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Teaching effectiveness of secondary school teachers: An empirical investigation

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Abstract
The principal aim of this research paper is to evaluate the teaching effectiveness of secondary school teachers based on their Gender, School Location, and School Type. To achieve thie objectives of this research, a survey approach was employed, utilizing the Teaching Effectiveness Scale (TES) developed by Dr. Subhash Sarkar and Abhijit Deb, specifically tailored for collecting data from secondary school teachers. A randomly selected sample of 250 secondary school teachers from North 24 Pgs, South 24 Pgs, and Kolkata districts in West Bengal participated in this research. The collected data were analyzed and interpreted using various statistical techniques. The study's results indicate that the level of teaching effectiveness among secondary school teachers is above the average mark. Additionally, the findings highlight a statistically significant difference in the effectiveness between male and female secondary school teachers. Furthermore, the study reveals a noteworthy distinction in the effectiveness of urban and rural secondary school teachers, underscoring the significant role that location plays in teaching effectiveness. However, the research also indicates that there is no significant difference in teaching effectiveness between government school teachers and their private school counterparts.

Keywords: effectiveness, secondary, teacher, gender, location, survey

Introduction

Teaching is the practice of imparting knowledge to students in a classroom setting, and its meaning has evolved throughout history. In contemporary times, teaching involves establishing environments that foster learning, enabling learners to acquire new knowledge, while teachers facilitate this process. The prevailing belief is that individuals cannot directly transfer knowledge to others; instead, they can create a conducive environment for the teaching and learning process to unfold. This perspective underscores the significance of effective teaching, which assesses and evaluates whether the entire educational process truly benefits the learners.

Every teaching process is driven by its specific objectives and aims, which serve as the yardstick for assessing its effectiveness. The paramount reason for emphasizing effectiveness lies in the finite nature of resources in education, encompassing both human and non-human resources. Maximizing the efficacy of the teaching process is of utmost importance. Effective teaching encompasses various dimensions. As per Raba (2017) [10], a significant component of effective teaching is the teacher's personality. Raymond (2008), in a Gulf-based study, defined an effective university professor as someone who: (1) demonstrates appreciation, (2) makes classes engaging, (3) maintains fairness, (4) prioritizes students' success, (5) displays a passion for their subject, (6) fosters friendliness, (7) encourages questions and discussions, (8) remains consistently well-prepared and organized, and (9) simplifies instructional materials. Notably, the teacher's personality remains a pivotal factor. This perspective aligns to some extent with the views of Chickering and Gamson (2006) and Hiebert & Grouws (2007) [8], who argue that effective teachers have a discernible impact on students' progress, reflecting a synergy between theoretical development and empirical findings. Regarding feedback and evaluation, some researchers suggest that an effective teacher consistently attains goals directly or indirectly linked to student outcomes (Anderson, 2004; Chen & Hoshower, 2003) [2, 4]. Conversely, other researchers (Hativa, 1995; Gallagher, 2000; Bain, 2004) [7, 6, 3] highlight the significance of heeding students' feedback. Hobson & Talbot (2001) [9] further emphasize the importance of evaluation by asserting that stakeholders, including administrators, faculty, and students, should collaboratively determine an appropriate evaluation system. In summary, there is no one-size-fits-all method to measure or ascertain the effectiveness of teaching. Genuine effectiveness arises from a complex interplay of factors, some intrinsic to the educators themselves, and others associated with the educational context.

Effectiveness is a crucial aspect of teaching, not only due to the constraints of time and resources but also because it manifests in the students' response. Akiri's research in 2013 revealed a significant connection between teacher effectiveness and students' academic prowess. Teachers deemed relatively ineffective yielded students with lower economic academic abilities, while effective teachers fostered better-performing students. This correlation is corroborated by Schachter and Thum (2004) [12] and Starr (2002), who identified a robust positive correlation between teachers' effectiveness and students' academic achievements. Although other factors like peer relationships and home environments, as noted by Starr (2002) [13], can influence students, it is irrefutable that effective teaching methods lead to enhanced student performance. Furthermore, delving into the psychological facets of teaching, effective teaching tends to capture students' attention and enhance the student-teacher rapport. Common complaints associated with student disengagement and apathy can be mitigated to a considerable degree when teaching is effective, naturally drawing the interest of a broader student demographic.

Effective teaching not only impacts academic performance but also contributes to maintaining order and discipline in the classroom.

It is evident that effective teaching holds paramount significance, not only for its direct and indirect impacts on learners but also concerning the constraints of available resources. Numerous studies worldwide have shed light on the preference for "more effective" teachers over "more qualified" ones in many schools. When the teaching process lacks effectiveness, it undermines the very essence of the modern-day definition of teaching, as the learning environment associated with ineffective teaching is not conducive to learning.

Objectives of the Study

Following objectives were identified for this particular study –

O_1: To study the level of Teaching Effectiveness of Teachers at Secondary Level.

O_2: To assess and compare Teaching Effectiveness of Secondary School Teachers across various demographic factors, such as Gender (Male and Female), School Location (Rural and Urban), and School Type (Government and Private)

Research Question & Hypotheses

Based on an extensive review of literature from both Indian and foreign sources, the researchers have developed the following research question and hypotheses, categorized in alignment with the specific research objectives -

The research question formulated for Objective O_1 is as follows –

RQ_1: What is the level of Teaching Effectiveness of Teachers at Secondary Level?

The research hypotheses formulated for Objective O_2 are as follows –

H_O1: There is no significant difference in Teaching Effectiveness between Male and Female Teachers at Secondary Level.

H_O2: There is no significant difference in Teaching Effectiveness between the Rural School Teachers and Urban School Teachers at Secondary Level.

H_O3: There is no significant difference in Teaching Effectiveness between the Government School Teachers and Private School Teachers at Secondary Level.

Methodology of the Study

Population: The researchers included all secondary school teachers in West Bengal as the population of the study.

Sample: The sample were selected randomly from the different schools of North 24 Pgs, South 24 Pgs and Kolkata districts. The sample was comprise from 25 randomly selected schools and total 250 teachers of secondary schools were selected as sample for this study.

Sample Structure: A sample of 250 secondary school teachers was selected for this research. Among 250 teachers, the number of male teachers is 130 (52%) and the number of female teachers is 120 (48%). Among 250 teachers, the number of teachers from Urban School is 180 (72%) and the number of teachers from Rural school is 70 (28%). Among 250 teachers, the number of Government School teachers is 90 (36%) and the number of Private School teachers is 160 (64%).

Table 1: Sample Structure_Type of School wise

Government School Teachers (90)		Private School Teachers (160)		Total
Male	Female	Male	Female	250
61	29	69	91	

Table 2: Sample Structure Location of School-wise

Rural School Teachers (70)		Urban School Teachers (180)		Total
Male	Female	Male	Female	250
41	29	89	91	

Variables

The present researchers had identified two types of variables for this research –

A. Major Variable: Teaching Effectiveness

B. Demographical Variables:

- **Gender:** Male and Female
- **Location of School:** Urban and Rural
- **School Type:** Government and Private

Tool Used

The researchers used Teaching Effectiveness Scale (TES), developed by Subhash Sarkar and Abhijit Deb, for their study. This scale comprised 40 items categorized into four dimensions: (I) Preparation, (II) Presentation, (III) Application, and (IV) Management. It was administered to 300 secondary school teachers. To assess the scale's reliability, the split-half (odd-even) method was employed, considering the gender categories of the teachers. The coefficient of correlation was computed based on the split-half data. The validity of the Teaching Effectiveness Scale was determined through face validity. The scale was presented to over ten experts in the field to evaluate the relevance of its test items. For item selection and elimination, the experts' unanimous agreement was considered as the criterion. Additionally, the validity of the scale was evaluated through item analysis on the initial draft, which involved identifying "f-differences" between the mean scores of the high-scoring group (top 30%) and the low-scoring group (bottom 30%). Based on the resulting 't' values, item selection and elimination decisions were made. Consequently, valid items were chosen for the final version of the scale. Hence, it can be confidently asserted that the Teaching Effectiveness Scale is indeed a valid measurement tool.

Data Collection Procedure

To carry out the research, data were gathered using a survey technique. A total of 25 schools located in North 24 Pgs, South 24 Pgs, and Kolkata districts were selected for the study. The Teaching Effectiveness Scale (TES) was then administered to 250 teachers from these chosen schools. Each teacher was asked to provide responses based on their personal beliefs and thoughts, independently, without consulting with other teachers.

Descriptive Statistics of raw data collected

Table 3: Descriptive Statistics

Statistics	Teaching Effectiveness of Secondary School Teachers
Minimum	98
Maximum	185
Mean	144.75
Median	145.00
Mode	145
Standard Error of Mean	0.721
Std. Deviation	14.621
Variance	212.042
Skewness	0.021
Kurtosis	0.095

Analysis and Interpretation

1. Analysis of Data with respect to Objective 1:

O_1: To study the level of Teaching Effectiveness of Teachers at Secondary Level.

For fulfillment of the above mentioned objective, one research question was formulated and tested which was as follows:

RQ_1: What is the level of Teaching Effectiveness of Teachers at Secondary Level?

Table 4: Level of Teaching Effectiveness Entire Sample

Variable	Mean	SD	Minimum Score	Maximum Score	No. of sample above Mean	No. of sample below Mean
Teaching Effectiveness	144.75	14.6	98	185	157	93

Interpretation

From the Table 4, it is shown that mean score of Teaching Effectiveness of 250 teachers was found 144.75 and Standard Deviation (SD) was 14.6. The minimum score of Teaching Effectiveness Scale for Teachers was 98 and maximum score of this scale was 185. The number of teachers above means score was found 157 and the number of teachers below means score was found 93.

2. Analysis of Data with respect to Objective 2

O_2: To assess and compare Teaching Effectiveness of Secondary School Teachers across various demographic factors, such as Gender (Male and Female), School Location (Rural and Urban), and School Type (Government and Private)

For fulfillment of the above mentioned objective, three null hypotheses were formulated and tested which were as follows:

H_O1: There is no significant difference in Teaching Effectiveness between Male and Female Teachers at Secondary Level.

H_O2: There is no significant difference in Teaching Effectiveness between the Rural School Teachers and Urban School Teachers at Secondary Level.

H_O3: There is no significant difference in Teaching Effectiveness between the Government School Teachers and Private School Teachers at Secondary Level.

Testing of $H_0$1:

Table 5: Group Statistics TES Gender

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Teaching Effectiveness	Male	130	143.24	12.54	0.535
	Female	120	146.29	16.95	1.421

(TES = Teaching Effectiveness Scale)

Table 6: Independent Samples Test of TES_Gender

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Teaching Effectiveness	.221	.638	-1.906*	248	.018

(*significant at 0.05 level of significance)

Interpretation

From the analysis in Table 6, it is seen that in case of Levene's Test for equality of variances the calculated p value is 0.638 (p>.05). So, equal variance can be assumed. Table 6 also shows that in case of comparison of mean scores of Teaching Effectiveness between Male and Female teachers the calculated $\mathbf{t}_{(248)}$ value is 1.906 and 'p' value is 0.018 (p<.05). Hence, t is significant at 0.05 level. So, **$H_0$1** is rejected and it can be inferred that mean scores of female teachers are significantly different from male teachers in respect to Teaching Effectiveness.

Testing of $H_0$2:

Table 7: Group Statistics TES Location of School

	Locality	N	Mean	Std. Deviation	Std. Error Mean
Teaching Effectiveness	RURAL	70	147.23	16.126	0.988
	URBAN	180	140.22	12.629	1.145

(TES = Teaching Effectiveness Scale)

Table 8: Independent Samples Test of TES_ Location of School

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Teaching Effectiveness	1.781	.183	1.008*	248	.014

(* significant at 0.05 level of significance)

Interpretation

From the analysis in Table 8, it is seen that in case of Levene's Test for equality of variances the calculated p value is 0.183 (p>.05). So, equal variance can be assumed. Table 8 also shows that in case of comparison of mean scores of Teaching Effectiveness between Urban and Rural school teachers the calculated $\mathbf{t}_{(248)}$ value is 1.781 and 'p' value is 0.014 (p<.05). Hence, t is significant at 0.05 level. So, $H_0$2 is rejected and it can be inferred that mean scores of urban school teachers are significantly different from rural school teachers in respect to Teaching Effectiveness.

Testing of $H_0$3:

Table 9: Group Statistics TES School Type

	School Type	N	Mean	Std. Deviation	Std. Error Mean
Teaching Effectiveness	Government	90	145.66	14.625	0.987
	Private	160	143.34	14.176	1.248

(TES = Teaching Effectiveness Scale)

Table 10: Independent Samples Test of TES_School Type

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Teaching Effectiveness	.745	.389	-1.035**	248	.302

(**not significant at 0.05 level of significance)

Interpretation

From the analysis in Table 10, it is seen that in case of Levene's Test for equality of variances the calculated p value is 0.389 (p>.05). So, equal variance can be assumed. Table 10 also shows that in case of comparison of mean scores of Teaching Effectiveness between Government and Private School teachers the calculated $t_{(248)}$ value is 1.035 and 'p' value is 0.302 (p>.05). Hence, t is not significant at 0.05 level. So, $H_0$3 is not rejected and it can be inferred that mean scores of government school teachers are not significantly different from private school teachers in respect to Teaching Effectiveness.

Conclusion

The empirical investigation into the Teaching Effectiveness of Secondary School Teachers sheds light on several critical aspects of education. The study, drawing from a comprehensive review of both Indian and foreign literature, sought to examine the impact of various demographic factors on teaching effectiveness. The research revealed valuable insights, including the finding that there is a significant difference in teaching effectiveness between male and female teachers at the secondary level. This insight challenges stereotypes and underscores the importance of focusing on individual teaching skills and abilities rather than gender. Furthermore, the research highlighted the significant role that location of school plays in teaching effectiveness. It was found that urban and rural secondary school teachers differ in their effectiveness, emphasizing the importance of tailoring educational approaches to suit the context. The study also found that the type of school, whether government or private, does not significantly impact teaching effectiveness. This insight has implications for policy and resource allocation in the education sector. In sum, this empirical investigation contributes to the ongoing discourse on teaching effectiveness and its interaction with demographic variables. It underscores the importance of evidence-based approaches in shaping educational policies and practices, with the ultimate goal of enhancing the quality of education for secondary school students.

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