material between male and female teachers was examined by Mann-Whitney test process. The grouping variable was gender. Results indicated significant differences between male and female teachers. For example, *Newspaper* was significantly most preferred by male teachers ($MR = 738.18$, $U = 158962.5$, $p = .000$), whereas *Magazines* and *Novel/Fiction* were

more read by female teachers ($U = 168075.000, p = .000$ and $U = 174150.000, p = .000$ respectively). *Subject-related Books/Journals* were highly preferred by male teachers ($MR = 672.29$) than compared to female teachers ($MR = 635.00$), but the difference was not of statistical significance ($U = 200475.0, p = .062$).

Table 2: Preference of reading language

Language	Mean	SD	Mean Rank		Mann-Whitney	
			Male	Female	U	Sig.
Tamil	2.21	.405	611.21	692.00	385065.000	.000
English	2.79	.405	694.79	614.00	414450.000	.000
Other	1.00	-	653.00	653.00	440775.000	1.000

The combined mean scores of language preference for both male and female teachers indicated *English* as the 1st choice of reading language ($M = 2.79 \pm .405$); *Tamil* was their second choice of preference ($M = 2.21 \pm .405$) and other languages was their third choice ($M = 1.00$). Comparison between male and female teachers indicates that for male teachers, 1st preference was English language ($MR = 694.79$) and second choice was Tamil language ($MR = 611.21$). Whereas female teachers' preference was in the reverse order; their first choice was Tamil language ($MR = 692.00$) and English was their second language ($MR = 614.00$).

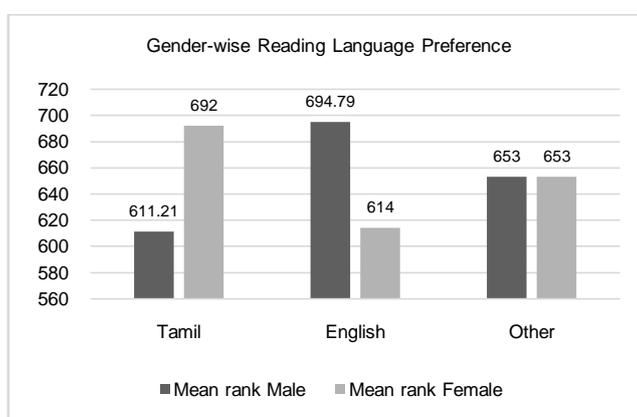


Figure 2: Gender-wise Reading Language Preference

Statistical significance of difference in the choice of language of reading material between the male and female teachers was studied by applying Mann-Whitney test. The two groups compared were male and female teachers and the dependent variable was the rank scores of language preference. Results indicated that male and female teachers contrasted significantly in their preference of reading language ($p < .0005$). Male teachers preferred reading materials in English ($MR = 694.79, U = 414450.000, p = .000$), whereas female teachers mostly read materials in Tamil language ($MR = 692.00, U = 385065.000, p = .000$).

Table 3: Male and female teachers' attitude towards reading

Group (Gender)	N	Reading Attitude		t-test Statistics		
		Mean	SD	t	df	Sig.
Male Teachers	630	3.5586	.46583	12.446	1278.438	.000
Female Teachers	675	3.1993	.57430			

Equal variances not assumed (2-tailed)

Mean scores indicate Reading attitude of male group was higher ($M = 3.5586 \pm .46583$) than the female group ($M = 3.1993 \pm .57430$). Independent samples *t*-test statistics shows that that the difference in the mean scores of Reading attitude between male and female groups was statistically significant [$t(1278.438) = 12.446, p = .000$]. Male teachers had significantly higher level of positive attitude towards reading than compared to their female counterparts.

Table 4: Correlation between teachers' age and their attitude towards reading

Variables	Pearson Correlation
Age vs. Attitude towards reading	$r = .181^{**}$ $p = .000$

** Correlation is significant at the 0.01 level (2-tailed).

Pearson's correlation results showed a positive, statistically significant but weak relationship between Age and Attitude towards reading ($r = .181, p < .0005$). Only 3.81 per cent of the variations in Attitude towards reading scores was attributed to the changes in Age. Older teachers exhibited slightly higher level of attitude towards reading than younger teachers. The equation $y = 3 + 0.01 * x$ describes the association between Age (x) and Attitude towards reading (y).

Table 5: Correlation between attitude towards reading and time spent for reading

Variables	Pearson Correlation
Attitude towards reading vs. Time spent for reading	$r = .512^{**}$ $p = .000$

** . Correlation is significant at the 0.01 level (2-tailed).

Positive, strong and statistically significant association was indicated between Attitude towards reading and Time spent for reading ($r = .512, p < .0005$, 2-tailed). Attitude towards reading explained 26.21 per cent of the variations in the mean score of Time spent for reading. This confirms that teachers who were more positive about reading, spent more time for reading. i.e. reading time duration increased with the increase in the level of positive attitude towards reading. The association can be represented by the equation: $y = 2.95 + 0.28 * x$, where 'y' is the Time spent for reading and 'x' is the mean Attitude towards reading.

Table 6: Correlation between teachers' age and their time spent for reading

Variables	Pearson Correlation
Age vs. Time spent for reading	$r = -.044$ $p = .112$

Pearson correlation test results indicate a weak, negative and statistically insignificant relationship ($r = -.044, p = .112$, 2-tailed) between the teacher's Age and their Time spent for reading. Only 0.16 per cent of the variations in the Time spent for reading mean scores was explained by the variations in Age. Results indicate that younger teachers spent almost the same amount of time for reading, as the older teachers. The relationship between Teachers' Age (x) and their Time spent for reading (y) can be expressed as the following equation: $y = 1.65 - 4.77E-3 * x$.

Table 7: Male and female teachers' time spent for reading

Group (Gender)	N	Time spent for reading		t-test Statistics		
		Mean	SD	t	df	Sig.
Male Teachers	630	1.893	1.1218	15.259	1030.208	.000
Female Teachers	675	1.100	.6885			

Equal variances not assumed (2-tailed)

Independent samples t-test method was applied to examine to what extent male and female teachers differed in time spent for reading. t-statistics revealed that mean score of reading duration per day for male group ($M = 1.893 \pm 1.1218$ hrs) was significantly greater than the mean score of female group ($M = 1.100 \pm .6885$ hrs per day) [$t(1030.208) = 15.259, p = .000$]. This leads to the conclusion that male teachers read significantly for a longer time than the female teachers. This may be due to the females' household chores which restricts the availability of time for reading.

Table 8: Time spent for reading by teachers of different discipline groups

Group (Teaching Discipline)	N	Time spent for reading		ANOVA		
		Mean	SD	F	df	Sig.
Humanities	315	2.071	1.4019	104.188	4	.000
Social science	315	1.286	.4525			
Natural science	135	.500	.0100			
Formal science	360	1.250	.7917			
Professional	180	2.000	.7091			

Whether time spent for reading varies with the subjects the teachers taught was examined by One-way Analysis of Variance method. Teaching subjects were grouped into five categories of disciplines as shown in the above table. Statistically significant difference on the average time spent for reading per day was found between the five discipline groups [$F(4, 1300) = 104.188, p = .000$]. Further multiple comparisons Post-hoc test

using Tukey HSD method revealed that except between *Humanities* vs. *Professional* and *Social Science* vs. *Formal Science* discipline pair of groups ($p > .05$), all other pairs of combinations of discipline groups differed significantly ($p < .0005$), Teachers associated with *Natural Science* spent significantly the least time (just half-an-hour per day) for reading ($M = 0.500 \pm .01$ hour per day) compared to other subject teachers. Whereas, teachers of *Humanities* subjects ($M = 2.071 \pm 1.4019$ hours per day) and teachers dealing with *Professional* subjects ($M = 2.000 \pm .7091$ hours per day) spent significantly more time (about two hours per day) for reading than compared to time spent by teachers of other disciplines.

1.6. Predictive Model

The following steps were involved in developing the Predictive Model: (1) Optimizing the number of variables by (i) Pearson’s correlation, (ii) Tolerance & VIF collenarity statistics, (iii) Adjusted R square, (iv) Mallow’s C_p and (v) Prediction Sum of Squares (PRESS), (2) Model significance and (3) developing the predictive equation.

Table 9: Pearson’s Correlation Matrix (Sig. 1-tailed)

Variables	Teacher Efficacy	Attitude towards Teaching	Attitude towards Reading	Time spent for Reading	Experience	Age
Attitude towards Teaching (AT)	.667 ($p = .000$)					
Attitude towards Reading (AR)	.591 ($p = .000$)	.635 ($p = .000$)				
Time spent for Reading (TR)	.573 ($p = .000$)	.483 ($p = .000$)	.512 ($p = .000$)			
Experience (EX)	.377 ($p = .000$)	-.085 ($p = .001$)	.375 ($p = .000$)	.098 ($p = .000$)		
Age	.241 ($p = .000$)	-.200 ($p = .000$)	.181 ($p = .000$)	-.044 ($p = .056$)	.922 ($p = .000$)	
Gender	.233 ($p = .000$)	.304 ($p = .000$)	.324 ($p = .000$)	.395 ($p = .000$)	-.006 ($p = .411$)	.057 ($p = .020$)

Pearson correlation r -values for Age ($r = .241$) and Gender ($r = .233$) with the dependent variable were less than the minimum recommended value .3. Also correlation between the two independent variables Age and Experience was greater than .7 ($r = .922$). Hence the independent variables, Age and Gender were excluded [43]. The remaining four independent variables satisfied the multicollinearity assumptions.

Table 10: Coefficient: Teacher Efficacy

Predictor Variables Model 4	Unstandardized Coefficients		Std. Coeff	t	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
(Constant)	1.669	.041		41.068	.000					
Attitude towards Teaching	.390	.013	.664	29.079	.000	.667	.628	.448	.455	2.198
Attitude towards Reading	-.096	.016	-.148	-5.957	.000	.591	-.163	-.092	.383	2.608
Time spent for reading	.102	.007	.283	15.354	.000	.573	.392	.236	.696	1.437
Experience	.029	.001	.461	24.760	.000	.377	.566	.381	.684	1.462

Tolerance scores for the four predictor variables were $> .1$. VIF values for all the four predictor variables are < 10 . The commonly used cut-off point for VIF was > 10 , i.e. VIF values above 10 would be an indication of multicollinearity [42]. Therefore, the variables included in the proposed model have not violated the multicollinearity assumption.

Residuals statistics showed maximum value of Cook’s Distance as .003, which was < 1 , and is quite safer [43]. Outliers were checked by inspecting Mahalanobis distances from the residuals statistics. The maximum Mahalanobis distance value was 10.844, which is less than the Critical Chi-square value 18.467 for 4 df, at .001 alpha level [44]. Casewise diagnostics revealed none of the cases’ standardized residual value was above 3.0 or below -3.0 [44].

The t -statistics shows that the four independent variables of the model were significant predictors of the dependent variable ($p < .0005$). *Attitude towards Teaching* (AT) explained 44.49 per cent of the variance in the mean scores of *Teacher Efficacy* (TE) ($r = .667, p = .000$), which was the highest significant contributor. About 34.93 per cent of the variance was attributed to *Attitude towards Reading* (AR) ($r = .591, p = .000$) and 32.83 per cent was explained by *Time spent for Reading* (TR) ($r = .573, p = .000$). *Experience* was attributed to 14.21 per cent of variance in *Teacher Efficacy* ($r = .377, p = .000$).

The unstandardized coefficients show the highest B value of .390 for *Attitude towards Teaching*. This means, *Attitude towards Teaching*, made the strongest unique contribution in explaining the dependent variable *Teacher Efficacy*, when the variances explained by the other three predictor variables in the model were

controlled for. The second highest significant unique contribution was by *Time spent for reading* (.102). *Experience* was the third unique contributor (.029) and the fourth was *Attitude towards reading* (-.096).

Table 11: Model Summary: Teacher Efficacy

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Mallows C_p	PRESS	ANOVA		
							df	F	Sig.
1	.667 ^a	.445	.445	.26854	1037.1	94.2	1, 1303	1046.784	.000
2	.797 ^b	.635	.634	.21800	240.7	62.1	2, 1302	1131.721	.000
3	.827 ^c	.683	.683	.20311	38.5	53.9	3, 1301	935.532	.000
4	.832 ^d	.692	.691	.20047	5.0	52.5	4, 1300	729.116	.000

a. Predictors: (Constant), Attitude towards Teaching

b. Predictors: (Constant), Attitude towards Teaching, Experience

c. Predictors: (Constant), Attitude towards Teaching, Experience, Time spent for reading

d. Predictors: (Constant), Attitude towards Teaching, Experience, Time spent for reading, Attitude towards Reading

Stepwise regression was applied. Stepping method criteria was set at probability of F entry = .05 and removal = .10. Compared to the four models, adjusted R Square value for model-4 explained 69.1 per cent of variance (the highest %) in the Teacher Efficacy and the model reached statistical significance [F(4, 1300) = 729.116, $p = .000$], which was a good level of prediction. SEE for model-4 indicated that Teacher Efficacy prediction was off by .20 – the lowest. Mallows C_p value for model-4 was the closest to the number of variables ($C_4 = 5.0$). Cross-validation, based on Prediction Sum of Squares (PRESS) also indicated the lowest PRESS value 52.5 [45] for model No. 4. To sum up, adjusted R Square, SEE, Mallows C_p , PRESS and ANOVA p -value confirmed the statistically significant contribution of the independent variables: Attitude towards Teaching (AT), Attitude towards Reading (AR), Time spent for Reading (TR) and Teaching Experience (EX), in predicting the criterion variable and thus ensured the good fitness of model No.4, compared to the other three models. Equation to predict Teacher Efficacy using the four independent variables of model-4 is given below.

$$Y'_i = b_0 + b_1X_1 + b_2X_2 + \dots + b_kX_k$$

$$\text{Teacher Efficacy (TE)} = 1.669 + .390*AT - .096*AR + .102*TR + .029*EX$$

VII. Conclusion

This study is significant as it associates the independent variable Attitude towards reading and the dependent variable Teacher efficacy, which, it seems have not been given much attention. The findings of this study asserted that reading habit of teachers resulted in improved teacher efficacy. Reading expands one's knowledge, reasoning power and learning skill. When teachers have positive attitude towards reading and reading habit, students eventually get motivated towards reading. But results indicated that time spent for reading and interest in reading among the teaching community was very less. Students can be effectively motivated towards inculcating reading habit, only when the teachers have positive attitude and interest towards reading. Studies have shown positive association between students' attitude towards reading and learning skill. Hence teachers should put in more efforts, to develop interest in reading among the students. Teacher training programs should be effective in developing and improving the reading habit among the trainee teachers and should be trained to motivate students.

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