CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research design, the data collection methods, the data analysis methods, as well as some ethical considerations in the study.

As outlined in the first chapter, this study aimed teacher education in West Azerbaijan Iran. Following the chronology of scientific enquiry, after defining the problem and formulation of the hypothesis in the first chapter, this chapter provides a detailed methodology of research design and data collection.

3.2 Research Design

According to Best & Kahn (2006), research is process of scientific inquiry concerned with “the systematic and objective analysis and recording of controlled observations that may lead to development of generalizations, principals or theories, resulting in prediction and possibly ultimate control of events”. Research design is planning a strategy of conducting research. It plans to what is to be observed, how it is to be observed, when, where, why it is to be observed, how to record observations and analyses interpret observations, and how to generalize. Research design is, thus, 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 (Ram Ahuja, 2001).

Besides, Bell (2005) has emphasized about the necessity of adopting a systematic approach to conducting an investigation. Trochim (2006) has pointed out that research design is used to structure a research and acts as a “glue” that holds all of the elements in a research project together; it is a plan of action indicating the specific steps that are necessary to provide answers to research questions and thereby achieve the research purpose. It is the arrangement of conditions for collection and analysis for data in a manner that aims to combine relevance to the research purpose with economy in procedure (Selltize, 1965). Research design is under serve of researcher as Kothari (2004) defined it; the conceptual structure within which research constitutes the blue
print for the collection, measurement and analysis of data. As such the design includes an outline of what the researcher will do from writing the hypothesis and its operational implications to the final data analysis.

Practically research design is beneficial plan and help researcher in a manner suggested by Berger et al (1989)\(^7\)

- It offers a guide that directs the research action, which reduces time and cost
- It offers a systematic approach to the research operation, so that all steps are executed in the right sentence.
- It encourages coordination and effective organization
- It helps in the use of resources effectively, avoiding errors and bias
- It enables the researcher to control research operation most effectively, when research investigators are employed.

One of the branches 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 (Gay, l.r. Andmills,g.e.(2009)).\(^8\)

This similarity with other scientific research pointed out by Gay and Mills (2009)\(^9\) in 4 steps, by using scientific method the educational research administered:

- Selection and definition of a problem
- Execution of research procedures
- Analysis of data
- Drawing and stating conclusions
Best & Kahn (2006) stated that in educational research problems, may be solved by the following research methodologies:

1. Historical research
   - Historical research focuses on “what was” in order to understand the past and the present, and to a limited extent for anticipating the future.

2. Descriptive research (Qualitative and Quantitative)
   - Descriptive research focuses on “what is” and involves some type of comparison or contrast and attempts to discover relationships existing between non manipulated or non-quantifiable variables. Survey is a common tool in descriptive research.

3. Experimental research
   - Experimental research focuses on “what will be” and involves control and manipulation of variables. It attempts to analyse relationships between manipulated variables.

Survey research 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 and Mills (2009)).

According to (Ram Ahuja) survey study explained as method involves 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. The term ‘survey’ is commonly applied to a research methodology designed to collect data from a specific population, or a sample from that population, and typically utilizes a questionnaire or an interview as the survey instrument (Robson, 1993).

According to Gay and Mills (2009) A survey is an instrument to collect data that describes one or more characteristics of specific population and a questionnaire is a written collection of survey questions to be answered by a selected group of research participants.
Questionnaire is a self-report data collection instrument that each research participant fills out as part of a research study. Researcher use questionnaire to obtain information about the thoughts, feeling, attitudes, beliefs, values, perceptions, personality and behavioural intentions of research participants (Johnson and Christensen, 2011.4th. ed)\(^1\). Intra method mixing, both quantitative and qualitative data are obtained through the creative use of a single method. For example a mixed questionnaire it includes both open-ended part provides qualitative data, and closed ended part provides quantitative data. (Johnson and Christensen, 2011 .4th .ed). ( Backstorm and hursh (1963))\(^1\) have referred to survey research, also called field research, as “gathering information about a large number of people by interviewing a few of them”.

Ram (2001)\(^1\) claims some advantages of survey design as:

- 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.

Surveys enable investigators to verify theories because their theoretical notions are either supported or not supported by the people.

The present investigation is a descriptive research in teacher education in west Azerbaijan Iran by using survey method.
Table No. 3.1 Methodology of the Research.

<table>
<thead>
<tr>
<th>Objective No 1.</th>
<th>Method of Research</th>
<th>Population</th>
<th>Sampling technique</th>
<th>Sample</th>
<th>Tools and techniques for data collection</th>
<th>Tools for data analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Document descriptive</td>
<td>1460</td>
<td>Random sampling</td>
<td>146 Students</td>
<td>Questionnaire</td>
<td>Percentage tabular and graphical representation</td>
</tr>
<tr>
<td>Objectives No 1,2,3</td>
<td>Descriptive method</td>
<td>1100</td>
<td>Random sampling</td>
<td>110 Teacher educators</td>
<td>Questionnaire</td>
<td>Percentage tabular and graphical representation</td>
</tr>
</tbody>
</table>

3.3 Population and Sample

According to Gorard (2003): "The group you wish to study is 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” (Gorard, 2003, p.57).

The population of the study is Teacher Education colleges in west Azerbaijan Iran. The names of colleges were listed.

McMillan & Schumacher (2001) pointed out that for generalizations of the results that are derived from a study, the sample should be representative of the population of the study, and that sample must be adequately large in size so that power of generalization of the findings seems to be high and accurate in estimating the properties of the population.

Therefore a simple random sampling has been used to select college from the population in the present study. The sample size has been targeted to 146 teacher’s education and 110 faculty members, staff and manager’s teacher education collage in west Azerbaijan Iran.

Therefore all collages of west Azerbaijan had been used for sampling. From the population selected as simple random sampling has been selected 146 teacher’s education
and 110 faculty members, stuff and manager teacher education collage in west Azerbaijan in Iran.

### Table No. 3.2. Courses and degrees in West Azerbaijan Iran

<table>
<thead>
<tr>
<th>N</th>
<th>Courses and Degrees</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Diploma(2years after 12standard)Elementary and Primary Schools</td>
<td>59</td>
<td>40</td>
</tr>
<tr>
<td>2</td>
<td>Diploma, Other levels</td>
<td>26</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>Bachelor</td>
<td>61</td>
<td>42</td>
</tr>
<tr>
<td>4</td>
<td>Master</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>PhD</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>146</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

### Table No. 3.3. Distribution of the research samples

<table>
<thead>
<tr>
<th>The distribution of the research samples</th>
<th>Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manager</td>
<td>Male</td>
</tr>
<tr>
<td>Professor</td>
<td>8</td>
</tr>
<tr>
<td>Assistant professor</td>
<td>11</td>
</tr>
<tr>
<td>Associate professor</td>
<td>43</td>
</tr>
<tr>
<td>Trainers</td>
<td>189</td>
</tr>
<tr>
<td>Director</td>
<td>1</td>
</tr>
<tr>
<td>Technicians of education technology sector, librarian, laboratory personnel</td>
<td>202</td>
</tr>
<tr>
<td>Official personnel</td>
<td>174</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>754</strong></td>
</tr>
</tbody>
</table>

### Table No. 3.4. Azerbaijan's Teacher Education colleges and universities

<table>
<thead>
<tr>
<th>N</th>
<th>Azerbaijan's Teacher Education centers</th>
<th>Staff</th>
<th>Lecturers</th>
<th>Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Azad University of OROMYA</td>
<td>4</td>
<td>5</td>
<td>*</td>
</tr>
<tr>
<td>2</td>
<td>Azad University of KHOY</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Azad University of NAQADEH</td>
<td>2</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Azad University of MEHABAD</td>
<td>0</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Teacher training college of SHAHID RAJAI</td>
<td>4</td>
<td>7</td>
<td>*</td>
</tr>
<tr>
<td>6</td>
<td>Teacher training college of ALAMAH TABATABAI</td>
<td>1</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Teacher training college of EMAM KHOMAIN</td>
<td>0</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Teacher training college of Girls(OROMYH</td>
<td>2</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Teacher training college of Girls(KHOY)</td>
<td>4</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>Teacher training college of SHAHID MOTAHARI</td>
<td>5</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Teacher training college of SHAHID BEHESHTI</td>
<td>2</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>110</strong></td>
<td><strong>76</strong></td>
<td><strong>9</strong></td>
</tr>
</tbody>
</table>
3.4 Data Source and Demographic Details of Subjects

3.4.1 Source of Data

The sources of data for this study are students. Teachers and principal of teacher training college in west of Azerbaijan in Iran 2010.

Table No. 3.5. Demographic Details of Subjects:

<table>
<thead>
<tr>
<th>N</th>
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<td>5</td>
<td>*</td>
</tr>
<tr>
<td>2</td>
<td>Azad University of KHOY</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Azad University of NAQADEH</td>
<td>2</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Azad University of MEHABAD</td>
<td>0</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Teacher training college of SHAHID RAJAI</td>
<td>4</td>
<td>7</td>
<td>*</td>
</tr>
<tr>
<td>6</td>
<td>Teacher training college of ALAMAH TABATABAI</td>
<td>1</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Teacher training college of EMAM KHOMAINI</td>
<td>0</td>
<td>6</td>
<td>1</td>
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<td></td>
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<td>76</td>
<td>9</td>
</tr>
</tbody>
</table>

3.5 Tools of Research:

Researcher has used questionnaire as the main tool in the present study.

3.5.1 Questionnaires

Brace (2008)\textsuperscript{20} states that questionnaires are intricate measurement tools that have the potential to obtain substantial amounts of information from respondents. Descomber (2000)\textsuperscript{21} mentioned that questionnaires are means of “collecting information supplied directly by people in response to questions asked by the researcher”. In addition, questionnaires are used for eliciting the feelings, beliefs, experiences, perception, or attitudes of respondents in a study. Robson (2002)\textsuperscript{22} had commented that questionnaires
could be“ extremely efficient at providing large amounts of data … in a short period of time”

Questionnaire, as tool of data collection, have strengths and weaknesses and thus advantages and disadvantages. Some advantages of questionnaire as pointed out by (Singleton and Straits (1999:259))\textsuperscript{23}, Selltiz et al (1976)\textsuperscript{24} and Sarantakos (1998:224))\textsuperscript{25} are listed below:

- Lower Cost
- Time saving
- Accessibility to widespread respondents
- No interviewer’s bias
- Greater anonymity
- Respondents Convenience
- Standardized wordings
- No variation

In the present study, questionnaires were used to collect data. The researcher modified one questionnaire in two parts and administrated them personally to teachers education and principal in all collages which have teacher training courses. (Refer to The Appendix). Questionnaires were administrated to 146 teacher education 110 faculty members, stuff and manager teacher education collage in West Azerbaijan in Iran.

3.5.2 Developing the questionnaire

The questionnaire is divided to two part for collection of data based on the research object:

For the study

The researcher has used the questionnaires for collecting the data which is designed in two parts.
Part one: was used for the students are 4-point agreement scale (strongly agree, agree, disagree and strongly disagree).

Part two: Was used for the students 5-point agreement scale (strongly agree, agree, undecided, disagree and strongly disagree).
The first part is for the university and colleges students.
The second part is for the university & college students.
The questionnaire is designed in a manner that the questionnaire includes two parts. In part one there are four options and the option of undecided was not given to students. In part two however there are five options including the option undecided given to the students.

3.6 Administrations of Tools
Appointment with the principals of the collages was taken in October 2010 for the collection of data using questionnaire for teacher education and faculty members, stuff and manager teacher education collage modified according to Iran method of teaching. The researchers personally distributed and collected questionnaire from 146 teacher education 110 faculty members, stuff and manager teacher education collage in October 2010.

3.7 Validity and Reliability of data
3.7.1 Pilot testing the questionnaire
To assess the validity of the questionnaire items before the actual data collection, a pilot test was conducted with volunteer participants, including different teachers and principals. Based on the feedback obtained, weak items were removed or revised to enhance the construction of the questionnaire. Questions that were considered unsuitable or repetitive were removed to shorten the questionnaire.
Before Piloting the questionnaire is impossible to say whether it is going to achieve the desired results or no.
For this purpose it is necessary do pre-test questionnaire before it is used in a full-scall survey. To identify any mistakes that needs correcting.
The Purpose of piloting the questionnaire is to determine:

- Whether the questions are awarded to achieve the objectives.
- Whether the questions understood by respondents.
- Whether the questions are adequate.
- Whether the questions is additional or specifying question are needed or same question should be eliminated.

I selected a small number of respondents for the pre-test. The respondents were selected for the pilot survey among the teacher education in west Azerbaijan Iran. The questionnaire had been subjected to a thorough pilot-test, & the final form had given to the responders.

3.7.2 Testing reliability of questionnaire using Cronbach Alpha

According to (Field (2009))\textsuperscript{26}, the reliability of a survey questionnaire (internal consistency of items) can be determined using the value of reliability coefficient known as Conbach Alpha. A value of Cronbach’s Alpha that indicated an acceptable level of reliability is 7 or higher (field, 2009) **Cronbach’s $\alpha$ (alpha)** \textsuperscript{26} is a coefficient of reliability. It is commonly used as a measure of the internal consistency or reliability of a psychometric test score for a sample of examinees. A value of Cronbach’s Alpha that indicated an acceptable level of reliability is 7 or higher (field, 2009)

Cronbach’s $\alpha$ is defined as:

$$
\alpha = \frac{K}{K-1} \left(1 - \frac{\sum_{i=1}^{K} \sigma_{Y_i}^2}{\sigma_X^2}\right)
$$

Where $K$ is the number of components (K-items or testlets), $\sigma_X^2$ the variance of the observed total test scores, and $\sigma_{Y_i}^2$ the variance of component $i$ for the current sample of persons. In the present study, the alpha coefficient of internal consistency reliability was
0.88 in student questionnaire Sample (N=146), and was 0.86 in students Sample (N=110).

3.8 Ethical consideration
According to Gay and Mills (2009) Ethical considerations play a role in all research studies and all researchers must be aware of and attend to ethical considerations in their research. As this study utilized human participants certain issues were addressed. The consideration of these issues is necessary for the purpose of ensuring the privacy as well as the security of the participants. These issues were identified in advance so as prevent future problems that could have risen during the research process. Among the significant issues that were considered included consent, confidentiality and data protection. For conducting the survey it was commanding for the researcher to get permission from the ministry of education and extension of Iran and principals of the colleges who provide access to the participants for study. In order to secure the consent of the selected participants, the researcher relayed all important details of the study, including its aim and purpose. By explaining these important details, the respondents were able to understand the importance of their role in the completion of the research. The respondents were also advised that they could withdraw from the study even during the process. With this, the participants were not forced to participate in the research. The confidentiality of the participants was also ensured by not disclosing their names or personal information in the research. Only relevant details that helped in answering the research questions were included.

3.9 Statistical Tools and Techniques Used
Data obtain though the questionnaire was input in Microsoft excel. It was then exported and analyzed statistically using the statistical package for social science (SPSS version 16.0). The following statistics was used to analyze the data:

- Descriptive statistic (for analyzing using frequencies & percentage)
According to (Libarkin & Kurdziel\textsuperscript{28} (2002)), descriptive statistic can be used to describe and reveal participant characteristics, answers to research questions and summarize research finding in statically meaningful ways. Therefore in order to present the essential characteristics of the data in the study, data obtained from the questionnaire was arranged into an interpretable from using SPSS to calculate numerical indexes (Johnson & Christensen, 2004)\textsuperscript{29} such as frequency percentage of item responses.
3.10 Procedure of research

Conducted all college of west Azerbaijan in Iran.

Selected the samples tools for data collection

Modified tools for data collection

Take appointment from collages for distribution the questionnaire

Collect questionnaire from teacher/principal and conduct observations

Analyze data statistically

Generalization and/or predictions based on findings
References

16. Backstorm and Hursh (1963)
27. Gay and Mills (2009)