

3.0 Introduction

In Research Methodology, a researcher always tries to search the given question systematically in his/ her own way and find out all the answers till conclusion. If researcher does not work systematically on problem, there would be less possibility to find out the final result. For finding or exploring research questions, a researcher faces lot of problems that can be resolved effectively by using correct research methodology (Industrial Research Institute, 2010).

Research is a systematic effort in which research design is planned, structure and strategy of investigation conceived so as to obtain answers to the research questions. The major responsibility of the investigator is to devise research design capable of providing the information necessary for the solution of the problem. It constitutes the blue print for collection, measurement and analysis of the data. In other words, strategy implies how the research objectives will be achieved and how the problems encountered in the research will be tackled. The first and most important requisite in any research is data. Data are like raw materials, without which no study could be conducted and hence, production in research is not possible. For collection of data, the investigator has to set up the design, describe the sampling method, the population and the sample, the tools used for collection of data, the reliability and validity of the tools used, the method adopted and the procedure employed in tabulation and organization of the data.

Keeping the above facts in view, the researcher felt it essential to explain the procedure used for the study and the technique used for collecting the data of this research study. Thus, this chapter is devoted to discuss these steps as follows:

- Research method

- Population and sample
- Tools used
- Procedure of data collection
- Statistical techniques used

3.1 Research Method

The research method is the gateway of success in any research process. The decision about the research method depends upon the nature of the research problem selected and the kind of the data necessary to achieve the objectives. In general practice, the following research methods have been accepted in the field of educational research:

- The Historical Method
- The Descriptive (Survey) Method
- The experimental Method
- The Philosophical Method

Selection of research method depends upon the purpose of the study. The purpose and the nature of the research problem play an important role in the selection of a research method and its execution

3.1.1 Descriptive (Survey) Method

Keeping in view the nature of the present study, the Descriptive (Survey) Method was employed to collect the information. This method is most popular and widely used in the field of social sciences. The present study is descriptive because it aims to describe the nature and present status of the phenomenon and it is concerned with conditions or relationships that exist and opinions that are held.

Descriptive (Survey) studies collect three types of information:

- What exists by studying and analyzing important aspects of present situation

- What we want by clarifying goals and objectives possibly through a study of the conditions existing elsewhere or what experts otherwise consider to be desirable
- How to get there through discovering the possible means of achieving the goals on the basis of the experiences of others or the opinion of experts

It involves some types of comparisons or contrasts between existing variables. The present study is a co-relational research because it attempts to discover relationships between teacher effectiveness with teaching competency and spiritual intelligence.

3.2 Population and Sample

Research need patience, hard work, time and the subjects related to the research work. Because all of the characteristics of accuracy these objects are difficult to measure. To overcome these problems, every investigator has to include the whole population for the investigation. To study whole population, thousands of researchers, much time and money etc are required. Relatively all number of individuals are related and analyzed in order to find out something about entire population from which they have been selected through sampling. Through appropriate sampling techniques, it is possible to draw a representative sample from population, so that findings can safely be extended to target population. Investigator in the present study has taken such steps necessary to see that sampled population was representative of the target population. Secondary school from 21 districts of Haryana constituted the population for the present study. Multistage random sampling was used to draw the required sample. Sampling was done in four stages. At first stage, four districts *viz.* Sirsa, Hisar, Mahendergarh and Bhiwani were selected randomly out of 21 districts. At second stage, two blocks from each of these four districts were selected randomly. These were Sirsa and Rania from Sirsa district, Hisar I and Adampur from Hisar district, Mahendergarh and Kanina from Mahendergarh district and Bhiwani and Tosham from Bhiwani district. At the third stage, 40 government and 40 private secondary schools of these blocks were selected randomly and at the final and 4th stage, 5 teachers from each school

were selected randomly for the sample of present study. Stages of sampling technique are presented in figure 3.1.

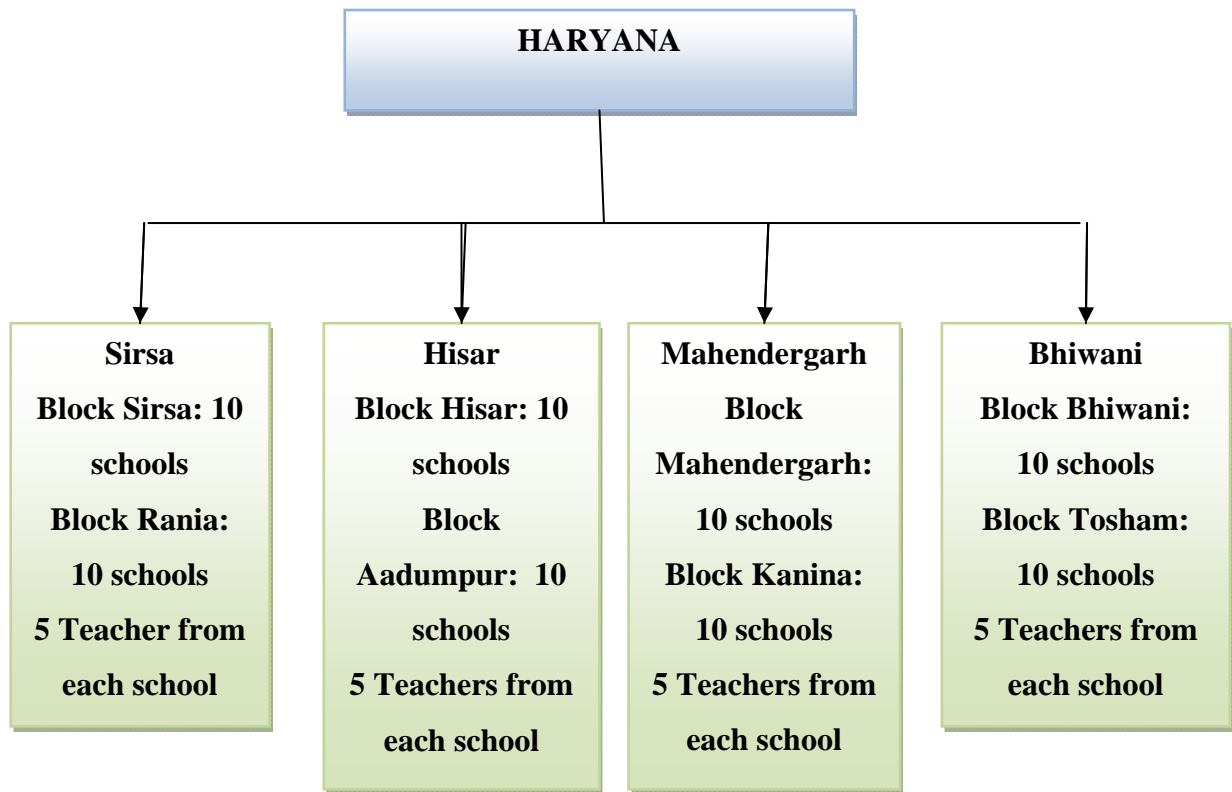


Figure 3.1 Various Stages of Sampling

Table 3.1: District wise representation of the sample

Sr. No.	Name of the district	Name of the block	Type of school	No. of schools
1	Sirsa	Sirsa	Government	05
			Private	05
		Rania	Government	05
			Private	05
2	Hisar	Hisar-I	Government	05
			Private	05
		Adampur	Government	05
			Private	05
3	Mahendergarh	Mahendergarh	Government	05
			Private	05
		Kanina	Government	05
			Private	05
4	Bhiwani	Bhiwani	Government	05
			Private	05
		Tosham	Government	05
			Private	05
Total	4	8		80

Table 3.2: Description of the sample

Basis of classification	Category	No of teachers	Total
Type of school	Government	200	400
	Private	200	
Gender	Male	200	400
	Female	200	
Locality	Rural	200	400
	Urban	200	
Teaching experience less than 5 years	Government	43	131
	Private	88	
	Male	56	131
	Female	75	
	Rural	83	131
	Urban	48	
Teaching experience 5 to 10 years	Government	46	112
	Private	66	
	Male	55	112
	Female	57	
	Rural	53	112
	Urban	59	
Teaching experience 10 to 15 years	Government	36	68
	Private	32	
	Male	44	68
	Female	24	
	Rural	28	68
	Urban	40	
Teaching experience more than 15 years	Government	75	89
	Private	14	
	Male	49	89
	Female	40	
	Rural	36	89
	Urban	53	

3.3 Tools Used

The aim of study as mentioned in the first chapter required the collection of relevant data through standardized tools on the variables of teacher effectiveness, teaching competency and spiritual intelligence, The tools used for this purpose are as under:

- Teacher Effectiveness Scale by Umme Kulsum (2011)

- General Teaching Competency Scale by B. K. Passi and M.S. Lalitha (2011)
- The Spiritual Intelligence Self Report Inventory (S1SRI) by D.B. King (2008)

3.3.1 Teacher Effectiveness Scale

For assessing teacher effectiveness, 'Teacher Effectiveness Scale' (2011) developed and standardized by Umme Kulsun was used. This scale is a self anchoring striving scale constructed on the lines of self- anchoring striving scale of Kilpatrik and Cantril (1960). The rationale behind choosing the self anchoring scale technique for the purpose of study was to assess the general as well as the educational aspirations. It is further added that conceptualism of the top and bottom anchoring points with the help of the picture of a ladder that was quite familiar to the teachers, was thought to be much easier and meaningful. This self anchoring striving scale based on first person approach was thought to be more empirical. It didn't involve any rigidity, predefined dimensions, verbal categories, prepared phrases or sentences. The data collected through the scale was psychologically as well as directly comparable i.e. the scale level selected by one person or a group can be specifically and meaningfully said to be higher, lower or equal to the scale level of some other individual or group because the frames of reference of the replies would in fact be similar psychologically. The facts of the scale were easily understood by the teachers and their effectiveness would be elicited accordingly, was realized to be true in the subsequent try-out of the scale.

3.3.1.1 Areas of the Scale

The investigation in the perspective examined the areas (variables) worth being included in the tool. The tool should be objective, comprehensive measuring content validity, easily amendable for administrator and acceptable to the respondent. Hence, one has to think about teacher effectiveness in terms of his characteristics (personality, attitudes etc.), process (teacher pupil interaction etc.) and production variables (outcomes of teaching learning process), Five areas were used *viz.* Preparation and Planning for Teaching, Classroom Management, Knowledge of Subject Matter, its Delivery and Presentation, Teacher

Characteristics and Interpersonal Relations. These areas cover all the functions of a teacher and hence have the merit of adequate conceptual framework and content validity. A brief description of these five areas is given below:

- **Preparation and Planning for Teaching:** This area includes the ability of the teacher in preparing, planning and organizing for teaching in accordance with the course objectives by using different source materials.
- **Classroom Management:** This area includes the ability of the teacher to successfully communicate, motivate the students and evaluate the teaching-learning process and also to maintain discipline in the classroom within the framework of a democratic set-up.
- **Knowledge of Subject Matter; its Delivery and Presentation including B. B. (Black board) Summary:** This area includes the ability of the teacher in acquiring, retaining, interpreting and making use of the contents of the subject he/she is dealing within the classroom situations. Delivery of course contents and its presentation including Black Board summary constitute essential aspect of the teaching-learning process.
- **Teacher Characteristics:** This area refers to the personality make-up of teachers and its behavioural manifestations that have their own level of acceptability or unacceptability in the teaching profession. Ability to arouse a perceptive mass and seeking active participation of pupils constitute essential demand characteristics of effective teacher.
- **Interpersonal Relations:** The ability of the teacher to adopt himself/herself to maintain cordial relations with his/her colleagues, pupils, their parents and other persons in the community with whom he/she is to interact as part and parcel of his/her profession form the basis to this area.

3.3.1.2 Scoring of Statements

Seventy statements were randomized and were provided with standard directions and administered on a sample of 396 secondary school teachers of Bangalore city; selected by two stage stratified proportionate random sampling design. Each respondent was asked to

indicate his/her effectiveness as described by 70 statements in terms of the step number for the two time - dimensions namely 'now' (present) and 'in the next three years' (future) was the same as frame of reference for the 'present' 'now' effectiveness. Hence, the step number given for each statement for the present dimensions was taken as the score of the effectiveness of a respondent. Total score of respondent could range from 0 to 700.

3.3.1.3 Selection of Statements

After scoring, the 370 protocols were arranged in ascending order based on the total score obtained by each respondent. The top hundred protocols (the top 27%) and the bottom 100 protocols (bottom 27%) were taken to form the upper and the lower criterion groups. As suggested by Edwards (1969), 't' value for all the 70 statements were calculated, and only those statements in the final form of the scale were retained with t-value equal to or greater than 1.75 of the 70 statements, 10 statements were eliminated which were not significant based on the obtained 't' value. Hence, 60 items were included in the final form of the scale. The final 60 statements belonging to the different areas of the scale after item analysis are presented in table 3.3.

Table 3.3: The Total Number of Item with their Serial Numbers and their Distribution over Different Areas and Dimensions

Area/ dimensions	Serial numbers of items in the final scale	Total no of items
Preparation for Teaching and Planning	2, 6, 11, 23, 27, 33, 37, 44, 49, 54, 58	11
Classroom Management	3, 7, 12, 16, 20, 24, 28, 38, 45, 50, 51, 55, 56, 59	14
Knowledge of Subject Matter etc	1, 8, 14, 17, 29, 39, 46	7
Teacher Characteristics	4, 9, 13, 18, 21, 25, 30, 31, 34, 35, 36, 40, 41, 47, 48, 52, 57	17
Interpersonal Relations	5, 10, 15, 19, 22, 26, 32, 42, 43, 53, 60	11
	Total	60

3.3.1.4 Instruction for Administering the Scale

The scale is self administrable. To ensure careful understanding of the instructions, proper Instructions need to be given by the testers beside the individual reading them. There is no time limit and there are no right or wrong responses. Hence, the respondents are quite free to express their responses as they perceive, keeping in view the maximum possible effectiveness (Most) of teachers and the least possible effectiveness (Least) of teachers as frame of reference for individual rating.

3.3.1.5 Scoring Procedure

Each item elicits two responses; (1) step number on Now, and (2) step number aspiring to attain in the next three years, The time dimension of these next three years was to score as a frame of reference for the 'now' (present) effectiveness, hence the step number given for each item for present time was taken as the score of the effectiveness of each of the response teacher. Total score of the respondent ranges from 0 to 600.

3.3.1.6 Reliability

Reliability refers to the consistency of measurement, i.e. how consistent scores are from one measurement to another. A test must be reliable, as it must have the ability to consistently yield the same results when repeated measurements are taken of the same individual under the same conditions. It is this consistency of the scores obtained by the same person when re-examined with the same test on different occasions.

3.3.1.7 Split-Half Method

In this, test is divided into two equal halves and the scores of the half of the items are correlated with the scores of the other half. From the reliability of the half test, the self-correlation of the whole test is then estimated by Spearman-Brown Prophecy formula. The split-half reliability index of the scale X_{tt} is 0.82.

3.3.1.8 Test-Retest Method

In this, the same test is re-administered shortly after the first administration and the two sets of scores are correlated to obtain the reliability of the test. Test-retest reliability coefficient after the interval of 16 days was found to be 0.63 on a sample of 180 secondary school teachers. After applying the Spearman Brown Prophecy formula, the reliability coefficient went up to 0.94.

Table 3.4: Reliability of Teacher Effectiveness Scale

Sr. No	Reliability	Co-efficient of Correlation (r)	Reliability Index
1	Split half reliability	0.68	$X_{tt} = 0.82$
2	Test-retest reliability	0.63	$X_{tt} = 0.79$

3.3.1.9 Validity

Validity refers to the extent to which the results of an evaluation instrument or procedure serve the particular uses for which they are intended. No test can have usefulness unless it has validity. Validity relates to the question what does the test measure? To find out the criterion-related validity the correlation between the total score of the scale and total score of the effectiveness scale had also been found. The co-efficient of correlation between each of the areas of the Rating Scale and the Teacher Effectiveness Scale was high and they range between 0.57 and 0.78. The correlation between the total score of rating scale was 0.85. These values indicated that teacher effectiveness scale had high criterion-related validity. Beside this, based on the protocols of 180 teachers have been separated to form two groups, i.e. effective and ineffective teachers. The obtained 't' value obtained 9.9 was significant beyond 0.001 level of probability indicates that the scale has differentiated the effective teachers from ineffective teachers. This measure of scale indicates that it is valid and is measuring what it is supposed to measure.

3.3.2 General Teaching Competency Scale

For the assessment of teaching competency, Teaching Competency Scale (GTCS, 2011) was used. There are 21 items related to 21 teaching skills which encompass the entire teaching—learning process in the classroom. They are related to five major aspect of classroom teaching, namely, Planning, Presentation, Closing, Evaluation and Managerial.

The items are such that they are centred on teacher classroom behaviour in relation to pupil behaviour. It is a 7 point rating scale measuring the use of the skill by the teacher in the classroom corresponding to each item ranging from ‘1’, for ‘Not at All’ to ‘7’ for ‘Very Much’.

Table 3.5: Distribution of Items in Different Classification of Teaching Skills

Sr. No.	Category	Serial-wise Item No.	Total
1	Planning (Pre-instructional)	1, 2, 3, 4	4
2	Presentation (Instructional)	5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	11
3	Closing	16, 17	2
4	Evaluation	18, 19	2
5	Managerial	20,21	2
Total			21

The various teaching skills included are related to objectives of the lesson, content selecting, content organisation, selection of audio-visual materials (Planning skills) introducing the lesson, fluency of questions, use of probing questions, explaining, illustrating with examples, stimulus variation, use of silence and non-verbal cues, increasing pupil participation (items 12 and 14), pacing use of blackboard (presentation skills); achieving closure, giving assignment (closing skills), classroom evaluation, diagnosis of pupil difficulties (evaluation skills), recognizing attending behaviour and maintaining classroom discipline (managerial skills).

3.3.2.1 Procedure for Use

The GTC scale is generally used for measuring teaching competency of a teacher individually by a reliable observer or a group of reliable observers making direct observations of his classroom behaviour for the entire teaching period.

As the teacher teaches, the observer sits at the back for observation. At the end of the teaching period, he gives his ratings on the GTC scale against all the items. To facilitate this process, he may either mark frequencies or write verbal descriptions against each item which help him in giving ratings more objectively.

3.3.2.2 Scoring Procedure

The sum of the ratings against all the 21 items constitutes the score on General Teaching Competency (GTC Score) of the teacher being observed. The maximum score possible is 147 and the minimum is 21.

These ratings are - 1 score for 'Not at All', 2 score for 'Low', 3 score for 'Below Average', 4 score for 'Average', 5 score for 'Above Average', 6 score for 'High' and 7 score for 'Very Much' in the use of classroom skill by the teacher.

3.3.2.3 Reliability of the Scale

Since GTC scale is an observation tool, the more appropriate type of reliability is the inter-observer reliability. This scale has been used for doctoral research (Joshi, 1977; Passi, 1977) and the reported inter-observer reliability coefficients range from 0.85 to 0.91. Inter-observer reliability can be better established when the observers train themselves for using the GTC scale.

3.3.2.4 Validity of the Scale

The scale has factorial validity. Scott's coefficient of inter-observer ranging from 0.78 to 0.82.

3.3.3 The Spiritual Intelligence Self-Report Inventory (SISRI-24)

In the current model, spiritual intelligence is defined as a set of mental capacities which contribute to the awareness, integration, and adaptive application of the nonmaterial and transcendent aspects of one's existence, leading to such outcomes as deep existential reflection, enhancement of meaning, recognition of a transcendent self, and mastery of spiritual states (King, 2008). King, D. B. (2008) proposes four core abilities or capacities of spiritual intelligence:

- **Critical Existential Thinking:** The capacity to critically contemplate the nature of existence, reality, the universe, space, time, and other existential/metaphysical issues; also the capacity to contemplate non-existential issues in relation to one's existence (i.e., from an existential perspective).
- **Personal Meaning Production:** The ability to derive personal meaning and purpose from all physical and mental experiences, including the capacity to create and master a life purpose.
- **Transcendental Awareness:** The capacity to identify transcendent dimensions/patterns of the self (i.e., a transpersonal or transcendent self), of others, and of the physical world (e.g., non-materialism) during normal states of consciousness, accompanied by the capacity to identify their relationship to one's self and to the physical.
- **Conscious State Expansion:** The ability to enter and exit higher states of consciousness (e.g. pure consciousness, cosmic consciousness, unity, and oneness) and other states of trance at one's own discretion (as in deep contemplation, meditation, prayer, etc.).

Table 3.6: Item Numbers for Different Aspects of Spiritual Intelligence Self Report Inventory (SISRI-24)

Sr. No.	Factors/ Subscales	Sum Items	Total items	Score Range
1.	Critical Existential Thinking (CET)	1, 3, 5, 9, 13, 17, 21	7	0-28
2.	Personal Meaning Production (PMP)	7, 11, 15, 19, 23	5	0-20
3.	Transcendental Awareness (TA)	2, 6*, 10, 14, 18, 20, 22	7	0-28
4.	Conscious State Expansion (CSE)	4, 8, 12, 16, 24	5	0-20

*Reserve Coding: For item no 6 response must be reversed prior to summing scores. Higher scores represent higher levels of spiritual intelligence and/or each capacity.

3.3.3.2 Scoring Procedures

Based on redundancy, high residual correlations, and cross-loadings, 18 items were removed from the SISRI, leaving a final pool of 24 items. Each item in the scale has five possible responses viz. 0- Not at all true for me, 1- Not very true for me, 2- Somewhat true for me, 3- Very true for me, 4- Completely true for me. All items responses or subscale scores (after accounting for reverse-coded item) were summed up. The total scores for twenty four items range from 0 to 96.

3.3.3.3 Reliability and Validity

The Split-half reliability of the inventory is 0.91 and Test-retest reliability with gap of four months is found to be 0.89 for total Spiritual Intelligence Score. To check the validity of the SISRI-24, psychological measures were employed. Inter-subscale correlations were in the moderate-strong range supporting the construct validity, divergent validity and convergent validity overall.

3.4 Collection of Data

Prior to the administration of the composite booklets containing Teacher

Effectiveness Scale, Teaching Competency and Spiritual Intelligence Scale to secondary school teachers, the investigator sought permission and cooperation of the heads of the institution and teachers. First of all the purpose of the study was clarified to the teachers and rapport was established with them. The said tools were administered to the teachers taken from the schools randomly selected from the four districts of Haryana state. All the teachers under study were assured that the information would be kept strictly confidential and it would be used for research purpose only. While handling over the booklets of the scales, they were requested to go through the prime instructions and understand them correctly before responding to the items of the tools. The investigator again emphasized the paramount need of the genuine data, i.e., the need to response to the items of the research tools with utmost honesty and truthfulness. The data pertaining to gender (male/female) and organizational setup (government/private) of subjects was obtained from the particulars given by the teachers on the title pages of the scales used. Due care was taken that the respondents did not leave any item unmarked. Sufficient time was given to the respondents to respond.

After the collection of the data, the responses of the subjects were scored in the light of criteria laid down for each tool used, as described in the description of the tools. Thereafter, the scores of the subjects pertaining to each variable were tabulated on a proper code sheet which was used for statistical analysis.

3.5 Statistical Techniques Used for Data Analysis

In order to analyze data with suitable statistical techniques, the following statistical techniques were adopted in the present study:

- Mean and Standard Deviation were calculated for the variables of teacher effectiveness, teaching competency and spiritual intelligence to ascertain the nature of score distribution.

- To find out the differences between mean scores of teacher effectiveness, teaching competency and spiritual intelligence with respect to type of school, gender, locality and teaching experience; t-test and ANOVA were employed.
- Product - Moment Method of correlation technique was used to find out the relationship of teacher effectiveness with teaching competency and spiritual intelligence.

In this chapter, researcher focused on the research method, sample, tools and statistical techniques used. It has been made clear that standardised tools were used by the investigator for the purpose of collection of data to study the teacher effectiveness of secondary school teachers in relation to teaching competency and spiritual intelligence. After the data collection, the researcher analysed and interpreted the data to find out the result which are discussed in next chapter.