3.1 Introduction

This segment elucidates the methodology and outline of the analysis in every aspect. The plan of research study is an overview of the total layout including a consideration of how the work is to be executed. It is at this stage the decisions crucial for the achievements of the objectives of the study are made. These decisions include what measures are to be used for gathering of data? How population is to be defined and sampled?

What kinds of data relevant to the study are to be collected? And finally how it is to be analyzed. It includes description of the manner in which decisions have been made about the type of data needed for the study, tools and devices used for their collection, the purpose of the study is

“A Study Of Gender Bias in C.B.S.E, I.C.S.E and U.P Board Social Science Textbooks of Class IX”

The method adopted for the present study will be descriptive and statistical in nature. Descriptive statistical research limits generality to the specific group of individuals, no observed inferences are extended beyond this group and any similarity to those outside the group cannot be supposed, i.e. the data describes the group and only that group. The statistical analysis based on the completion of descriptive statistical measures is mostly applied in action research and provide valuable information about the nature of a particular group and that group only. Descriptive research deals with the relationships between variable, the testing of hypotheses and the development of generalization, principles, theories that have
universal validity. The method of descriptive research is particularly appropriate in the
behavioural sciences because many of the types of behaviour that the researcher
observes cannot be arranged in realistic setting. They are restricted not only to fact
findings but often result in the formulation of important principles of knowledge and
solution, significant problem such as local city, State, National and International issues.
Descriptive studies investigate phenomena in their natural settings. They involve
measurement classification, analysis, composition and interpretation.

The descriptive research method has unquestionably been the most accepted and the
most widely applied research method in Education. It helps to give a detailed
explanation on educational phenomena with respect to the situations and associations
that exist, theories that are held by the students, teachers, parents and experts,
procedures that are going on, effects that are evident and trends that are emerging.
Because of the obvious situation and directness of this method a researcher can collect
information in terms of individual opinion about some subject, by preparing a sample
questionnaire. At times, descriptive survey is the only medium through which opinions,
attitudes, suggestions for improvement of educational practices and instructions and
other data can be gathered. The descriptive type of research is helpful in the
development of data gathering appliances and tools like checklists, schedules,
questionnaire and rating scales. It also provides the setting ground of ideas and data
from which many more distinguished studies of casual relations are made.

Descriptive research aims to describe a condition, predicament, experience, service or
programme, or provides information about, say, daily prerequisite of a society, or
describes the standpoint towards an issue in a systematic and simplified manner.
The method for the present study will be the content analysis of Textbooks of Social Science of class IX of U.P Board, C.B.S.E Board and I.C.S.E Board on the basis of quantitative data obtained from the observation of citations that represent Male, Female and their representation.

3.2 Approaches to Content analysis

The study using content analysis method will examine the gender wise representation and depiction for the purpose of criterion with respect to the related content or materials in the Textbooks of three subjects taught in three boards of Indian secondary schools.

In order to identify the elements of gender discrimination in Textbooks, the following check list will be prepared to study the academic parameter in which both quantitative and qualitative approaches will be used in the investigation and analysis.

1. The number of pictures used for male and female as a single as well as in group also.

2. Type of activities and occupations indicated for male and female.

3. Number of times references were made to male and female.

To carry out any meaningful research data are gathered on the basis of which the hypothesis is tested. Depending on the nature of the problem and the purpose of study, a variety of instruments have to be utilized for the analysis of relevant data. Observation Tool is developed so that the necessary information can be collected in the present study.
3.3 Description of the Sample

A sample is any number of persons selected to represent the population according to some rule or plan. The sample is a smaller representation of the population selected for observation and analysis. In keeping with the objective of this project, a review was undertaken of Textbooks of class IX of U.P Board, I.C.S.E Board, and C.B.S.E Board in India. The Sample of this study consists of Textbooks of Social Science of standards IX of U.P Board, I.C.S.E Board, and C.B.S.E Board. The investigation for the present study shall be carried out on class IX Textbooks mentioned below in the subject area of Social Science for I.C.S.E, C.B.S.E and U.P Boards :-
Table 3.1

Description of the sample

(CLASS IX)

BOARDS

U.P. BOARD  I.C.S.E BOARD  C.B.S.E BOARD

Social Science  Social Science  Social Science

Book  Books  Books

Samajik Vigyan (2013-14)

Jain Kumar Jain & Brijesh Kumar Dewedi (Writers)

History and Civics (2014)

D.N. Kundra (Writers)

Total Geography (2013)

Loktantrik Rajneeti - 1 (2012)

Bharat Aur Samkalin Vishva-1 (2012)

Samkalin Bharat-1 (2013)

Arthashastra (2013)


(Publication) (Publication) (Publication) (Publication)
In all these books the Researcher will conduct the content analysis for all the chapters including the exercises.

3.4 Procedure of the Study

The Investigator has prepared the Evaluation Tool for observing and identifying the verbal and visual citations in the Textbooks.

The Textbooks will be subject to a Qualitative and quantitative analysis based on a checklist.

▶ Qualitative data analysis

Qualitative data analysis is a very personal process with few rigid rules and procedures. Qualitative data analysis means the conclusive study of the contents of an interview in order to identify the major topics that arise from the responses given by the respondents. In this research, the need to do qualitative analysis will not arise because only the analysis of Textbooks will be done as only that comes under the scope of quantitative data analysis.

▶ Quantitative data analysis

Quantitative data are obtained by using various tools and tests based on scales of measurements. In Social Science studies, while making a measure of standpoints of the people we generally follow the procedure of preparing the opionnaire* (or attitude scale) in such a way that the tally of the individual reactions assigns him/her a position on the scale. Under this approach, the respondent conveys his/her agreement or disagreement with a number of statements related to the topic. While developing such statements, the researcher must note the following two points:-

1) That the statements must elicit responses which are psychologically related to the attitude being measured;
2) That the statements need to be such that they differentiate not merely between extremes of standpoints but also among individuals who differ to some extent.

Researcher must be well aware that inferring attitude from what has been recorded in opinion has several limitations. People may conceal their attitudes and express socially acceptable opinions. They may not really know how they actually feel about a social issue. People may be unaware of their attitude about an abstract situation; until confronted with a real situation, they may be unable to predict their reaction. Even behaviour itself is at times not a true indication of attitude. For instance, when politicians kiss babies, their behaviour may not be a true expression of affection toward infants. Thus, there is no sure method of measuring attitude; researcher only tries to measure the expressed opinion and then draw inferences from it about people’s real feelings or attitudes.

With all these limitation in mind, psychologists and sociologists have developed several scale construction techniques for the purpose. Quantitative data are obtained by using various tools and tests based on scales of measurements. Among various different scales Nominal scale is appropriate for this study.

➤ Nominal scale

Nominal scale is simply a system of assigning number symbols to events in order to label them. Nominal scale provides convenient ways of keeping track of people, objects and events. Nominal scale is the least powerful level of measurement. A nominal scale simply describes differences between things by assigning them to categories. Nominal data are thus counted data. The scale wastes any information that we may have about varying degrees of attitude, skills, understandings, etc. nominal scales are very useful
and are widely used in surveys and other ex-post-facto research when data are being classified by major sub groups of the population.

Nominal scales of measurements provide non-parametric data. These data are counted. Nominal scales are used when a set of objects among two or more categories are to be differentiated on the basis of some similar defined characteristics. Nominal scales are non-orderable and only arithmetical operation applicable to such scales is counting, the mere enumeration of individuals in a particular category. Statistical analysis based on counting is permissible in this type of measurement.

Test

There are two types of tests:

- Parametric Tests
- Non Parametric Tests

In statistics, parametric and nonparametric methodologies refer to those in which a set of data has a normal vs. a non-normal distribution, respectively. Parametric tests make certain assumptions about a data set; namely, that the data are drawn from a population with a specific (normal) distribution. Non-parametric tests make fewer assumptions about the data set. The majority of elementary statistical methods are parametric, and parametric tests generally have higher statistical power. If the necessary assumptions cannot be made about a data set, non-parametric tests can be used.

Parametric and non parametric statistical procedures test hypotheses involving different assumptions. Parametric statistics hypotheses based on the assumption that the sample comes from populations that are normally distributed. Also parametric statistical test assume that there is homogeneity of variance(variances within groups are the same). The level of measurement for parametric test is assumed to be interval or at least
ordinal. Non Parametric statistical procedures test hypotheses that do not require normal distribution or variance assumptions about the populations from which the samples were drawn and are assigned for ordinal and nominal data.

As Parametric and Non Parametric test both are relevant, they are two sides of a same coin but Researcher used Non Parametric test because nonparametric procedures can be used to treat data which have been measured on nominal(classificatory) scales. Such data cannot, on any logical basis, be ordered numerically, hence there is no possibility of using parametric statistical tests which require numerical data.

The general pattern of nonparametric procedures is that certain sample data are treated by a statistical model which yields a value or statistic. This value is then interpreted for the likelihood for its chance occurrence according to some type of statistical probability distribution.

The most frequently used non-parametric statistic for testing hypotheses with nominal data is Chi-Square. The nature of nominal data involves assigning data to mutual exclusive categories, labelling, or naming the data. Nominal data are most generally analyzed by frequency of occurrence. The non-parametric statistic Chi Square is a comparison of relative frequencies among two or more groups.

With chi Square a value is calculated from the data using Chi Square procedures and then compared to a critical value from a Chi Square Table with degrees of freedom corresponding to that of the data. If the calculated value is equal to or greater than the critical value (table value), the null hypothesis is rejected. If the calculated value is less than the critical value, the null hypothesis is accepted.
Chi-Square test

The Chi Square test is undoubtedly the most important and most used member of the nonparametric family of statistical tests. Chi Square is employed to test the difference between an actual sample and another hypothetical or previously established distribution such as that which may be expected due to chance or probability. Chi-Square can also be used to test differences between two or more actual samples. The chi-square test is used to determine whether there is a significant difference between the expected frequencies and the observed frequencies in one or more categories.

Chi-Square Formula :-

\[ \chi^2 = \sum \frac{(O - E)^2}{E} \]

- \( O \) = the frequencies observed
- \( E \) = the frequencies expected
- \( \sum \) = the 'sum of'

The steps in using the chi-square test may be summarized as follows:-

1. Write the observed frequencies in column O
2. Figure the expected frequencies and write them in column E.
3. Use the formula to find the chi-square value:
4. Find the df.
5. Find the table value (consult the Chi Square Table.)
6. If the chi-square value is equal to or greater than the table value, reject the null hypothesis and if the square value is less than the table value then accept the null hypothesis:

The differences in the data are not due to chance alone.
- **Observed Frequency**

In this Researcher will put the total number of male and female frequencies which has been taken after content analysis.

- **Expected Frequencies :-**

When Researcher finds the value for chi square, Researcher will determine whether the observed frequencies differ significantly from the expected frequencies.

The null hypothesis states that there is no significant difference between the expected and observed frequencies. The alternative hypothesis states they are different. The level of significance (the point at which Researcher can say with 95% confidence that the difference is not due to chance alone) is set at .05 (the standard for most science experiments.)

Data can be critically analyzed either manually or with the help of a computer.

- **Manual Data Analysis:-**

This procedure can be used if the number of respondents are rationally small, and there are not many variables to analyze. Manual data analysis is time consuming process.

The easiest way to analyze data is to code it directly onto large graph paper in columns. The researcher can use detailed headings or question numbers can be written on each column to code information about the question. To manually analyze data (frequency distribution), count various codes in a column and then decode them.

In addition to this, if Researcher wants to carry out statistical tests, they have to be calculated manually.
Using a Computer:

In this area, knowledge of computer and statistics plays an essential role. The most commonly used software for data analysis is SPSS for windows. However, data input can be long and tedious process, and if data is entered incorrectly, it will influence the final results.

3.5 Observation Tool

The Investigator has prepared Evaluation Tool for observing and identifying the verbal and visual citations in the Textbooks. The Evaluation tool is as follows :-
<table>
<thead>
<tr>
<th>Page no.</th>
<th>Para graph no.</th>
<th>Picture no.</th>
<th>Total No. of pictures</th>
<th>Visual</th>
<th>Total No. of Noun &amp; Pronoun</th>
<th>Verbal</th>
<th>Total No. of Noun &amp; Pronoun (M+F)</th>
<th>Role assigned with in four walls (Stereo type activities)</th>
<th>Total No. of Stereotype activities (M+F)</th>
<th>Total No. of Non-Stereotype activities (M+F)</th>
<th>Occupational Activity</th>
<th>Total No. of references (Noun+Pronoun+Pictures)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Grand Total</td>
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</tr>
</tbody>
</table>
3.5.1 Description of Tool : Gender-Wise Occurrence of Evidence

In this tool Researcher has done content analysis of each and every page and paragraph.In this tool, Researcher has described all the things according to these mentioned things.

3.5.1.1 Picture number

Contains all the pictures, tables, maps & charts. In the context of these pictures images of male and female has been taken.

3.5.1.2 Total times of references

In this Researcher will add Nouns ,Pronouns and Pictures. In Pictures all the pictorial representations, tables, maps & charts are included along with the whatever is said verbally about them Researcher has taken that data too and has counted noun, pronoun and pictures for total number of times references.

3.5.1.3 Stereotype and Non-Stereotype activities within the four walls

3.5.1.3.1 Stereotype activities within the four walls

A stereotype is a contemplation that can be adopted about certain types of individuals or certain ways of doing things. These are the activities which describe the existing images and customs of what men and women are supposed to be and behave like in the society.

It has been observed that men and women are not only in anatomically different, but also in terms of how they conduct themselves and in the interests they express. Certain behavioural variations are believed to be biologically determined. For instance, the male sex hormone, testosterone is supposed to be the reason behind males being more aggressive than females. However, many non-anatomical variations appear to be based
on gender roles that are inculcated by every individual. In other words, people are born male or female but are taught how to behave in a masculine or feminine manner.

3.5.1.3.2 Non-Stereotype activities within the four walls

Those roles which do not fit in the category of standards that characterize how people of specific social standing ought to behave. It considers that female can also read the paper in the house and at the same time male can do the house chores or both of them are doing any work of the house which is particularly meant for male or female according to the societal norms.

Researcher will take stereotype activities for male and female and then non stereotype activities for male and female. Researcher will count the stereotype activities in total i.e of male and female and Non-Stereotype activities for male and female. After that researcher will compare the total number of Stereotype and Non-Stereotype activities.

3.5.1.4 Occupational Activities

Researcher will count the total number of occupational activities of male and female and then will compare it.

3.6 Procedure of data collection scoring and statistical techniques

In order to collect the systematic data Researcher approached the books of Social Science for class IX of I.C.S.E Board. The relevant data were collected with the assistance of measuring tools such as “Gender wise occurrence of Evidence”.

Researcher did the content analysis of all the books. Doubts and confusions were made clear by the investigator before moving to the next item. In order to identify the elements of gender discrimination in Textbooks, the following check list is prepared to study the academic parameter.
- **Visuals**

  1. The number of pictures used for male and female as a single as well as in group also.

- **Textual**

  1. Occupations indicated for male and female.
  2. Role assigned within the four walls (Stereotype and Non Stereotype activities).
  3. Number of times references were made to male and female (Noun, Pronoun and total no. of pictures.

  Researcher collected the data after content analysis of all the seven textbooks and selected Chi-square test for testing the hypotheses.