A large number of studies have investigated the negative and positive effect of educational environment standards on educational satisfaction, academic welfare, student’s and teacher’s achievements, student’s and teacher’s motivations.

In summary there are various research studies which are explicitly and implicitly relevant to this study. These research studies vary in objectives, research methodology, procedure of data collection, tools of data collection and analyzing. There is not any study approximate to the objectives and methodology which conducted in this study and in same geographical region and there is not any research about Indian and Iranian educational environment to evaluated the educational satisfaction between both countries students and teachers.

The next chapter focuses on the methodology that has been applied to collect empirical data in order to evaluate educational environment and educational satisfaction.

CHAPTER III

PLAN AND PROCEDURE

3.1. INTRODUCTION
This chapter describes and illustrates the methodology and research design utilized in current study according to objectives mentioned in chapter one. Research is a process of gaining a better understanding of the complexities of human experience, the goal of research is to describe and understand a field, practice or activity (Brown & Dowling, 1998). In this study both qualitative and quantitative methodologies have been used. Data gathered from this research instruments were then computed for interpretation. Along with primary data, the researcher also made use of secondary resources in the form of related published articles and literatures to support the survey results. The reliability of results and conclusions extensively depend on the quality of the research design, data collection, data management, and data analysis. This chapter will be dedicated to the description of the methods and policy done in order to obtain the data, how they will be analysed, interpreted, and how the conclusion will be met. All these will help in the processing of the data and the devising of conclusions. Therefore this chapter organized as is explained in following purposes:

- Describe the research methodology and research design of this study
- Explain the sample selection
- Describe the procedure and policy used in designing the instrument and collecting the data
- Provide an explanation of the statistical procedures used to analyze the data
- Ethical consideration.

**Strategy and the Methodology of the study**

The primary purpose of employing this method is to provide an accurate description or picture of the status or characteristics of situation or phenomenon (Johnson, 2011), it is concerned with conditions or relationships that exist (Best, 2001) to answering the research questions through the analysis of variable relationships between non manipulated variables and the development of generalizations, extending its conclusions beyond the sample observed (Best & Kahn, 2001). Since the purpose of this study is to find out, describe and interpret the levels and relationship between educational environment, and educational satisfaction of teachers and students, this is an explanatory cum descriptive research, which uses the normative survey method.
3.2 RESEARCH DESIGN

Research has been defined in a number of different ways. Kerlingers (1973) states scientific research as a "systematic, controlled, empirical, and critical investigation of hypothetical propositions about the presumed relations among natural phenomenon. Research is a systematic and objective analysis and recording of controlled observations that may lead to the development of generalization, principles or theories, resulting in prediction and possibly ultimate control of events (Best & Kahn, 2006). Research methodology is defined as the total strategy, from the identification of problem, to the final plans for gathering data and analysis (Burns & Grove, 2001). Research design is a detailed plan how the goals of research will be achieved. The research process proceeds in six phases as follow, specifying the problem topic to be studied, framing research design, planning a sample, collecting the data, analyzing the data, preparing the report (Ahuja, 2001). According to Allison (2000) a research design includes the planning of the research procedure as well as the procedure for data collection and analysis. Creswell (2008) point out following major actions for research procedures:

- Identification of research problem
- Literature review
- Specifying the purpose of research
- Determine specific research questions or hypotheses
- Data collection
- Analyzing and interpreting the data
- Reporting and evaluating research.

One of the branch of social research is Educational research, the formal, systematic application of the scientific method to the study of educational problems. The goal of educational research is essentially the same as the goal of all science: to describe, explain, predict, or control phenomena, in this case educational phenomena, which have similarity with other scientific research method in following steps: Selection and definition of a problem, Execution of research procedures Analysis of data and
Drawing and stating conclusions. According to Best and Kahn (2001) practically all studies fall under one or combination, of these types: historical research, descriptive research (qualitative or quantitative) and experimental research. The descriptive research divided in two main types as coming in follow:

A. **Descriptive research quantitative**: uses quantitative methods to describe what is, recording, analyzing, and interpreting conditions exist. It involves some type of comparison or contrast and attempts to discover relationships between existing non-manipulated variables. Some form of statistical analysis is used to describe the result of the study quantitative research is the collection and analysis of numerical data to describe, explain, predict, or control phenomena of interest (Gay & Mills, 2009). It is defined as a formal, objective, systematic process to describe and test relationship and examine cause and effect interactions among variables (Burns & Grove, 2001).

B. **Qualitative descriptive research**: uses non-quantitative methods to describe what is by using systematic procedure to discover non-quantifiable relationships between existing variables (Best & Kahn, 2001) second approach of descriptive research which collect, analysis and interpretation of comprehensive narrative and visual (i.e., numerical) data to gain insight into a particular phenomenon of interest (Gay & Mills, 2009).

According to Backstorm and Hursh (1963) survey research or field research is a method to “gathering information about a large number of people by interviewing a few of them” as well as Survey method defined as a systematic and comprehensive study of a particular community, organization, groups, etc., with a view to the analysis of a social problem and presentation of recommendations for its solutions (Ahuja, 2001) it is an instrument to collect data that describes one or more characteristics of specific population (Gay & Mills, 2009) which collect original data for describing a population too large to observe directly (Mouton, 1996) and obtain information from a sample of people by means of self-report, that is, the people respond to series of questions posed by the investigator (Polit & Hungler, 1992).

C. **Questionnaire** is a self-report data collection instrument that each research participant fill out as part of a research study. Researcher use questionnaire to obtain information about the thoughts, feeling, attitudes, beliefs, values, perceptions,
policies, plans, personality and behavioral intentions of research participants (Johnson & Christensen, 2011). It defines as a written collection of survey questions to be answered by a selected group of research participants to determines and reports the way things are, it involves collecting numerical data to test hypothesis or answer questions about current status of the subject of the study (Gay & Mills, 2009). The advantages of utilizing survey has mentioned by Ahuja (2001): Low cost, particularly when the information is collected through questionnaire from respondents scattered in large areas. Generalization is more legitimate because of adequate number of persons surveyed. Flexibility in data collection is possible tools and could be questionnaire, schedule, interview or observation. Surveys enable researcher to get facts which he never anticipated.

In this study the researcher used the survey method. This type of research usually describes and interprets what exists at present.

3.3 POPULATION

According to Gorard (2003) the group you wish to study in termed the ‘population’, and the group you actually involve in your research is the sample, the purpose of sampling is to use relatively small number of cases to find out about a much larger population. Population refers to all those people with the characteristics which the researcher wants to study within the context of particular research problem (Shepard, 2005). The population of the present study were all of the teachers and girls and boys students in Pune and Shiraz universities. Currently the university of Pune is one of the largest Universities in the world with more than five lakh students studying in 52 Post-Graduate Departments and Research Centers, 6 Interdisciplinary Centers, 466 Graduate Colleges and 232 Recognized Institutions affiliated to Pune University. The University of Pune (UoP) and its affiliated colleges function within the broad framework of the education policy laid down from time to time by Government of Maharashtra and Government of India. The Maharashtra State Government gives grants and aids to the University of Pune and its affiliated colleges mainly for payment of salaries of teaching and non-teaching. Shiraz university is also one of the biggest universities in Iran with 710 faculties and more than 25000 students.

A) Sample size and method of sampling
In this study, Multistage sampling was used for selecting the samples of students and teachers in Pune and Shiraz Universities. Multistage sampling is a complex form of cluster sampling. Cluster sampling is a type of sampling which involves dividing the population into groups (or clusters). Then, one or more clusters are chosen at random and everyone within the chosen cluster is sampled. Using all the sample elements in all the selected clusters may be prohibitively expensive or unnecessary. Under these circumstances, multistage cluster sampling becomes useful. Instead of using all the elements contained in the selected clusters, the researcher randomly selects elements from each cluster. Constructing the clusters is the first stage. Deciding what elements within the cluster to use is the second stage. The technique is used frequently when a complete list of all members of the population does not exist and is inappropriate. In some cases, several levels of cluster selection may be applied before the final sample elements are reached. For example, household surveys conducted by the Australian Bureau of Statistics begin by dividing metropolitan regions into 'collection districts' and selecting some of these collection districts (first stage). The selected collection districts are then divided into blocks, and blocks are chosen from within each selected collection district (second stage). Next, dwellings are listed within each selected block, and some of these dwellings are selected (third stage). This method makes it unnecessary to create a list of every dwelling in the region and necessary only for selected blocks. In remote areas, an additional stage of clustering is used, in order to reduce travel requirements. Although cluster sampling and stratified sampling bear some superficial similarities, they are substantially different. In stratified sampling, a random sample is drawn from all the strata, where in cluster sampling only the selected clusters are studied, either in single- or multi stage.

For this research, 382 students from Pune universities and 378 students from Shiraz universities and 322 teachers from Pune University and 260 teachers from Shiraz University has selected. The formula of Krejcie & Morgan has used in order to select best sample size from Indian and Iranian teachers and students, the total sample size of the research is including 1342 teachers and students . The stratified random
sampling is advisable to subdivide the population into smaller homogeneous groups to get more accurate representation (Best & Kahn, 2001). Data for the study was collected from June 2012 to May 2013.

The ever increasing need for a representative statistical sample in empirical research has created the demand for an effective method of determining sample size. To address the existing gap, Krejcie & Morgan (1970) came up with a table for determining sample size for a given population for easy reference.

Table 3.1: Table for Determining Sample Size for a Given Population

<table>
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<td>750 256</td>
<td>2600 335</td>
<td>100000 384</td>
<td></td>
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</tr>
</tbody>
</table>

Note: “N” is population size “S” is sample size


The Table is constructed using the following formula for determining sample size.

Formula for determining sample size
S = $x^2 NP (1-P) + d^2 (N - 1) + x^2 P (1 - P)$

$S = \text{require sample size}$

$X^2$ = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.84)

$N$ = the population size

$P$ = the population proportion (assumed to be .50 since this would provide the maximum sample size).

$d$ = the degree of accuracy expressed as a proportion (.05). Source, Kerjcie & Morgan,

3.4 SOURCES OF DATA
The data required for the research are collected directly from respondents who are the bachelor students (girls and boys) and teachers of the Pune and Shiraz universities.

### 3.5 PILOT STUDY

The researcher conducted a pilot study to analyze and verify the possibilities and difficulties to assess the feasibility of the study. A pilot study was conducted on 10 selected universities and colleges in India and Iran. Based on the pilot study findings, nine items were removed from the questionnaires as they were found to be inconsistent with the Indian and Iranian teachers and students opinions and education system, this reduce the number of items in the original questionnaires . Besides, some responses regarding other items in the questionnaires could be found by the secondary means and therefore they were eliminated. Researcher consulted various key persons in this field and ensured necessary permissions and assistance from different universities and other authorities to carry out the study. These pilot inquiries and study have helped the researcher to modify and design the study appropriate to the research problem and objectives. Piloting was done to validate of tools from June 2011 to August 2011 in Pune (India) and from October 2011 to December 2011 in Shiraz (Iran).

### 3.6. TECHNIQUES OF DATA COLLECTION

#### Primary & Secondary data Collection

Both primary and secondary data were used for the study.

**Primary Data:** For this purpose, three standardized questionnaires were used in order to address the research hypotheses and to study the relationships among variables: Educational environment, Educational satisfaction, learning environment, student’s satisfaction, teacher’s job satisfaction, the character of standard educational environments and Universities and achievement motivation. Due to accomplishment of current research purpose descriptive design data collection, called matched stage have used by collecting data in two situations. The data have collected from one situation universities of Pune city in India and from another situation university of Shiraz city in Iran.
Secondary Data: Publications such as books, thesis, critical essays, comparative studies and journal articles, newspapers & magazines, conference papers, reports and other documents produced on the relationship between educational environment and satisfaction, studies pertaining to educational environment effects on students and teachers satisfaction, student achievement and educational environments facilities, theory of teacher attrition and teacher retention, theoretic perspectives of university climate and the learning environment, history of school facilities, condition of educational standards environments, Universities and school facilities, teachers and students satisfaction, performance and achievement, educational environments facilities and teacher retention, assessing universities facilities, learning environment, university and school building design, characteristicsserve as secondary sources for this research. Furthermore, non-written or media-based materials, archives, electronic database, websites, etc. are also used as secondary sources in this project. These sources provide information about the related literature of the study.

To collect data through secondary sources of data, some sources including the internet (websites) and external sources were used. To collect secondary data, library (external sources) was privileged and the internet as another source of secondary data with the fewer application was utilized.

Internet: Polonsky (2004-2005) believes that “You must use the internet with caution, especially when you are basing an entire research project on web-based information, which does not include specific database searching. Of course, this is not
to suggest that all information on the internet is inappropriate. The internet provides an extremely useful research tool in conjunction with other types of information.” Therefore, to collect data, many websites in the Internet were used and only those data were picked out of those original sources of those data could be found out. For this study the valuable websites/ search engines such as Alta Vista, Yahoo, and Google were utilized.

External sources: Generally external sources including published sources like Books, Journals, Newspapers, Magazines, etc. and unpublished sources like unpublished theses and reports can be accessed in a library and to collect these kinds of data for this study some library such as education department library, Jayakar library, Shiraz university library, Mirzaye Shirazi library, British library, etc. have been utilized.
Figure 3.5 Sources of Data Collection
3.7. RESEARCH TOOLS

To collect data, the researcher administered three structured questionnaires along with the personal data sheet.

1- Physical Education Environmental Survey (Hil & Hulbert, 2007):

This survey address the perception of following areas: Quality of outdoor activity spaces, Quality of indoor activity spaces, Impact of noise and air on indoor and outdoor education classes. Quality of indoor support areas and Perception of safety of indoor and outdoor education facilities (For evaluating of educational environment effects on students and teachers). For each of 33 identified survey questions, respondents use a five-point likert scale (1= strongly disagree, 2= disagree, 3= undecided, 4= agree, 5= strongly agree) (range = 33-165).

2- Course Experience Questionnaire (CEQ), (Ramsden, 1991):

The Course Experience Questionnaire (CEQ) is a government-mandated, annual survey of graduates seeking information on graduates’ satisfaction with their courses and teaching staff. It is part of the broader Graduate Destinations Survey. The target population includes graduates who have completed an undergraduate (including honors) degree or a coursework masters. This questionnaire has 6 scale included: good teaching, generic skills, overall satisfaction, learning resources, appropriate assessment, and appropriate work load.

3- Faculty Satisfaction questionnaire (Serafin, 1991):

This instrument has 29 items. The questionnaire is divided into three sections: Teaching, research and service which describing some general aspects of the faculty position functions. Eleven items are related to teaching, nine items are related to research, nine items are related to service and 9 items request information on personal and professional backfround.

3.8 VALIDITY AND RELIABILITY OF STUDY

In the current study, the questionnaires items were validated in terms of their content. This is the degree to which the best items actually measure traits for which the test was designed and is to be used. Therefore, the issues, actual wording, design of the items or questions were evaluated using pilot study result. According to best(2001),”there is no numerical way to express content validity “. the researcher
went ahead to administer the items once the experts gave their nod and after verification of pilot results.

Reliability of This Scales

1- Physical Education Environmental Survey (Hil & Hulbert, 2007):
In this study validity was .79 and Cronbach’s coefficient alpha was .87 for students and validity was .76 and Cronbach’s coefficient alpha was .79 for teachers.

2- Course Experience Questionnaire (CEQ), (Ramsden, 1991):
The CEQ is based on over 20 years of international survey development and research. It is possibly the best researched student survey tool in use in Australia. It continues to be refined through the development of additional items and scales. Information on the survey's psychometric properties including reliability and validity is available on the GCA website. The CEQ has attracted critics over the years; however it has stood the test of time. Numerous research studies have concluded that the factor scales and the survey items they derive from are valid across repeated administrations to different cohorts. In this study validity was .77 and Cronbach’s coefficient alpha was .97.

3- Faculty Satisfaction questionnaire (Serafin, 1991):
The evidence of the validity and reliability of the measures showed that the alpha of teaching (11 items) r= .85; research (9 items) r= .80; and service (9 items) r= .85. No negative item-correlations among the items were found. Consequently, no Changes in the instrument or procedure were made on the basis of the field test.

Later, more evidence of sufficient reliability of the measures was established testing 207 faculty members of UPEL. The three measures were ratified as reliable for each section of the instrument. The alpha of teaching was .76, research .86, and service .83. As it’s observed, the alpha coefficient for teaching decreased; however, the retention of respectable alpha coefficient, larger than .50, is further documentation of the reliability of the 39 items instrument formatted into four pages. Table 2 reports the field testing findings. In this study validity was .89 and Cronbach’s coefficient alpha was .76.
A test is reliable to the extent it measures whatever it is measuring consistently. In this research the stability of items was measured for their external consistency using the pilot results. There was consistency among the responses that were given by the respondents. Hence the questionnaires items can be adjudged to be highly reliable.

3.9. VARIABLES OF THE STUDY

Variables that were measured during this study are as follows: for students, an independent latent variable as perception of educational environment has 5 observed variable included general environment, Walls and floors, noise, climate control, and ceilings and electrical and a dependent latent variable as satisfaction has 6 observed variables included good teaching, generic skills, overall satisfaction, learning resources, appropriate assessment, and appropriate work load. for teachers, an independent latent variable as perception of educational environment has 5 observed variables included general environment, Walls and floors, noise, climate control, and ceilings and electrical and a dependent latent variable as job satisfaction has 3 observed variables included teaching, research and service.

3.10 STATISTICAL TOOLS USED IN THIS STUDY

To test the various questions according to objectives following statistical tools were employed in the present study briefly following tools have administrated: Frequency, Percentage; Mean; pie charts and bar charts, Pearson coefficient and structural equation model (SEM).

3.11 ADMINISTRATION INSTRUCTIONS

These tools for data collection were administered to all participants under the direct supervision of the researcher and the classroom teachers who were trained to cooperate for conducting the survey. They were with the booklets and answer keys of the tools followed by proper instructions at a time along with personal data sheet. Though there was no time limit, the subjects were asked to work and give honest, frank and first response to each item. Every item was to be answered by every subject. After the subjects finished their responses the test booklets were collected along with the answer sheets.
3.12 DATA ANALYSIS TOOLS

Data will be collected and through LISREL 8.54 and SPSS 20 the necessary computation will be done.

a. Descriptive statistic

To test the various questions according to objectives following statistical tools were employed in the present study briefly following tools have administrated: Frequency, Percentage; Mean; pie charts and bar charts,

b. Inferential statistic

Independent sample t-test, One way ANOVA and Pearson coefficient.

3.13 STATISTICAL TOOLS, FORMULAS AND TECHNIQUES

Data collected through the questionnaires was analyzed using Statistical Package for Social Science (SPSS) and EXCEL. To test the various hypotheses some statistical techniques were employed in the present research, they are given below.

1) t.test:

For resolving other problems and test the other various hypotheses that if there is significant relationship between variables of this study (educational environment, educational satisfaction) of Pune and Shiraz universities’ students and teachers, by testing the mean of two independent groups (t) test were used. It involves computation of the ratio between experimental variance (observed difference between two sample means) and error variance as follows:

\[ t = \frac{X_1 - X_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \]

2) One Way ANOVA:

The overall null hypothesis for one-way ANOVA with \( \mu \) groups is \( H_0: \mu_1 = \ldots = \mu_k \). The alternative hypothesis is that "the population means are not all equal".
The F statistic (ratio)

The next step in standard inference is to select a statistic for which we can compute the null sampling distribution and that tends to fall in a different region for the alternative than the null hypothesis. For ANOVA, we use the F-statistic. The single formula for the F-statistic that is shown in most textbooks is quite complex and hard to understand. But we can build it up in small understandable steps.

Remember that a sample variance is calculated as \( SS/df \) where \( SS \) is the sum of squared deviations from the mean and \( df \) is the degrees of freedom.

In ANOVA we work with variances and also variance-like quantities which are not really the variance of anything, but are still calculated as \( SS/df \). We will call all of these quantities mean squares or MS. i.e., \( MS = SS/df \), which is a key formula that you should memorize. Note that these are not really means, because the denominator is the \( df \), not \( n \).

For one-way ANOVA we will work with two different MS values called means square within-groups, \( MS_{\text{within}} \), and means square between-groups, \( MS_{\text{between}} \). We know the general formula for any MS, so we really just need to find the formulas for \( SS_{\text{within}} \) and \( SS_{\text{between}} \), and their corresponding \( df \).

The F statistic denominator: \( MS_{\text{within}} \). \( MS_{\text{within}} \) is a pure estimate of \( \sigma^2 \) that is unaffected by whether the null or alternative hypothesis is true. The extension to more groups and/or different numbers of subjects is straightforward.

For an individual group, \( i \), \( SS_i = \sum_{j=1}^{n_i} (Y_{ij} - \bar{Y}_i)^2 \) and \( df_i = n_i - 1 \). We can use some statistical theory beyond the scope of this course to show that in general, \( MS_{\text{within}} \) is a good (unbiased) estimate of \( \sigma^2 \) if it is defined as

\[
MS_{\text{within}} = SS_{\text{within}}/df_{\text{within}}
\]
where \( SS_{\text{within}} = \sum_{i=1}^{k} SS_i \), and \( df_{\text{within}} = \sum_{i=1}^{k} df_i = \sum_{i=1}^{k} (n_i - 1) = N - k \).

\( MS_{\text{within}} \) is a good estimate of \( \sigma^2 \) (from our model) regardless of the truth of \( H_0 \). This is due to the way \( SS_{\text{within}} \) is defined. \( SS_{\text{within}} \) (and therefore \( MS_{\text{within}} \)) has \( N-k \) degrees of freedom with \( n_i - 1 \) coming from each of the \( k \) groups.

\( MS_{\text{between}} \) is a good estimate of \( \sigma^2 \) only when the null hypothesis is true. In this case we expect the group means to be fairly close together and close to the grand mean. When the alternate hypothesis is true, as in our current example, the group means are farther apart and the value of \( MS_{\text{between}} \) tends to be larger than \( \sigma^2 \). (We sometimes write this as \( MS_{\text{between}} \) is an inflated estimate of \( \sigma^2 \).)

\( SS_{\text{between}} \) is the sum of the \( N \) squared between-group deviations, where the deviation is the same for all subjects in the same group. The formula is

\[
SS_{\text{between}} = \sum_{i=1}^{k} n_i (\bar{Y}_i - \bar{Y})^2
\]

where \( \bar{Y} \) is the grand mean. Because the \( k \) unique deviations add up to zero, we are free to choose only \( k - 1 \) of them, and then the last one is fully determined by the others, which is why \( df_{\text{between}} = k - 1 \) for one-way ANOVA.

Because of the way \( SS \) between is defined, \( MS \) between is a good estimate of \( \sigma^2 \) only if \( H_0 \) is true. Otherwise it tends to be larger. \( SS \) between (and therefore \( MS \) between) has \( K - 1 \) degree of freedom.

3) Pearson’s correlation coefficient

For studying significance relationship between educational environment, educational satisfaction, students satisfaction, teachers job satisfaction among
students and teachers, Pearson’s correlation coefficient has been used so that correlation rate of variables should be determined.

\[
r = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{n(\Sigma x^2) - (\Sigma x)^2}[n(\Sigma y^2) - (\Sigma y)^2]}}
\]
3.14. RESEARCH PROCEDURE

Under this headline the steps which the researcher must take are to be distinguished and demonstrated. It consists of a series of steps or actions that are necessary to execute a research in effective way. The chart below illustrates the steps of the research process:

1. **Finalization of the problem of the study, hypothesis & Research design**
2. **Nature of the problem**
3. **Selection of the Method**
4. **Selection of population**
5. **Selection of the sample**
   - **Selection of the tools**
6. **Administration of the Questionnaires**
7. **Collecting of the Data in Pune and Shiraz**
8. **Analysis of Data**
9. **Proving / Rejecting the Hypothesis**
10. **Conclusion and suggestions**

*Figure 3.6 Procedure of the study*
3.15. CONCLUSION

Chapter 3 deals with various aspects of research design, sampling methods, data collection and research instruments. It also described research objective, hypotheses and the tests used to analyze the collected data. However, in the next chapter the data collected thorough research instruments are presented. Chapter 4 dwells on data analysis and interpretation of the collected data.