Chapter 4
Analysis and Interpretation of Data

4.1 Analysis and Interpretation of Data

"Statistics is the branch of science methodology. It deals with collection, classification, description and interpretation of data obtained by conduct of surveys and experiments. Its essential purpose is to describe and draw inferences about the numerical properties of population". **George A Ferguson**

"Analysis is the ordering – the breaking down of data into constituent parts in order to obtain answer to research questions". **Kerlinger**

In the present research study, the researcher has made an attempt to analyses and interpret the data by using the following statistical techniques.

4.2: Regression

When two related variables have cause and effect relationship and when a change in one variable induces a change in the other variable then there exists correlation between them. Thus, the strength of relationship between them can be known and measured by the correlation. If the average value of one variable is to be estimated corresponding to the given value of the other variable then regression is used. Here, of course the cause and effect relationship between two variables is tacitly implied. A variable in which change occurs is called a cause variable or independent variable. We shall call it an independent variable and we shall denote it by X. the other variable whose value is to be estimated corresponding to a given change in X is called an effect variable or dependent variable and we shall denote it by Y. In statistical terms, we say that there is some definite mathematical relationship with an error term.

$Y=\alpha +\beta X+\mu$(error term)

Where,

Y = Dependent variable

X= Explanatory variable/Independent variable

α = Constant term

β = Coefficient term/ slope of the equation

4.2 Quantitative Analysis

Objective 1. "To study the impact of teaching competency on the academic achievement of the learners".

Hypotheses 1: "There is no impact of teaching competency on the academic achievement of the learners".

Table No 22: Executive summary of teaching competency on the academic achievement of the Learners.

Executive Summary

Model	R	R Square	R Square Adjusted	Estimated Standard Error
1	.050	.003	-.001	9.421

a. Predictors: (Constant), Teaching Competency

The above table is interpreted that the value of r is .050 which shows that there is   no correlation between the teaching competency of teachers and the academic achievement of   Learners and in the table value of r square is .003 which shows that .003 percent variation in academic achievement of Learners is described by the teaching competency of teachers. The standard error estimate is 9.421 and the adjusted R Square is -0.001. This can also be interpreted that in present societal system Learners are learning from various other sources. They have electronic gadgets with them and through which Learners can learn new knowledge of the subject.

Table No 23: ANOVA Table

Models	Squares Sum	Df	Mean Square	F	Significance
Regression	66.820	1	66.820	.753	.386
Residual	26449.430	298	88.756		
Total	26516.250	299			

a. Dependent Variable: Academic Achievement
b. Predictors: (Constant), Teaching Competency

In the above table the value of F is 0.753 which is lower than the value at .05 level of significance which shows that there is no impact of teaching competency of teachers on the academic achievement of the Learners. The hypothesis, there is no impact of teaching competency on the academic achievement of the Learners is accepted.

Table No 24: Coefficient of correlation for *teaching competency on the academic achievement of the Learners.*

Coefficients					
Model	Coefficients Unstandardized		Coefficients Standardized	t	Significance
	B	Standard Error	Beta		
1 (Constant)	72.020	2.627		27.410	.000
Teaching Competency	.023	.027	.050	.868	.386
Dependent Variable: Academic Achievement					

From the above given Coefficient of correlation table it can be explained that the value of p is higher than the value at 0.05 level of significance which shows that there is no impact of teaching competency on the academic achievement of the Learners. It means that academic achievement is depend upon many other factors. These factors may be directly or indirectly connected. In present scenario the ICT plays a very important role in the life of learners. They explore many literature from Internet sources.

Objectives 2: "To study the impact of socio-economic status on the academic achievement of the Learners".

Hypotheses 2: "There is no impact of socio-economic status on the academic achievement of the Learners".

Table No 25: Executive Summary for socio-economic status on the academic achievement of the Learners

Executive Summary				
Model	R	R Square	R Square Adjusted	Estimated Standard Error
1	.031	.001	-.002	9.428

a. Predictors: (Constant), Socio-Economic Status (SES)

The above table is interpreted that the value of r is .031 which reflects that there is no correlation between the socio-economic status of teachers and the academic achievement of Learners where the value of r square is 0.031 which shows that 0.031 percent variation in academic achievement of Learners is explained by the socio-economic status of

teachers. The standard error estimate is 9.428 and the adjusted R Square is -0.002. Here the personal attitude and aptitude put impression / motivate Learners.

Table No 26: Describing ANOVA for socio-economic status on the academic achievement of the Learners

ANOVA

Models		Squares Sum	df	Mean Square	F	Significance
1	Regression	25.190	1	25.190	.283	.595
	Residual	26491.060	298	88.896		
	Total	26516.250	299			

a. **Dependent Variable: Academic Achievement**

The above table is interpreted that the value of F is 0.283 which is lower than the value at 0.05 level of significance which shows there is no impact of socio-economic status of teachers on the academic achievement of the Learners. The hypothesis, there is no impact of socio-economic status on the academic achievement of the Learners is accepted. It may be because socio-economic status alone is not responsible for the achievement of learners. There are various other factors like family environment, education of parents, number of siblings, work status of the parents and many more.

Table No- 27: Coefficient of correlation for *Socio-Economic Status on the Academic Achievement of the Learners*

Coefficients

Model		Coefficients Unstandardized		Coefficients Standardized	t	Significance
		B	Standard Error	Beta		
1	(Constant)	72.156	3.972		18.166	.000
	socio-economic status (SES)	.029	.055	.031	.532	.595

a. **Dependent Variable: Academic Achievement**

The above table explained that the value of p is higher than the value at 0.05 level of Significance which shows that there is no impact of socio-economic status on the academic achievement of the Learners. The coefficient data also says that achievement in academic is not depend on the single factor i.e. socio-economic status of the learner.

Objectives 3: "To study the impact of personality traits on the academic achievement of the Learners".

Hypotheses 3: "There is no impact of personality traits on the academic achievement of the Learners".

Table No28: Executive Summary of Personality traits on the Academic Achievement of the Learners

Executive Summary

Model	R	R Square	R Square Adjusted	Estimated Standard Error
1	.158	.025	.022	9.315

a. **Predictors: (Constant), Personality**

The above table interpreted the result as the value of r is 0.158 which shows that there is very low correlation between the personality traits of teachers and the academic achievement of Learners and the value of r square is .025 which shows that .025 percent variation in academic achievement of Learners is described by the personality traits of the teachers. The standard error estimate is 9.315 and the adjusted R Square is -0.025.

Table No 29: *Describing ANOVA of Personality traits on the Academic Achievement of the Learners*

ANOVA

Models	Squares Sum	df	Mean Square	F	Significance
	Regression	1	658.377	7.587	.006
Regression 1 Residual Total	Residual	298	86.771		
	Total	299			

Dependent Variable: Academic Achievement
b. Predictors: (Constant), Personality
In the above table the value of F is 7.58 which is higher than the value at .05 level of significance which shows there is an impact of personality traits of teachers on the academic achievement of the Learners. The hypothesis, there is no impact of personality traits of teachers on the academic achievement of the Learners is rejected.

Table No 30: *Coefficient of correlation for Personality traits on the Academic Achievement of the Learners*

Coefficients

Model	oefficients Unstandardized		Coefficients Standardized	t	Significance
	B	Standard Error	Beta		
(Constant) 1 Personality	60.077 .060	5.173 .022	.158	11.613 2.755	.000 .006

Details of the above given table can be explained that the given value of p is lower than the value at 0.05 level of significance which shows that there is an impact of personality traits of teachers on the academic achievement of the Learners.

Objectives 4: "To study the impact of teaching competency, socio-economic status and personality traits on the academic achievement of the Learners".

Hypotheses 4: "There is no impact of teaching competency and socio-economic status and personality traits on the academic achievement of the Learners".

Table No 31: *Executive Summary of teaching Competency, Socio-economic Status and Personality traits on the Academic Achievement of the Learners*

Executive Summary

Model	R	R Square	R Square Adjusted	Estimated Standard Error
1				
1	.172	.030	.020	9.323

a. *Predictors: (Constant), SES, Teaching Competency, Personality*

From the above given table it can be interpreted that the value of r is .172 which shows that there is very low correlation between teaching competency, socio-economic status, the personality traits of teachers and the academic achievement of Learners and the value of r square is .030 which shows that .030 percent variation in academic achievement of Learners is described by the personality traits, socio-economic status and the teaching

competency of teachers. The standard error estimate is 9.323 and the adjusted R Square is 0.020.

Table No 32: *Describing ANOVA for Teaching Competency, Socio-economic Status and Personality traits on the Academic Achievement of the Learners*

ANOVA

Models		Squares Sum	df	Mean Square	F	Significance
1	Regression	787.643	3	262.548	3.021	.030
	Residual	25728.607	296	86.921		
	Total	26516.250	299			

a. Dependent Variable: Academic Achievement
b. Predictors: (Constant), Socio-economic Status (SES), Teaching   Competency, Personality

In the above table the value of F is 3.02 which is higher than the value at .05 level of significance which shows there is an impact of teaching competency, socio-economic status and the personality traits of teachers on the academic achievement of the Learners. The hypothesis, there is no impact of teaching competency, socio-economic status, personality traits of teachers on the academic achievement of the Learners is rejected.

Table No 33: *Coefficient of correlation for Teaching Competency, Socio-economic Status and Personality traits on the Academic Achievement of the Learners*

Coefficients

Modal		Coefficients Unstandardized		Coefficients Standardized	t	Significance
		B	Standard Error	Beta		
1	(Constant)	58.662	6.155	.217	9.530	.000
	Personality	.083	.029	-.092	2.826	.005
	Teaching	-.043	.036 .055	.002	-1.205	.229
	SES	.002			.028	.977

a. Dependent Variable: Academic Achievement

From the above given table it can be explained that the value of p shows that the personality traits of teachers have impact on the academic achievement of the Learners

and the value also shows that teaching competency have no impact on the academic achievement of the Learners, while as the values also show that there is no impact of socio-economic status on the academic achievement of the teachers.

Objectives 5: "To study the impact of socio-economic status on the teaching competency of the teachers".

Hypotheses 5: "There is no impact of socio-economic status on the teaching competency of the teachers".

Table No 34: *Executive Summary of Socio-economic Status on the Teaching Competency of the Teachers*

Executive Summary

Mode	R	R Square	R Square Adjusted	Estimated Standard Error
1	.016	.000	-.003	20.261

a. **Predictors: (Constant),** Socio Economic Status **(SES)**

The above table interpreted that the value of r is .016 which shows that there is no correlation between socio-economic status and the teaching competency of teachers and the value of r square is .000 which shows that .000 percent variation in teaching competency is explained by the socio-economic status of teachers. The standard error estimate is 20.261 and the adjusted R Square is -0.003.

Table No 35: *Describing ANOVA of Socio-economic Status on the Teaching Competency of the Teachers*

ANOVA

	Models	Squares Sum	df	Mean Square	F	Significance
	Regression	32.977	1	32.977	.080	*.777*
1	Residual	122337.170	298	410.527		
	Total	122370.147	299			

a. Dependent Variable: Teaching Competency
b. Predictors: (Constant), Socio Economic Status(SES)

In the above table the value of F is .080 which is lower than the value at .05 level of significance which shows there is no impact of socio-economic status on the teaching competency of teachers. The hypothesis, there is no impact of socio-economic status on the teaching competency of teachers is accepted.

Table No 36: *Coefficient of correlation for Socio-economic Status on the Teaching Competency of the Teachers*

Coefficients

Model	Coefficients Unstandardized		Coefficients Standardized	T	Significance
	B	Std. Error	Beta		
(Constant) 1	97.843	8.536		11.463	.000
Socio economic status(**SES**)	-.033	.117	-.016	-.283	.777

a. **Dependent Variable: teaching competency**

From the above given table it can be explained that the value of p is higher than the value at 0.05 level of significance which shows that there is no impact of socio-economic status on the teaching competency of the teachers is accepted.

Objectives 6: "To study the impact of personality traits on the teaching competency of the teachers".

Hypotheses 6: "There is no the impact of personality traits on the teaching competency of the teachers".

Table No 37: *Executive Summary of Personality traits on the Teaching Competency of the Teachers*

Executive Summary

Mode	R	R Square	R Square Adjusted	Estimated Standard Error
1	.654	.427	.426	15.334

a. **Predictors: (Constant), Personality**

The above table interpreted that the value of r is .654 which shows that there is correlation between personality traits and the teaching competency of teachers and the value of r square is .427 which shows that 42 percent variation in teaching competency is described by the personality traits of teachers. The standard error estimate is 15.334 and the adjusted R Square is 0.426.

Table No 38: *Describing ANOVA* **of Personality traits on the Teaching Competency of the Teachers**

ANOVA

Models	Squares Sum	Df	Mean Square	F	Significance
Regression 1 Residual Total	52304.071 70066.075 122370.147	1 298 299	52304.071 235.121	222.456	.000

a. Dependent Variable: Teaching Competency
b. Predictors: (Constant), Personality

In the above table the value of F is 222.45 which is higher than the value at .05 level of significance which shows there is an impact of personality traits on the teaching competency of teachers. The hypothesis result says that there is no impact of personality traits on the teaching competency of teachers is rejected.

Table No 39: *Coefficient of correlation for of Personality traits on the Teaching Competency of the Teachers*

Coefficients

Model	Coefficients Unstandardized		Coefficients Standardized	t	Significant
	B	Standard Error	Beta		
(Constant) 1 personality	-30.880 .538	8.516 .036	.654	-3.626 14.915	.000 .000

a. Dependent Variable: Teaching Competency
From the above given table it can be explained that the value of p is lower than the value at 0.05 level of significance which shows that there is an impact of personality traits on the teaching competency of teachers is rejected.

Objectives 7: "To study the impact of socio-economic status on the personality traits of the teachers".

Hypotheses 7: "There is no impact of socio-economic status on the personality traits of the teachers".

Table No 40: *Executive Summary Socio-economic Status on the Personality traits of the Teachers*

Executive Summary

Model 1	R	R Square	R Square Adjusted	Estimated Standard Error
1	.127	.016	.013	24.419

a. **Predictors: (Constant),** Socio Economic Status **(SES)**

The above table interpreted and discussed that the value of r is .127 which shows that there is very low correlation between the socio-economic status and personality traits of teachers and the value of r square is .016 which shows that .016 percent variation in teaching personality traits is explained by the socio-economic status of teachers. The standard error estimate is 24.419 and the adjusted R Square is 0.016.

Table No 41: *Describing ANNOVA Socio-economic Status on the Personality traits of the Teachers*

ANOVA

Models	Squares Sum	df	Mean Square	F	Significance
1 Regression Residual Total	2922.042 177694.208 180616.250	1 298 299	2922.042 596.289	4.900	.028

a. **Dependent Variable: Personality**

In the above table the value of F is 4.90 which is higher than the value at .05 level of significance which shows there is an impact of socio-economic status on the personality traits of teachers. The hypothesis, there is no impact of socio-economic status on the personality traits of teachers is rejected.

Table No 42: *Coefficient of correlation for Socio-economic Status on the Personality traits of the Teachers*

Coefficients

Model	Coefficients Unstandardized		Coefficients Standardized	*t*	Significant
	B	Standard Error	Beta		
1 (Constant)	212.193	10.287		20.627	.000
socio-economic status **(SES)**	.313	.141	.127	2.214	.028

a. **Dependent Variable: Personality**

From the above given table it can be explained that the value of p is lower than the value at 0.05 level of significance which shows that there is no impact of personality traits on the teaching competency of teachers is accepted.

Objective 8: "To study the impact of socio-economic status and Personality traits on the teaching Competency of the teachers".

Hypotheses 8: "There is no impact of socio-economic status and Personality traits on the teaching Competency of the teachers".

Table No 43: *Executive Summary of* **Socio-economic** *Status and Personality traits on the Teaching Competency of the Teachers*

Executive Summary

Model	R	R Square	R Square Adjusted	Estimated Standard Error
1	.661	.438	.434	15.224

a. **Predictors: (Constant), SES, Personality**

The above table interpreted that the value of r is .661 which shows that there is a correlation between the personality traits, socio economic status and the teaching competency of teachers and the value of r square is .438 which shows that 43 percent variation in teaching competency is explained by the personality traits and the socio economic status of the teachers. The standard error estimate is 15.224 and the adjusted R Square is 0.438.

Table No 44: *Describing ANOVA Socio-economic Status and Personality traits on the Teaching Competency of the Teachers*

ANOVA

Models	Squares Sum	df	Mean Square	F	Significance
Regression 1 Residual Total	53537.275 68832.872 122370.147	2 297 299	26768.637 231.761	115.501	.000

a. Dependent Variable: Teaching Competency
Predictors: (Constant), Socio Economic Status (SES), Personality

In the above table the value of F is 115.50 which is greater than the value at .05 level of significance which shows there is an impact of personality traits and socio-economic status on the teaching competency of teachers. The hypothesis, there is no impact of teaching competency on the academic achievement of the Learners is rejected.

Table No 45: *Coefficient of Correlation for Socio-economic Status and Personality traits on the Teaching Competency of the Teachers*

Coefficients

Model	Coefficients Unstandardized		Coefficients Standardized	*t*	Significance
	B	Standard Error	*Beta*		
(Constant)	18.593	9.993	.667	-1.861	.064
1 personality	.549	.036	-.101	15.194	.000
socio-economic status **(SES)**	-.205	.089		-2.307	.022

a. **Dependent Variable: Teaching Competency**

From the table it can be explained that the value of p for personality traits is lower than table value at 0.05 level of significance which means that personality traits have impact on the teaching competency of teachers. However the value of p for socio-economic status is greater than the table value at 0.05 level of significance which means that socio economic status does not have the impact on the teaching competency of teachers.

Table No 48: Testing of Hypotheses in Nutshell

Objectives	Null Hypothesis	Decision Values (at level 0.05)	Remark
1	There is no impact of teaching competency on the academic achievement of the students	R = 0.05 F = .753 P = 0.386	Accepted
2	There is no impact of socio-economic status on the academic achievement of the students.	R = 0.31 F = 0.283 P = 0.595	Accepted
3	There is no impact of personality traits on the academic achievement of the students	R = 0.158 F = 7.587 P = 0.006	Not accepted
4	There is no impact of teaching competency and socio-economic status and personality traits on the academic achievement of the students.	R = 0.172 F =3.021 P = 0.005, 0.229, 0.977	Not accepted
5	There is no impact of socio-economic status on the teaching competency of the teachers	R = 0.016 F = 0.80 P = 0.777	Accepted
6	There is no the impact of personality traits on the teaching competency of the teachers.	R = 0.654 F = 222.456 P = 0.000	Not accepted
7	There is no impact of socio-economic status on the personality traits of the teachers	R = 0.127 F = 4.9 P = 0.028	Accepted
8	There is no impact of teaching competency on the academic achievement of the Learners	R = 0.661 F = 115.501 P = 0.022	Not accepted

As a consolidated result it can be very clearly seen from the table that four hypotheses were accepted and four were not accepted. It also shows that the academic achievement of the Learners are depend on various other variables and factors. Teaching competency is depend on many other factors. These factors could be the interest and awareness taken for the recent development and knowledge of their subjects.
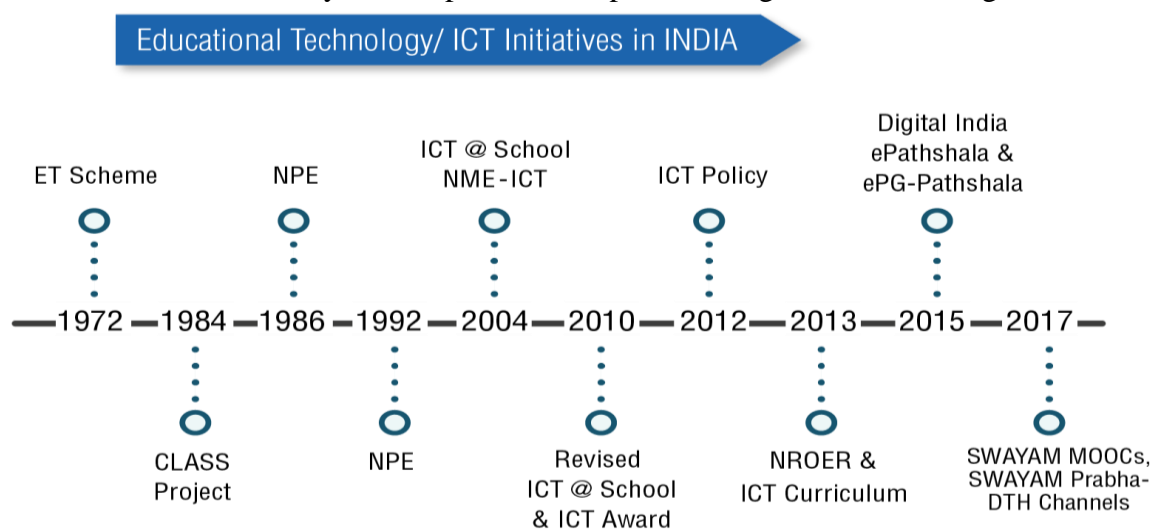
4.2 Qualitative Analysis

The analysis was done on the basis of the questions asked and noted individual teachers of the schools regarding the incorporation of digital teaching in routine class teaching. Digitalization is the effective step taken by the government if India where every school must have a computer lab and every teacher needs to learn e teaching, digital teaching etc. Approximately 1,79,498 schools (upper primary, secondary & senior secondary) was approved for strengthening ICT component under various schemes. The Indian Government took various steps to provide and strengthen digitalization in schools. These are: ICT in Education Curriculum for School System, e-pathshala, National Repository of Open Educational Resources (NROER), SWAYAM, SWAYAM PRABHA, CBSE initiatives, KVS initiatives, Operation Digital Board, The history of the digitalization in India:

Question No.1Do you have any competency of digital use of equipment.

Responses: All the teachers claimed that they are acquaint with most of the digital use of equipment.

Question No.2 What kind of digital initiative is taken in your institution?

Responses: All the teachers claimed that they take many initiatives like ICT in Education Curriculum for School System, e-pathshala, Operation Digital Board, Google use for

Educational Technology/ ICT Initiatives in INDIA

ET Scheme — NPE — ICT @ School NME-ICT — ICT Policy — Digital India ePathshala & ePG-Pathshala

—1972 —1984 —1986 —1992 —2004 —2010 —2012 —2013 —2015 —2017—

CLASS Project — NPE — Revised ICT @ School & ICT Award — NROER & ICT Curriculum — SWAYAM MOOCs, SWAYAM Prabha- DTH Channels

resources, Mobile applications etc.

Question No.3Do you have fully furnished ICT lab in your institution.

Responses: All the teachers claimed that they *have fully furnished ICT lab in their institution.*

Question No.4 Do your classrooms have smart boards?

Responses: Only five percent schools are having smart boards in their classroom.

Question No.5 What kind of digital initiative you are taking in the class.

Responses: The responses were silent and it was found that very few teachers were using ICT in classroom accept the ICT period/ Computer period.

There are various devices used in Information Communication Technology Laboratory (ICT) which can be used during teaching learning process. Teachers are using most of the devices. The use of computer is very common in this area. In Indian classroom every class does not have furnished computer devices. Schools have a separate lab where adequate number of computers were installed. School students do not keep laptop with them. Therefore teachers teaches via computer only during the ICT period. One another device is Mobile phones which is very commonly used by the learners. But learners are not allowed to bring their mobile phones into the classroom. Mobile phones have various features which are very easy to use like timer, calculator, clicking of photos of the events and also editing them, recording of lectures, information via short service messages (SMS), use for administrative purposed, learning material, E Mail checking, reminder for homework, surfing from internet explorer, ***use dictionary*** and many more. *IPADS is the device which can be used for recording, play music, download and transfer files, use dictionary etc. Digital Cameras, Tablet devices, projectors, television, radio, and tape recorders can be used in the classrooms during teaching. Then we have* Interactive Whiteboard. Through Interactive Whiteboard teaching becomes very easy and enjoyable. A lot of features are there in the Interactive Whiteboard (IWB). Teacher's competency increases using Interactive Whiteboard. Teachers can even stole lot of data of their subject in the hardware of Interactive Whiteboard. It can be connected with wifi. This all shows that teaching competency is not depend on socio-economic status and personality of the teachers but also the awareness and interest taken by the teachers of recent development in the field of Education.