3.1 Introduction

Every study in its planning phase is concerned with the problem of appropriate methodology. Methodology is a well laid out plan of conducting research in a scientific manner. It consists of formulation of research design, identification of variables, sampling, collection of data and finally analysis of data with the help of appropriate statistical techniques so that conclusions may be drawn, which have wider generalisations and implications.

3.2 Research Design

The research design is an important aspect of methodology. In fact, the research design is a conceptual structure within which the research is to be conducted. It constitutes of the blue print for the collection, measurement and analysis of data.

The subject matter of research design therefore includes planning the research, selection of the problem, obtaining relevant information from the data collected and making an analysis of the data and going right up to the writing of the report. It includes formulation of objectives, setting up of hypotheses, methods of selecting the subjects for collecting the data, the type of tools required for collecting the data and the type of statistical techniques to be employed for analysing the data to test the hypotheses. Therefore research design is an integral part in research and helps to economise efforts.

3.3 Research Method

Proper selection of method is critical in every research work. Every problem warrants the methods suited to achieve the objectives. While every method is useful in its own way, every method cannot be used for single problem, since the latter's need dominates

in selecting a proper method. Hence, the method must fit in with the problem. While right selection of a method yields upgraded dividends, the reverse is equally correct. Researchers have employed various methods and designs for conducting research and one of which is given below.

3.3.1 Descriptive Research

Descriptive research deals with the relationships between variables, the testing of hypotheses and the development of generalisations, principles or theories that have universal validity. Descriptive research methods are non-experimental, for they deal with the relationships among non-manipulated variables. In the words of **Best (1983),** *"A descriptive study describes and interprets what is. It is concerned with conditions or relationships that exist, opinions that are held, process that are going on, effects that are evident or trends that are developing. It is primarily concerned with the present, although it often considers past events and influences as they relate to current conditions."* The methods of research utilised in descriptive research are survey methods of all kind.

The present study is aimed to study the attitude of principals, teachers and students towards educational media and its utilisation at secondary school stage in Lucknow city. The study aims at finding out the present status of educational media at secondary school stage and how these media are being utilised? What are the purposes of utilisation? What are the infrastructure build up for the programmes? How do viewers react to the media? Therefore **descriptive survey method** is deemed most appropriate to be employed for the study.

Worthwhile survey studies collect three types of information; what exists, by studying and analysing important aspects of a contemporary situations; what do we want, by classifying goals and objectives possible through a study of the conditions existing elsewhere or what experts otherwise consider to be desirable, and how to achieve goals by exploring possible ways and means on the basis of the experience of others or opinion of experts.

3.4 Variables

Kerlinger says, "Variables is a property that takes on a different value." A variable is any feature or aspect of an event, function and process that by its presence and nature affects other events or process which is being studied.

Independent variables are those characteristics or conditions that can be manipulated, controlled or observed. Dependent variables are those conditions or characters that appear, disappear or change as the researcher introduces, removes or changes dependent variable.

The study is designed to examine attitudes of Principals, Teachers and Students towards educational media and its subsequent utilisation at secondary school stage according to/by them based on their personal information. Therefore **Independent Variables** of the study are personal information of Principals, Teachers and Students as board of the school, gender, age, teaching experience and teaching subject; while **Dependent Variables** are attitudes of principals, teachers and students towards educational media and utilisation of educational media according to/by them.

3.5 Population

A population is an identifiable and well specified group of individuals that have one or more characteristics in common that are of interest to the researcher. The population may be all the individual of a particular type or a more restricted part of that group. In this study the researcher wants to find out the attitude of principals, teachers and students towards educational media and its utilisation at secondary school stage in Lucknow city. The population of the study thus consists of principals, teachers and students of secondary schools of ICSE and CBSE Board of Lucknow city. The list of recognised secondary schools of ICSE and CBSE Board was obtained from their respective websites. The list contained names of 73 ICSE Board schools and 90 CBSE Board schools where classes 9th and 10th are held.

3.6 Sample and Sampling

Data collection is essentially an important part of research process so that the inferences, hypotheses or generalisations tentatively held may be identified as valid, verified as correct or rejected as untenable. The researcher could not survey or investigate the entire population of principals, teachers and students as it would entail a very lengthy process, therefore the investigator used a sample in order to make observations and handle the data.

A sample is a small proportion of a population selected for the purpose and analysis. A sample is a smaller representation of the population. Various techniques have been devised for selection of adequate sample. In the present study, **multi-stage sampling** technique has been used. The following sampling methods have been thus used:-

3.6.1 Random sampling

The descriptive term 'random' does not imply that the sample has been chosen in an offhand, careless or haphazard manner. Instead it means that we rely upon a certain method of selection called 'random' to private an unbiased cross section of the larger group of population. The criteria for the randomness in a sample are met when every unit in the population has the same chance of being chosen for the sample and when the selection of one unit in no way influences the choice of another.

Simple random sampling technique is employed in selecting the schools from the population. From the list of ICSE Board schools, every 4th school is selected in the sample so as to make a sample of 20 schools. Similarly from the list of CBSE Board schools, every 5th school is selected in the sample so as to make a sample of 20 schools. Thus 40 schools of CBSE and ICSE Board schools in total are selected for the present study and the Principals from each school represented the sample of the study.

3.6.2 Incidental Sampling

Incidental sampling technique refers to selection of individuals who are readily available at the time of data collection. It may also be called convenience sample. Four teachers from each sample schools are selected, using incidental random sampling technique, for the study,

3.6.3 Stratified random sampling

In this method, the population is divided into various strata or classes and a sample is drawn from each stratum randomly. In this research, stratified random sampling technique has been used to select students from each sample school according to their

gender. From each school 15 boys and 15 girls are selected using stratified random sampling technique.

3.6.4 Nature and Size of the Sample

The sample consists of 40 schools with a principal, 4 teachers and 30 students from each school. Further there are 20 schools each of CBSE and ICSE board and 15 boys and 15 girls from each school. Thus the sample is of 40 principals, 160 teachers and 1200 students. The following figure shows the number of principals, teachers and students in the sample.

Fig. 3.1

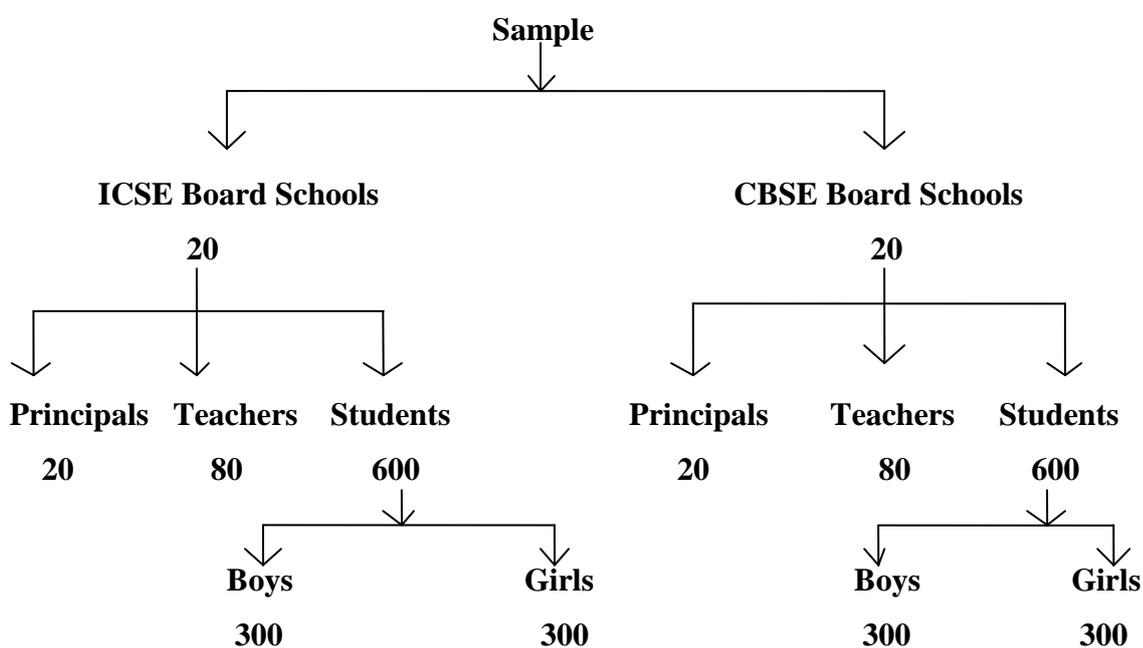**Number of Principals, Teachers and Students in the Sample**

Table 3.1

Distribution of Sample of Schools, Principals, Teachers and Students according to the Objectives for Study

S.No.	Objectives	Schools	Principals	Teachers	Students
1.	To study the attitude of Principals towards educational media at secondary school stage.	40	40	-	-
2.	To study the utilisation of educational media according to Principals of secondary school stage.	40	40	-	-
3.	To study the extent of utilisation of OHP, Computer and Smartclass in CBSE and ICSE board school according to Principals of secondary school stage.	40	40	-	-
4.	To study the attitude of Teachers towards educational media at secondary school stage.	40	-	160	-
5.	To study the utilisation of educational media by Teachers of secondary school stage.	40	-	160	-
6.	To study the extent of utilisation of OHP, Computer and Smartclass in CBSE and ICSE board school by Teachers of secondary school stage.	40	-	160	-

S.No.	Objectives	Schools	Principals	Teachers	Students
7.	To study the competence level in using educational media by Teachers of secondary school stage.	40	-	160	-
8.	To study the attitude of Students towards educational media at secondary school stage.	40	-	-	1200
9.	To study the utilisation of educational media according to Students of secondary school stage.	40	-	-	1200
10.	To study the extent of utilisation of OHP, Computer and Smartclass in CBSE and ICSE board school according to Principals of secondary school stage.	40	-	-	1200

3.7 Tools Used in the Study

Tools are the nucleus for the collection of data in any research work. The success of the whole study depends upon the relevant as well as appropriate tools. As a matter of fact, *"the selection of tools for a particular study depends upon the various considerations such as the objectives of the study, the amount of time at the disposal of the investigation, availability of suitable tests, personal competence of the investigator to administer, score and interpret the test results and the like."* **Pal (1969).**

In the present study, for assessing the attitude of principals, teachers and students towards educational media and its utilisation at secondary school stage, no appropriate standardised tool was available. Hence the researcher used self developed tools.

Following self developed tools are used for the study:-

1) Attitude Towards Educational Media Scale (ATEMS) for Principals and Teachers of Secondary Schools

2) Attitude Towards Educational Media Scale (ATEMS) for Students of Secondary Schools

3) Utilisation of Educational Media Questionnaire (UEMQ) for Principals of Secondary Schools

4) Utilisation of Educational Media Questionnaire (UEMQ) for Teachers of Secondary Schools

5) Utilisation of Educational Media Questionnaire (UEMQ) for Students of Secondary Schools

3.7.1 Construction of tools

For the construction of the tools the items are adapted from Kadzera's (2006) dissertation *"Use of Instructional Technologies in Teacher Training Colleges in Malawi"* and Rout's (2006) thesis *"Utilisation of Educational Media at Primary School Stage"*. The following common procedures are adapted for development of these tools

3.7.1.1 Identification of the Aspects

Before identifying the various aspects and sub-aspects of the questionnaire, the researcher went through some research reports, journals, books etc. On the basis of the information gained through above resources, the aspects were decided by the researcher.

3.7.1.2 Development of Appropriate Items

After identifying various aspects of the tools, the researcher developed appropriate items on identified aspects.

3.7.1.3 Collection of Opinion of the Experts

The opinion of the experts from the field of teacher education, regarding the validity and weightage of these dimensions to assess the attitude of principals, teachers and students towards educational media and its utilisation was sought. Suggestions regarding content coverage, language and nature of the items were also gathered from them. On the basis of the experts opinion, the researcher made needful changes in the tools.

3.7.1.4 Try out of the Tools for Item Analysis

Instructions for administration and scoring were finalised and the tools were ready for try out. For try out, the tools were administered on a group of 45 Principals and Teachers and 270 Students. There was no time limit for filling the tool. The respondents were permitted to return it as soon as they completed it. The items were then scored. A total score for each individual was obtained by adding up scores on each item.

3.7.1.5 Selection of Items

The items were selected on the basis of their discriminative values. The total scores of each subject on all the items were arranged in descending order i.e., from highest to lowest. Taking 27 percent of the subjects with the highest total score and also the 27 percent of the subjects with the lowest total scores, two criterion groups were formed. The responses of both the groups on each item were compared by t-test.

Eq No. 3.1

$$t = \frac{M_H - M_L}{\sqrt{\dfrac{\sigma_H^2}{N_H} + \dfrac{\sigma_L^2}{N_L}}}$$

Formula used for calculating discriminating value of each item of the tool

where, M_H = the mean score on a given statement for the high group

M_L = the mean score on a given statement for the low group

σ_H = the variance of distribution of responses of the high group to the statement

σ_L = the variance of distribution of responses of the high group to the statement

N_H = the total number of subjects in the high group

N_L = the total number of subjects in the low group

The t-value is a measure of the extent to which a given statement differentiates between the high and low groups. As a crude and approximate rule of thumb any t-value equal to or greater than 1.75 shows that the responses of high and low groups differ significantly. Thus this criterion was adopted to select the items for the final tool. In the final tool statements which differentiated between high and low groups were selected. This was done by arranging the t-values from highest to lowest and then taking the items with high t-values, i.e., 1.75 and above in the final tools.

3.7.1.6 Scrutiny of the Aspects and the Corresponding Items

All the tools were scrutinized by the investigator and the final draft was prepared with the help of the guiding supervisor.

3.8 The Final Tools

The final tools thus constructed after tryout and item analysis are as follows:-

3.8.1 Attitude Towards Educational Media Scale (ATEMS) for Principals and Teachers of Secondary Schools

The scale comprise of twenty four items. The items collected the participants' attitude towards the use of educational media. Items include such statements to which the respondents check their level of agreement or disagreement. This tool helps in answering objective number 1 and 4. The scale has items related to the area of teacher, teaching, student, learning, student-teacher relationship, development, time and cost effectiveness and wastage.

Table 3.2

Section wise Distribution of Items of ATEMS for Principals and Teachers Before and After Item Analysis

S. No.	Dimensions	No. of items before item analysis	No. of items after item analysis	S. No. of items	Percent
1	Teacher	8	3	6, 15, 19	12.5
2	Teaching	6	4	1, 4, 20, 22	16.67
3	Student	4	3	9, 17, 21	12.5
4	Learning	5	3	2, 5, 7	12.5
5	Student-teacher relationship	3	2	12, 16	8.33

S. No.	Dimensions	No. of items before item analysis	No. of items after item analysis	S. No. of items	Percent
6	Development	6	5	10, 13, 14, 18, 24	20.84
7	Time and cost effectiveness	5	2	3, 25	8.33
8	Wastage	4	2	8, 11	8.33
	Total	**40**	**24**		**100**

Positive Items

There are seventeen (17) positive items in the tool which are item no. 1, 2, 4, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18 and 19, 20, 21, 24 and 25.

Negative Items

There are seven (7) negative items in the tool which are item no. 3, 5, 6, 8, 11, 12 and 22.

Scoring

Table 3.3

Scoring pattern of ATEMS for Principals and Teachers of secondary school stage

Type of Item/Rating	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
Positive Items	5	4	3	2	1
Negative Items	1	2	3	4	5

From item no. 1 to item no. 24 scores ranged from 1 to 5. In the case of positive items the strongly agree response is given a score of 5, the agree response a score of 4, undecided response a score of 3, disagree response a score of 2 and the strongly disagree response is given a score of 1. In the case of negative items scoring procedure is reversed i.e., the strongly agree response is given a score of 1, agree a score of 2,

undecided a score of 3, disagree a score of 4 and strongly disagree a score of 5. A total of score for each individual is obtained by adding up scores on each item.

3.8.2 Attitude Towards Educational Media Scale (ATEMS) for Students of Secondary Schools

The scale comprise of twenty eight items. Items include such statements to which the respondents checked their level of agreement or disagreement. This section helps in answering objective number 8. The scale has items related to the area of learning, interest, development, utilisation and wastage.

Table 3.4

Section wise distribution of Items of ATEMS for Students Before and After Item Analysis

S. No.	Dimensions	No. of items before item analysis	No. of items after item analysis	S. No. of items	Percent
1	Learning	10	8	1, 2, 7, 13, 18, 20, 24, 25	28.57
2	Interest	9	6	4, 5, 8, 23, 27, 29	21.43
3	Development	7	7	6, 9, 10, 14, 16, 17, 26	25
4	Utilisation	5	4	3, 21, 22, 28	14.29
5	Wastage	4	3	11, 12, 15	10.71
	Total	**35**	**28**		**100**

Positive Items

There are twenty three (23) positive items in the tool which are item no. 1, 2, 4, 5, 6, 7, 8, 9, 10, 13, 14, 16, 17, 20, 21, 22, 23, 24, 25, 26, 27, 28 and 29.

Negative Items

There are five (5) negative items in the tool which are item no. 3, 11, 12, 15, and 18.

Scoring

Table 3.5

Scoring pattern of ATEMS for Students of secondary school stage

Type of Item/Rating	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
Positive Items	5	4	3	2	1
Negative Items	1	2	3	4	5

From item no. 1 to item no. 28 scores ranged from 1 to 5. In the case of positive items the strongly agree response is given a score of 5, the agree response a score of 4, undecided response a score of 3, disagree response a score of 2 and the strongly disagree response is given a score of 1. In the case of negative items scoring procedure is reversed i.e., the strongly agree response is given a score of 1, agree a score of 2, undecided a score of 3, disagree a score of 4 and strongly disagree a score of 5. A total of score for each individual is obtained by adding up scores on each item.

3.8.3 Utilisation of Educational Media Questionnaire (UEMQ) for Principals of Secondary Schools

The tool comprise of ten items. To get an overview of the principals in secondary schools, the tool first ask personal details of the participants about their, gender, age, qualification and experience. The next ten items, deal with the status of use of educational media, such as availability, maintenance etc. These data help to answer objective number 2 and 3.

Table 3.6

Section wise Distribution of Items of UEMQ for Principals Before and After Item Analysis

S.No.	Section	No. of items before item analysis	No. of items after item analysis
1	Extent of Utilisation	11	10

Scoring

Table 3.7

Scoring Pattern of UEMQ for Principals of secondary school stage

Response	Score
Yes	2
No	1
No response	0

For each item from no. 1 to no.10 the scores range from 2, 1 and 0. For yes option a score of 2 is given, for no option a score of 1 is given and for no response score of 0 is given. A total of score for each individual is obtained by adding up scores on each item

3.8.4 Utilisation of Educational Media Questionnaire (UEMQ) for Teachers of Secondary Schools

The tool comprise of two sections and eighteen items. To get an overview of the teachers in secondary schools, the tool first ask personal details of the participants about their, gender, age, qualification, teaching experience and teaching subject. The first section has thirteen items, deal with the status of use of educational media; such as availability, maintenance, activities etc. organised by the teachers. These data helps to answer objective no. 5 and 6. The second section has five items aimed at eliciting teachers' perceived competence levels in using the selected educational media. These data helps to answer objective number 7.

Table 3.8

Section wise Distribution of Items of UEMQ for Teachers Before and After Item Analysis

S.No.	Section	No. of items before item analysis	No. of items after item analysis
1	Extent of Utilisation	20	14
2	Competence level	6	5
	Total	**26**	**18**

Scoring

Table 3.9

Scoring pattern of UEMQ for Teachers of secondary school stage for Section I

Response	Score
Yes	2
No	1
No response	0

For each item from section I scores range from 2, 1 and 0. For yes option a score of 2 is given, for no option a score of 1 is given and for no response score of 0 is given.

Table 3.10

Scoring pattern of UEMQ for Teachers of secondary school stage for Section II

Response	Score
Very competent	4
Above average competence	3
Average competence	2
Little or no competence	1

For item from section II scores range from 1 to 4. The 'little or no competence' response is given a score of 1, 'average competence' a score of 2, 'above average competence' a score of 3 and 'very competent' response a score of 4. A total of score for each individual is obtained by adding up scores on each item

3.8.5 Utilisation of Educational Media Questionnaire (UEMQ) for Students of Secondary Schools

The tool comprise of fourteen items. To get an overview of the students in secondary schools, the tool first ask personal details of the participants about their, gender, age etc. The next fourteen items, deal with the status of use of educational media, such as arrangement, activities etc. These data helps to answer objective number 9 and 10.

Table 3.11

Section wise distribution of Items of UEMQ for Students Before and After Item Analysis

S.No.	Section	No. of items before item analysis	No. of items after item analysis
1	Extent of Utilisation	18	14

Scoring

Table 3.12

Scoring Pattern of UEMQ for Students of secondary school stage

Response	Score
Yes	2
No	1
No response	0

For each item from no. 1 to no.14 the scores range from 2, 1 and 0. For yes option a score of 2 is given, for no option a score of 1 is given and for no response score of 0 is given. A total of score for each individual is obtained by adding up scores on each item

3.9 Reliability of the Tools

A test is reliable to the extent that it measures whatever it is measuring consistently. The reliability of the tools is established by using Split-Half Method. The split-half reliability of the tools is estimated by employing Product Moment Correlation method.

For this the tools are divided into two halves by adopting odd even procedure. There after applying Spearman Brown Prophecy Formula, the reliability index for the whole individual tools is calculated. The value is found to be significant at 0.05 level of significance and that the scale is internally consistent to measure the desired objectives.

Table 3.13

Reliability of the tools used

S.No.	Name of the tool	Reliability Coefficient (Product moment correlation)	Reliability Index (Spearman Brown Prophecy Formula)
1	ATEMS for Principals and Teachers	0.72	0.84
2	ATEMS for Students	0.53	0.69
3	UEMQ for Principals	0.69	0.82
4	UEMQ for Teachers	0.68	0.81
5	UEMQ for Students	0.63	0.77

3.10 Validity of the Tools

Validity refers to the degree to which evidence and theory support the interpretation of test scores entailed by proposed uses of test (Best, 2007).

3.10.1 Content validity

The content validity of the tools is established by carrying out critical discussions with the research experts at the time of the development of preliminary draft of the tools. The experts were of the opinion that the statements of the tools are fully adequate and relevant to measure the respective objectives. Thus the tools possess adequate content validity.

3.10.2 Item Validity

The tools can be considered to be valid enough in terms of item validity because only those items are retained in the final form that has *t*-value greater than 1.75.

3.10.3 Face Validity

The face validity refers to know whether the present tools are valid to the subjects who take it. The face validity was established by having the reactions of the research experts, professors towards the present tools. They were of the opinion that present tools seemed to be valid enough for measuring the required objectives.

3.10.4. Cross Validity

Each sample of respondents for carrying out item analysis and establishing reliability is entirely different from each other so as to avoid the chance errors of carryover effect and hence this ensure cross validity of the tools.

3.11 Data Collection

For collecting the data the head of the institution of each school were contacted. The principal was briefed concerning the purpose of the research and the procedure to be followed. After explaining to the principal the researcher was given a date and time to contact the teachers and students. On the fixed date the teachers and students were contacted and the necessary data was collected.

In few cases, the researcher faced the problem in collection of data from the subjects. At first some schools denied to give any support in data collection. After much persuasion and explaining the importance of research the institutes agreed to give permission. At the time of data collection, some students and teachers had left the questionnaire incomplete which led to lot of wastage especially of time and energy.

Thus a lot of time was spent for collection of data from principals, teachers and students of different schools.

Table 3.14

Sample of PRINCIPALS according to their Board of Institution, Gender, Age and Teaching Experience

Variables	Board of Institution		Gender		Age (years)		Teaching Experience (years)	
Groups	CBSE	ICSE	Male	Female	31-45	46-60	1-20	21-40
Number	20	20	18	22	21	19	23	17
Total	40		40		40		40	

Table 3.15

Sample of TEACHERS according to their Board of Institution, Gender, Age, Teaching Experience and Teaching Subject

Variables	Board of Institution		Gender		Age (years)		Teaching Experience (years)		Teaching Subject	
Groups	CBSE	ICSE	Male	Female	21-40	41-60	1-15	16-30	Science	Arts
Number	80	80	70	90	85	75	92	68	83	77
Total	160		160		160		160		160	

Table 3.16

Sample of STUDENTS according to their Board of Institution and Gender

Board/Gender	Boys	Girls	Total
CBSE	300	300	600
ICSE	300	300	600
Total	600	600	1200

3.12 Analysis of Data

The raw data however valid, accurate and reliable are of little significance unless it has been classified in a systematic tabular form. After classification and tabulation such treatment is given to data which facilitates analysis and interpretation. Statistical method goes to the fundamental purpose of description and analysis of data. Two types of statistical applications are relevant which have been adopted for the study.

1) Descriptive Analysis

2) Inferential Analysis

3.12.1 Descriptive Analysis

In describing and analysing the sample data in a meaningful way following statistical measures are used.

1) Frequency score and percentage for spread of data.

2) Mean as a measure of central tendency of data.

3) Standard deviation as a measure of variability.

4) Graphs to represent frequency/percentage distribution of variables.

3.12.1.1 Mean

The mean commonly understood as arithmetic mean is the most useful of all statistical measures as it is the base from which many important measures are computed.

Eq No. 3.2

$$\text{Mean} = AM + \frac{\Sigma fd}{N} \times i$$

Formula used for calculation of Mean

Where AM = the assumed mean

F = the frequency in a given class interval

d = the level difference of the scores in a range from assumed mean, the

level of assumed mean (AM) being taken as zero

Σfd = the summation of the product of all f and d of frequency table

N = the count of the sample

i = the class interval in which the scores are grouped

3.12.1.2 Standard Deviation

Written as SD in abbreviation form, the variance or deviation is a value that
describes how all scores in a distribution are dispersed or spread about the mean
score

Eq No. 3.3

$$SD = i \sqrt{\frac{\Sigma fd^2}{N} - \left(\frac{\Sigma fd}{N}\right)^2}$$

Formula used for calculation of Standard Deviation

Where Σfd^2 = the product of fd and d. All other terms have same meaning as
explained earlier.

3.12.2 Inferential Analysis

The objective of discovering principles and relationships that have universal
application is achieved through inferential analysis which involves testing of
hypotheses. In order to accept or reject a hypothesis *t*-test to compare two different
groups of the same population is applied.

3.12.2.1 *t*-test

t-test is used to evaluate mean differences to indicate which means differ significantly.

Eq. No. 3.4

$$t = \frac{M_1 \sim M_2}{\sqrt{\dfrac{\sigma_1^{2}}{N_1} + \dfrac{\sigma_2^{2}}{N_2}}}$$

Formula used for calculation of *t*- test

where, M_1 = mean of first group

M_2 = mean of second group

σ_1 = standard deviation of first group

σ_2 = standard deviation of second group

N_1 = total number of cases in first group

N_2 = total number of cases in second group

3.12.2.2 Degree of Freedom (df)

The number of degrees of freedom in a distribution is the number of observations or values that are independent of each other and cannot be deduced from each other. It is denoted by the symbol 'df'.

Eq. No. 3.5

$$df = (N_1 - 1) + (N_2 - 1)$$

Formula used for calculation of Degree of Freedom

where, N_1 = total number of cases in the first group

N_2 = total number of cases in the second group

3.12.2.3 Level of Significance

A difference is marked significant when the gap between two sample mean points to or signifies a real difference between the parameter of population from which the sample are drawn.

If $p > 0.05$, then *t*- values are taken non-significant and if $p < 0.05$, then *t*-values are taken significant.

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