3.1 INTRODUCTION

In the present chapter researcher has given the methodology of the research. This chapter deals with the research method, sampling and research procedure. Researcher pointed out here the detail process of the research.

3.2 RESEARCH METHODOLOGY:

The Aim of this research is that to study the use of e-governance in Diploma in teacher education program. To find out this aim the researcher has adopted the survey method and under this Method, researcher uses the questionnaire, interview and observation tools to collect the data. The details of the methodology are as under.

3.2.1] SELECTION OF RESEARCH METHOD

Methods of Research: - Followings are the methods of educational research.
1] Experimental Method
2] Survey Method
3] Historical Method

Educational research gives the profit by the experiences of the past in solution of present day educational problems. It provides knowledge concerning achieving educational objectives. Educational Research is that activity which directed towards the development of a science of behavior in educational situations.

Selection of Method

The Researcher has adopted the survey method for this research. The present research is the survey and descriptive. The Survey method
is related to the present situation. The details truth of the situation can get by this method and research can find out the truth by using this method. So that, the researcher has adopted the survey method for this research.

**Survey method**

The term survey is used in a variety of ways, but a main feature refers to the gathering of data or information from a sample or specific population, usually by questionnaire, interview, or telephone survey. The researcher does not manipulate independent variables or apply control conditions to the subjects under study. In many ways, the survey approach to data is very akin to descriptive studies, but of course survey data can be used in a variety of ways such as for explanation and testing of hypotheses. Samples tend to be large in surveys, and the emphasis is not usually on individuals in a sample but rather on the generalized profiles or statistics derived from all the individual cases. A survey is usually a cross-sectional study and should stem from a random sampling base. It is the primary base for data collection in the social sciences and should involve a clearly defined purpose, problem, and objective.

3.2.2] **SELECTION OF RESEARCH TOOLS:**

The Following tools have been selected for data collection. AS per Types of Research is survey. The appropriate tools should be selected for data collection. So the following tools have been selected for present research.

i) Questionnaire for Principals of D. T. Ed. colleges.

ii) Interview Schedule for the Head of the Non-teaching staff.

iii) Observation Schedule.
1] Questionnaire:-

A questionnaire is a data-gathering device that elicits from a respondent the answers or reactions to printed (pre-arranged) questions presented in a specific order. Questionnaires can be group administered, self-administered, mailed, long, short, and open-ended or closed-style questions. The purpose for which a questionnaire is used can range from exploring probing type research to a highly structured lab experiment. The following treatment illustrates many of these particular types, styles, and uses of questionnaires

1] Open-ended Questions

In this question format the respondent is free or open to supply answers or information in an unstructured manner. For example, one might be presented with the question, “What do you think should be done about illegal aliens in the United States?” Space is provided for the answer by the respondent. The advantage of this question format is that one has the opportunity to openly express what he or she believes, feels, or recommends. One is not confined to a pre-arranged response category that forces you to agree or disagree, a “yes” or “no” response, or one in which you check some degree of reaction to questions. An open-ended question should be carefully worded so as to present a standardized question to all respondents. Standardization is important because you will want to compare the responses, and this is meaningful only if you have assurance that all respondents were in fact reaction to the same question and that the responses are comparable in that context.

A greater depth of response is allowable in the open-ended question; and since no clues are given for the answer, it would...
seem to invite a respondent to give authentic information to a question. But since the response is open, it does take effort and high motivation for a respondent to react to the items and complete the instructions provided by the questionnaire maker. The investment of time, motivational level, and attentiveness needed to supply responses for open-ended items typically lead to a low level of response from a sample, especially if it is mailed questionnaire. If one has a captive audience, such as a classroom of students for example, then this problem is largely eliminated. The open-ended question used in this context is essentially an essay question, a style of question most readers are extremely familiar with after many years of testing in school.

It is particularly appropriate to use open-ended questions when one desires to know the respondent’s frame of reference or the level of information possessed. In a closed-question format, we sometimes force respondents to choose from a number of response categories, none of which may really apply to their situation or frame of reference. Obviously this can lead to distortion of validity and to an overuse of the response “don’t know.”

For this research for data collection, researcher used the questionnaire to collect the data. Researcher prepared some close ended questions and some open ended questions. According to the objectives, researcher prepared the questionnaire. Open ended questions were more useful to collect the required data.

2] Closed-ended Questions

This question format allows the respondent to answer items by checking categories or by providing a brief written response. A marking of “yes” or “no”, checking an item from a list of possible responses, or a very short response would be the three
main ways in which one answers questions posed in a close-ended style. An investigator will often supply the respondent with a category such as “other” to permit the respondent some latitude in frame of reference, thus allowing some individuality in response while hopefully getting at what is truly most important for the respondent.

The major advantages of this question style include:

1. Ease of completing the questions
2. Brevity of response time
3. Specification of the frame of reference for the subject
4. Promotion of objectivity
5. Ease in scoring, coding, and tabulation

If a main goal of the research is to classify or rank an individual’s attitudes or behavior on some concern that is well understood and would have a common frame of reference to respondents, then closed-style questions are the appropriate format. Additionally, a respondent may be quite willing to check response categories asking for sensitive information about income, sexual behaviour or other personal habits, but would not be willing to write out answers to such questions. Somehow checking a fixed-alternative response or a number which stands for some value in relation to the questions provides distance, neutrality, or anonymity for the respondent. In addition to time and motivational factors for using a closed style is the advantage of mechanically responding with a check or circling a category. Bailey (1978) suggest that some respondents may have a difficult time writing an answer that reflects their feelings even if they are motivated and willing to participate, hence the need for closed-ended questions.
It should be clear that each question format has distinct advantages and disadvantages. For exploratory work or research in which feelings, attitudes, or type of behavior are not known or well understood, the open-ended questions would be better than the closed type. On the other hand, in terms of return rate, time, expense, objectivity, ease of scoring and analyses, the closed-ended type (fixed-alternative) question is much superior. This fixed-alternative question can be more directly applied to a hypothesis because the data are quantifiable with much less effort. The fixed alternative question reduces data to a common dimension that can be more easily applied to the testing of a specified hypothesis.

Questionnaire was Prepared on the basis of five point likened scale. It was checked by the expert research guide. After preparation of the Questionnaire the validity and reliability was established and found by administering it on small Samples.

For this research for data collection, researcher used the questionnaire to collect the data. Researcher prepared some close ended questions and some open ended questions. According to the objectives, researcher prepared the questionnaire. Close ended questions were more useful to collect the required data.

**Questions Constructed for this research**

There are many parallels between constructing a clear exam for a class and a questionnaire for a research project. For the present research, researcher constructed the questions which have clarity in meaning, simple language, questions that are easy to read, and items that reflected the objectives of the research. A good questionnaire should create a feeling of importance in the respondent, a feeling that the research is relevant, and that cooperation is vital. The following suggestions for writing useful
questionnaire offer many practical guides for clear writing in
general, while stressing that clear writing is particularly important
in communicating with subjects.

1. Wording for the items in a questionnaire should be *clear* and
   presented in a style that will be familiar to all respondents.
   Attention should be focused on directness and simplicity in
   structure and word usage. Equally inappropriate is the use of
   sentence structure and style which offends the reader by “talking
down.” A sensitivity to region of the nation, ethnic or religious
   patterns, educational level, and unique speech patterns should be
carefully assessed as a questionnaire is prepared.

2. Double-barreled or double meaning items are confusing in any
   context, but they are particularly difficult in questions designed to
   obtain reliable and valid information from respondents. The
   question designer should review each item to determine if double
   meanings exist in various items or not. To reduce a double-barreled
   question to an item containing one specific dimension to which one
   can respond.

3. Avoid questions leading to a certain point of view or that are
   loaded in meaning or suggestion.

4. Question should apply to all respondents in the sample. This is a
   difficult one to cope with, but a few rules can largely eliminate
   problems like:

5. Some people have a tendency to answer question in terms of a
   *response style*. That is, they may generally *agree* with terms or
   answer “yes” to questions even if the investigator has reversed the
   content of the item. This is a *response set* problem, a problem for
   many people who reflect agreement, a need to be positive, to be
   supportive, or to be on the “yes” or agreement side of life rather
than on the “no” or the “disagreement” side. One can avoid a tendency to want to agree by eliminating agreement in the answer categories.

These are some of the good suggestions for preparing the questionnaire for the research. Researcher prepared the research tool questionnaire, as per the following above instructions.

Questionnaire tool is useful to collect the information from Principals of D, T. Ed. College. For the present research, researcher selected this tool according to achieve the objectives of the research. This tool is appropriate for the present research.

2) Interview Schedule and Observation:-

Interviews, like questionnaires, vary widely in form and purpose. The interview can be very structured, so that all questions are read verbatim, always in the same order using strict standardization; or the interview can be very permissive, amounting to a free-flowing conversation between the interviewer and the respondent. As noted previously, the type of interview used will depend on the purpose of the study, the nature of the population, the setting, and the topic for the interview. We will now cover some of the major types of interviews and review some guides in using various types.

The focused interview
The Nondirective Interview
The Clinical Interview
Telephone Interviews

Administration of Questionnaire and Interview

In addition to the types of interviews just reviewed in this section, the reader is invited to apply the advantages, disadvantages, and rules of application from the questionnaire
section to the interview section since we are essentially dealing with the same process. Unless a questionnaire is mailed, it must be given to somebody personally, and this personal contact is typical in an interview situation or a captive audience such as a class or group gathering. Questionnaires can be handed out in a supermarket, street, convention, or other setting with instructions for the respondent to mail them, place them in the “box”, or give them to the door attendant. It is important to keep in mind that the questionnaire as an instrument may be the same whether it is mailed or used in an interview situation. Furthermore, questionnaires are sometimes administered personally by an interviewer who introduces himself or herself, the purpose of the study, and then gives the form to the respondent to complete while the interviewer waits. The advantage to this approach is that one is available to answer questions, give directions, and offer support, but the respondent is free to work at his or her own pace rather than the pace set by the interviewer. Additionally, the setting can be more thoroughly controlled if the interviewer is present, and this is especially important in family research where both spouses are instructed to complete a questionnaire separately. The presence of the interviewer is about the only way that independence of response can be assured. In the Schvanveldt (1970) study of rural and urban aged populations, two interviewers would call at a home (appointments were made ahead of time), and the male interviewer interviewed the husband in one room and a female interviewer interviewed the wife in another room. The age, health, and anticipated education level of this population dictated that this was the most appropriate method for obtaining valid and reliable data.
The personal contact, rapport, and secondary comments proved this approach to be a useful strategy.

Research has conducted the interview of Parents and experts from the field to tally the questionnaire data. Interviews were conducted systematically by the preparing so important aspects, regarding the work of e-governance in D. T. Ed. colleges.

Interview schedule for the head of non teaching staff was also prepared as per the objectives of the research. It was also useful to collect the appropriate data related to the research.

Interview schedule and observation tools are useful to collect the information. In the present research, according to objectives related to the present condition of e-governance, these tools are appropriate. Due to that reason, researcher selected these tools to collect the accurate data.

3) Secondary Source of data:-

Research has been collected the News Papers, Office Data of D. T. Ed. colleges and it was finally co-relates the data which was collected by questionnaires and interview schedule.

3.2.3] SAMPLING:-

For the present research, researcher used proper sampling method and which was suitable to draw the conclusions according to the sample survey. It is necessary to offer some brief definitions and illustrations of terms used in sampling procedures. Definitions will be covered only for the more general terms, and technical terminology will be kept to a minimum.

1. **Concept:** *Population* refers to the entire group having some common characteristics that justified reference to the population. These entire groups or populations may be people, objects,
materials, events, and so on. The size of such populations may range from exceedingly large to a specific sample number.

2. Concept: *Element* refers to a single case or object in a sample. The element is the actual unit on which we perform measurement or we take measurement from it of some type. In a study of college basketball players, a single case interview would constitute an element in the population.

3. Concept: *Sampling units* may be defined as collections or clusters of elements from the populations that do not overlap. In a statewide study to assess attitudes of school board members toward some issue, each school board as a group would be the sampling unit and the members as individuals would be the elements. If a sampling unit only contains one element of a study population, then the sampling unit and the sampling element would be the same.

4. Concept: A *sample* is defined as a grouping or collection of sampling elements or units from a studied in order to make inferences to the whole by examining only a part. A statewide group of 700 prospective voters to obtain views on the upcoming senate race would be an example of a sample.

5. Concept: *Sampling frame* refers to a list of the sampling units from which the investigator draws the sample.

**Advantages of Sampling in Research**

We have already illustrated the need for, and the utility of, current probability samples in regard to elections, marketing, decision makings, health, and understanding of sexual behavior. Probably most researchers and consumers of research will not focus on predicting presidential elections or test the safety of certain drugs, but they will be faced with problems of budget, time usage, generalization, coordination, and educating various groups.
Certainly one of the main reasons to use samples in research is just plain economics – the cost involved in measuring a sample is considerably less than that required if we were to assess all elements in a population. Since most research is carried out under conditions of limited resources, this economic factor is a very important advantage.

Sampling is the process by which a relatively small number of individuals or measures of individuals, objects or events is selected and analyzed in order to find out something about the entire population from which it was selected sampling procedure provide generalizations on the basis of a relatively small proportions of the population.

“A sample as the name implies, is smaller representative of a larger whole.” George and Hatt.

“In every branch of science we lack the resources, to study more than a fragment of the phenomena that might advance our knowledge.” W.G. Cocham.

I) The value of Sampling Technique:

In the quantified research, the sampling technique is made maximum use of, and in no field of research can its importance and value belittled. In researches in the education, economic, commercial and scientific domains, the sampling technique is used and considered most apt. for research.

Sampling technique also has very high value in day-to-day activity. It is not considered necessary to examine each and every piece of the commodity only a handful of goods are examined and the idea about the whole is formed and this usually proves a justified procedure. In education, sampling is a widely used technique. The census technique is rarely used, its most striking example being population count.
II] Methods of Sampling:

Sampling methods can be classified into two broad categories.

1) Probability Sampling

2) Non-Probability Sampling.

1] Probability Sampling:

In probability sampling the unit of the population is not selected at the direction of the researcher but by means of certain procedures. Such method is also called random sampling in this methods following methods are included.

Probability Samples

Now that we have defined a probability sample at the general level we shall be more specific and define types of probability samples. The most basic and common type of probability sample is the simple random sample, which can be defined as a sample in which all elements or groups of elements have the same chance of being included. If one were to select a sample without replacement, it would be in violation of this definition since each succeeding selection would have a higher probability of being included, such drawing 10 numbers from a hat. To make this a simple random replacing the numbers back into the hat to assure that each number had the same probability of being drawn.

Another type of random sample widely used in social science research is the systematic random sample, defined as selecting every nth unit from a population after having selected the first by a random method

A cluster probability sample is also a probability sample in which the researcher is interested in selected groups or clusters of units to be included in a final study sample
Stratified random sampling constitutes a fourth common probabilistic method of selecting a sample for research. In this sampling technique, the population is divided into parts of strata according to some characteristic (say religion, race, or social class), and then one selects a random sample from each of the defined strata. This sampling technique requires that the researcher be somewhat knowledgeable about the whole population or it would not be possible to divide the population into defined homogeneous stratum.

Stratified random sampling also permits one to select cases within each stratum in a variety of ways as well as in different proportions. Additionally, this approach to sampling virtually guarantees that the subgroups in a population will be represented. Stratified random sampling is an efficient and high quality data producing sampling device. Its major disadvantage is, perhaps, the need to be more highly informed about the population as a whole than is the case in a simple random sample.

a. Simple Random Sampling  
b. Systematic Sampling  
c. Stratified Random Sampling  
d. Multistage Sampling

It is a method of sampling which gives the probability that a sample is representative of population.

“A probability sample is one that has been selected in such was that every element chosen has a known probability of being included”. G.C. Halmstadter (Koul, 1984, p.112)

Probability sampling is generally used in fundamental research in which the purpose is to generalize the results.
2] Non probability Samples

As noted earlier, not all samples are probability samples, and in some studies it may not be necessary to use probability samples to gather useful data for certain types of decisions. Since non probability samples may be useful, economical, and especially since they are so widely used in social science research, it is important to understand the types and features of these sampling approaches. All of the examples in this section are non probability samples because it would not be possible to indicate the probability that a given element would be in the sample. Nor would one be able to tell if each element had the same chance of being selected. Since these dimensions are not known, it makes if difficult, if not impossible, to make certain inferences about the population based on the sample or to describe a sample with a high degree of assurance that the description will hold for the entire population. These are important limitations, for a Smith (1975) notes, chemistry or physics may not need to be concerned about the question of representativeness, but the social sciences in general must always be concerned with this question.

ii] Non-Probability Sampling:

In non-probability sampling the units are selected at the direction of the researcher. Such samples derive their control from the judgment of the researcher in this method following methods are include.

a. Incidental Sampling
b. Quota Sampling
c. Purposive Sampling

Choice of sampling method depends upon many considerations unique to each individual project. These include the definition of the population available information the objectives of analysis and the financial other resource available for the project.
Purposeful sampling

It may be defined as a procedure for building a sample based on cases, individuals, or communities judged as being appropriate or very informative for the purpose of the research underway. Cases are handpicked to achieve some specific characteristic that will illuminate the purpose of the study.

Quota sampling –

It is defined as a special edition of stratified sampling in which one attempts to include the various elements in a population in a final sample. The researcher will often attempt to include the various quotas in relationship to their size in the whole population. Som (1973) notes that while one may be able to collect data about the quota (sex, religion, social class etc.), the actual people selected are left to investigator choice. In short, quota sampling is a procedure in which the investigator defines the characteristics of the desired sample as related to the purpose of the research and then proceeds to select respondents to reflect the specified characteristics previously defined. The tendency of interviewers to obtain data from people they know, find easily accessible, or to obtain respective quotas by convenient or easy methods, adds limitations to this sample approach in terms of actually filling the defined quotas.

Selection of sampling for the research

The sampling procedure of the study is be as mentioned below

1. One hundred and twenty D.T.Ed. Colleges and respective principals of that D.T.Ed. Colleges in Pune region were selected through the incidental sampling of Non – probability sampling. But due to unavailability of students and some were not in running condition, only 72 Principals of D. T. Ed. Colleges were available for the present research to fill the questionnaire.
2. Forty five Head of Non Teaching Staff of D.T.Ed. Colleges in Pune region were selected by using random number.

3. Forty five out of 120 D.T.Ed. Colleges in Pune region were selected by using random number for the observation of E-governance facilities

<table>
<thead>
<tr>
<th>Sample</th>
<th>Type of Sampling</th>
<th>No. of Sample</th>
<th>Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>D. T. Ed. Colleges</td>
<td>100%</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Principals of D. T. Ed. Colleges</td>
<td>100%</td>
<td>72 Principals were selected for questionnaire</td>
<td>Questionnaire</td>
</tr>
<tr>
<td>Head of Non Teaching Staff of D. T. Ed. Colleges</td>
<td>62.50% Head of non teaching staff were selected by random sampling</td>
<td>45 colleges were selected for Interview Out of 72</td>
<td>Interview Schedule</td>
</tr>
<tr>
<td>E- governance facilities of D. T. Ed. Colleges</td>
<td>62.50% colleges were selected by random sampling</td>
<td>45 colleges were selected for observation Out of 72-</td>
<td>observation</td>
</tr>
</tbody>
</table>
Area wise distribution of colleges in Pune region

<table>
<thead>
<tr>
<th>Pune Region</th>
<th>Marathi Medium</th>
<th>English Medium</th>
<th>Urdu Medium</th>
<th>Rural</th>
<th>Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grantable</td>
<td>16</td>
<td>01</td>
<td>00</td>
<td>15</td>
<td>02</td>
</tr>
<tr>
<td>Non-Grantable</td>
<td>134</td>
<td>15</td>
<td>05</td>
<td>127</td>
<td>06</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>16</td>
<td>05</td>
<td>142</td>
<td>08</td>
</tr>
</tbody>
</table>

As far concern to above chart, above 90% colleges are related to the rural area. So, most of the D. T. Ed. Colleges are situated in rural area. Maximum no. of colleges are non grantable colleges only 17 D. T. Ed. Colleges are grantable in Pune region.

3.3  RESEARCH PROCEDURE:-

A] Main Study

1] Administration of Questionnaire

Present Research was based on survey method to study and find out the Results of the decided objectives. The researcher has selected the tools for the data collection. The tools were selected and prepared by the researcher and established its reliability. After establishing the reliability he selects the samples to administer the Questionnaire on selected samples. The selected samples were principals of D. T. Ed. Colleges. The Researcher Personally Distributes the Questionnaire to principals. Within Two Months the researcher collected the all those Questionnaire. After collecting the Questionnaire for Analysis all the data feed in the computer Microsoft Excel Software to analyze the each and every Question and its aspects. On Analysis the tables of each Question were made for Tabulation. According the Analyzed Tables prepared the graphs. On the basis of the Tables it has been interpreted of it and
conclusion were made on the basis of conclusion Results were drawn.

2] Administration of Interview schedule

The tools were selected and prepared by the researcher and established its reliability. After establishing the reliability researcher selects the samples to administer the Interview schedule on selected samples. The selected samples were Head of Non teaching staff of D. T. Ed. Colleges. The Researcher Personally conducted the interviews. Within Two Months the researcher collected the all those interviews. After collecting the information through interview, researcher analyzed all the data feed in the computer Microsoft Excel Software to analyze the each and every Question and its aspects. On Analysis the tables of each Question were made for Tabulation. According the Analyzed Tables prepared the graphs. On the basis of the Tables it has been interpreted of it and conclusion were made on the basis of conclusion Results were drawn.

2] Administration of Observation schedule

The tools were selected and prepared by the researcher and established its reliability. After establishing the reliability researcher selects the samples to administer the observation schedule on selected samples. The selected samples were ICT facilities of D. T. Ed. Colleges. The Researcher Personally observed the facilities. Within Two Months the researcher collected the all those information. After collecting the information through observation, researcher analyzed all the data feed in the computer Microsoft Excel Software to analyze the each and every observation point and its aspects. On Analysis the tables of each Question were made for Tabulation. According the Analyzed
Tables the graphs prepared. On the basis of the Tables it has been interpreted of it and conclusion were made on the basis of conclusion Results were drawn.

**Research procedure -**

![Research Procedure Diagram]

**3.4 SUMMARY**

Present chapter deals with the total research procedure of the research study. Researcher has given here the method of sampling, tools, statistical tools and research procedure. In next chapter researcher has given the analysis and interpretation of the data.