The method of randomization can not be used effectively in educational research, because principles, heads can not permit to select subjects randomly from a class or an institution. Thus, selected subject may not co-operate.

TYPES OF SAMPLING DESIGNS

Several methods have been devised to select representative samples. In general two types of techniques of sampling are as follows:

1. **Probability Sampling:** Method of sampling which gives the probability that our sample is representative of population is known as probability sampling.
2. **G.C. Halmstadter:** A Probability sample is one that has been selected in such a way that every element chosen has a known probability of being included. Generally probability sampling is used in Fundamental Research (F.R.) since in F.R. our purpose is to generalize the results.

There are two laws of probability sampling:

(1) Law of Statistical Regularity, and (2) Law of Inertia of Large Sample.

1. **Law of Statistical Regularity:** This law involves the probability principle. A small sample may be good representative of the population, if the subjects of sample are selected at random. The conclusions drawn from the sample may be generalized for the population. The sample 'statistics' are the estimates of the population parameters. The parametric test of significance can be used for this purpose.
2. **Law of Inertia of the Large Sample:** It is the corollary of the first law. A large sample is more stable or good representative as compared with small sample. The sample error is inversely in proportion to the size of sample. It can be shown with the help of the following formula:

$$SE_M = \frac{\sigma}{\sqrt{N}}$$

If N size of the sample increases the sampling error or standard error the mean decrease. If it tends to infinity, the sampling error will be zero.

$$SE_M = \frac{\sigma}{\sqrt{\alpha}} = 0$$

Therefore, parametric tests are used for inferential purpose.

2. Non-probability Sampling: If there is no such idea of probability then the method of sampling is known as non- probability sampling. Non-probability sampling is generally used in Action Research (A.A.), since in A.R. we study a class without any generalization purpose.

Characteristics of Probability Sampling

The following are the main characteristics of probability sampling:

1. In probability sampling we refer from the sample as well as the population.
2. In probability sampling every individual of the population has equal probability to be taken into the sample.
3. Probability sample may be representative of the population.

4. The observations (data) of the probability sample are used for the inferential purpose.
5. Probability sample has not from distribution for any variable.
6. Inferential or parametric statistics are used for probability sample.
7. There is a risk for drawing conclusions from probability sample.
8. The probability is comprehensive. Representativeness refers to characteristic. Comprehensiveness refers to size and area.

Characteristics of Non-probability Sampling: The following are the main characteristics of non-probability sample:

1. There is no idea of population in non-probability sampling.
2. There is no probability of selecting any individual.
3. Non-probability sample has free distribution.
4. The observations of non-probability sample are not used for generalization purpose.
5. Non-parametric or non-inferential statistics are used in non probability sample.
6. There is no risk for drawing conclusions from non-probability sample.

1. Types or Techniques Probability Sampling: There are a number of techniques of taking probability sample. But here only six important techniques have been discussed as follows:

1. Simple random sampling.
2. Systematic sampling.
3. Stratified sampling.
4. Multiple or Double sampling.
5. Multi-stage sampling.
6. Cluster sampling.

2. Types of Non-probability Sample: There are the following four types of non-probability sample:

(1) Incidental or accidental sample.
(2) Purposive sample.
(3) Quota sample.
(4) Judgement sample.

PROBABILITY SAMPLING

1. Simple Random Sampling

A simple random sample is one in which each element of the population has an equal and independent chance of being included in the sample i.e. a sample selected by randomization method is known as simple-random sample and this technique is simple random-sampling. Aandomization is a method and is done by using a number of techniques as :

(*a*) Tossing a coin.
(*b*) Throwing a dice.
(*c*) Lottery method.
(*d*) Blind folded method.
(*e*) By using random table of 'Tippett's Table'.

Advantages

(*a*) It requires a minimum knowledge of population.
(*b*) It is free from subjectivity and free from personal error.
(*c*) It provides appropriate data for our purpose.
(*d*) The observations of the sample can be used for inferential purpose.

Disadvantages

(*a*) The representativeness of a sample cannot be ensured by this method.
(*b*) This method does not use the knowledge about the population.
(*c*) The inferential accuracy of the finding depends upon the size of the sample.

2. Systematic Sampling

Systematic sampling is an improvement over the simple random sampling. This method requires the complete information about the population. There should be a list of informations of all the individuals of the population in any systematic way. Now we decide the size of the sample.

Let sample size $= n$
and population size $= N$

Now we select each N/nth individual from the list and thus we have the desired size of sample which is known as systematic sample. Thus for this technique of sampling population should be arranged in any systematic way.

Advantages

(*a*) This is a simple method of selecting a sample.
(*b*) It reduces the field cost.
(*c*) Inferential statistics may be used.
(*d*) Sample may be comprehensive and representative of population.
(*e*) Observations of the sample may be used for drawing conclusions and generalizations.

Disadvantages

(*a*) This is not free from error, since there is subjectivity due to different ways of systematic list by different individuals. Knowledge of population is essential.
(*b*) Information of each individual is essential.
(*c*) This method can't ensure the representativeness.
(*d*) There is a risk in drawing conclusions from the observations of the sample.

3. Stratified Sampling

It is an improvement over the earlier method. When employing this technique, the researcher divides his population in strata on the basis of some characteristics and from each of these smaller homogeneous groups (strata) draws at random a predetermined number of units. Researcher should choose that characteristic or criterion which seems to be more relevant in his research work.

Stratified sampling may be of three types:

1. Disproportionate stratified sampling.
2. Proportionate stratified sampling.
3. Optimum allocation stratified sampling.

1. Disproportionate sampling means that the size of the sample in each unit is not proportionate to the size of the unit but depends upon considerations involving personal judgement and convenience. This method of sampling is more effective for comparing strata which have different error possibilities. It is less efficient for determining population characteristics.
2. Proportionate sampling refers to the selection from each sampling unit of a sample that is proportionate to the size of the unit. Advantages of this procedure include representativeness with respect to variables used as the basis of classifying categories and increased chances of being able to make comparisons between strata. Lack of information on proportion of the population in each category and faulty classification may be listed as disadvantages of this method.
3. Optimum allocation stratified sampling is representative as well as comprehensive than other stratified samples. It refers to selecting units from each stratum should be in proportion to the corresponding stratum the population. Thus sample obtained is known as optimum allocation stratified sample.

These three types are clear from the table as given below:

Levels	*Disproportionate Str. Sampling*	*Proportionate str. Sampling*	*Optimum allocation stratified Sampling*	
			Population	*Sample*
H.G.	35	25	250	25
A. G.	43	50	400	40
L. G.	22	25	350	35
Sample	100	100	1000	100

Advantages

(*a*) It is (more precisely third way) a good representative of the population.
(*b*) It is an improvement over the earlier.
(*c*) It is an objective method of sampling.
(*d*) Observations can be used for inferential purpose.

Disadvantages

(*a*) Serious disadvantage of this method is that it is difficult for the researcher to decide the relevant criterion for stratification.
(*b*) Only one criterion can be used for stratification, but it generally seems more than one criterion relevant for stratification.
(*c*) It is costly and time consuming method.
(*d*) Selected sample may be representative with reference to the used criterion but not for the other.
(*e*) There is a risk in generalization.

4. Multiple or Double or Repetitive Sampling

Generally this is not a new method but only a new application of the samplings we discussed above. This is most frequently used for establishing the reliability of a sample. When employing a mailed

questionnaire, double sampling is sometimes used to obtain a 'more representative sample. This is done because some randomly selected subjects who are sent questionnaires may not return them. Obviously, the missing data will bias the result of the study, if the people who fail to reply the' query differ in some fundamental way from the others in respect to the phenomena being studied. To eliminate this bias, a second sample may be drawn at random from the non-respondents and the people interviewed to obtain the desired information. Thus this technique is also known as repeated or multiple sampling. This double sampling technique enables one to check on the reliability of the information obtained from the first sample. Thus, double sampling, wherein one sample is analysed, and information obtained is used to draw the next sample to examine the problem further.

Advantages

(*a*) This sampling procedure leads to the inferences of free determine precision based on a number of observations.

(*b*) This technique of sampling reduces the error.

(*c*) This method maintains the procedure of the finding evaluate the reliability of the sample.

Disadvantages

(*a*) This technique of sampling cannot be used for a large sample. It is applicable only for small sample.

(*b*) This technique is time consuming, costly, and requires more competition.

(*c*) Its planning and administration is more complicated.

5. Multi-Stage Sampling

This sample is more comprehensive and representative of the population. In this type of sampling primary sample units are inclusive groups and secondary units are sub-groups within these ultimate units to be selected which belong to one and only one group. Stages of a population are usually available within a group or population, whenever stratification is done by the researcher. The Individuals are selected from different stages for constituting the multi-stage sampling.

Advantages

(*a*) It is a good representative of the population.

(*b*) Multi-stage sampling is an improvement over the earlier methods.

(*c*) It is an objective procedure of sampling.

(*d*) The observations from multi-stage sample may be used for inferential purpose.

Disadvantages

(*a*) It is a difficult and complex method of samplings.

(*b*) It involves errors when we consider the primary and secondary stages.

(*c*) It is again a subjective phenomenon.

6. Cluster Sampling

To select the intact group as a whole is known as a Cluster sampling. In Cluster sampling the sample units contain groups of elements (clusters) instead of individual members or items in the population. Rather than listing all elementary school children in a given city and randomly selecting 15 per cent of these students for the sample, a researcher lists all of the elementary schools in the city, selects at random 15 per cent of these clusters of units, and uses all of the children in the selected schools as the sample.

Advantages

(*a*) It may be a good representative of the population.
(*b*) It is an easy method.
(*c*) It is an economical method.
(*d*) It is practicable and highly applicable in education.
(*e*) Observations can be used for inferential purpose.

Disadvantages

(*a*) Cluster sampling is not free from error.
(*b*) It is not comprehensive.

All these above are techniques of probability sampling.

7. Non-probability Sampling Techniques

Non-probability is also known as non-parametric sampling which ate used for certain purpose.

1. Incidental or Accidental Assignment

The term incidental or accidental applied to those samples that are taken because they are most frequently available, i.e. this refers to groups which are used as samples of a population because they are readily available or because the researcher is unable to employ more acceptable sampling methods.

Advantages

(*a*) It is very easy method of sampling.
(*b*) It is frequently used in behavioural sciences.
(*c*) It reduces the time, money and energy i.e. it is an economical method.

Disadvantages

(*a*) It is not a representative of the population.
(*b*) It is not free from error.
(*c*) Parametric statistics cannot be used.

2. Judgement Sampling

This involves the selection of a group from the population on the basis of available information thought. It is to be representative of the total population. Or the selection of a group by intuition on the basis of criterion deemed to be self-evident. Generally investigator should take the judgement sample so this sampling is highly risky.

Advantages

(*a*) Knowledge of the investigator can be best used in this technique of sampling.
(*b*) This technique of sampling is also economical.

Disadvantages

(*a*) This technique is objective.
(*b*) It is not free from error.
(*c*) It includes uncontrolled variation.

(*d*) Inferential statistics cannot be used for the observations of this sampling, so generalization is not possible.

3. Purposive Sampling

The purposive sampling is selected by some arbitrary method because it is known to be representative of the total population, or it is known that it will produce well matched groups. The Idea is to pick out the sample in relation to some criterion, which are considered important for the particular study. This method is appropriate when the study places special emphasis upon the control of certain specific variables.

Advantages

(*a*) Use of the best available knowledge concerning the sample subjects.
(*b*) Better control of significant variables.
(*c*) Sample groups data can be easily matched.
(*d*) Homogeneity of subjects used in the sample.

Disadvantages

(*a*) Reliability of the criterion is questionable.
(*b*) Knowledge of population is essential.
(*c*) Errors in classifying sampling subjects.
(*d*) Inability to utilise the inferential parametric statistics.
(*e*) Inability to make generalization concerning total population.

4. Quota Sampling

This combined both judgement sampling and probability sampling. The population is classified into several categories: on the basis of judgement or assumption or the previous knowledge, the proportion of population falling into each category is decided. Thereafter a quota of cases to be drawn is fixed and the observer is allowed to sample as he likes. Quota sampling is very arbitrary and likely to figure in Municipal surveys.

Advantages

(*a*) It is an improvement over the judgement sampling.
(*b*) It is an easy sampling technique.
(*c*) It is most frequently used in social surveys.

Disadvantages

(*a*) It is not a representative sample.
(*b*) It is not free from error.
(*c*) It has the influence of regional geographical and social factors.

Since research design is a plan by which research samples may be selected from a population and under which experimental treatments are administered and controlled so that their effect upon the sample may be measured. Therefore, a second step in the establishment of an experimental design is to select the treatments that will be used to control sources of learning change in the sample subjects.

CHARACTERISTICS OF A GOOD SAMPLE

The following are the main characteristics of a good sample:

1. A good sample is the true representative of the population corresponding to its properties. The population is known as aggregate of certain properties and sample is called sub-aggregate of the universe.
2. A good sample is free from bias, the sample does not permit prejudices the learning and pre-conception, imaginations of the investigator to influence its choice.
3. A good sample is an objective one, it refers objectivity in selecting procedure or absence of subjective elements from the situation.
4. A good sample maintains accuracy. It yields an accurate estimates or statistics and does not involve errors.
5. A good sample is comprehensive in nature. This feature of a sample is closely linked with true-representativeness. Comprehensiveness is a quality of a sample which is controlled by specific purpose of the investigation. A sample may be comprehensive in traits but may not be a good representative of the population.
6. A good sample is also economical from energy, time and money point of view.
7. The subjects of good sample are easily approachable. The research tools can be administered on them and data can be collected easily.
8. The size of good sample is such that it yields an accurate results. The probability of error can be estimated.
9. A good sample makes the research work more feasible.
10. A good sample has the practicability for research situation.

Advantages of Sampling Technique according to R.A. Fisher

Fisher has enumerated the following four advantages of sampling technique:

1. It has a greater adaptability.
2. It is an economical technique.
3. It has high speed for generalization.
4. It has a greater precision and accuracy in the observation.

Advantages of Sampling Technique according to W.G. Cocharan. He has given the following four advantages of sampling technique:

1. This technique has great accuracy.
2. It has a greater speed in conducting a research work.
3. It has a greater scope in the field of research.
4. It reduces the cost of observation or data collection.

Types of Errors in Sampling

The samples of behavioural research are not representative and suffer from two types of errors:

(1) Random error, and (2) Systematic error.

These errors can be classified further as :

(*a*) Sampling errors and (*b*) Error of measurement.

Thus, it provides a four-ways classification and has been shown in following manner:

	Random	Constant
Sampling measurement	A	B
	C	D

Cell A refers to the unavoidable errors that occur whenever sampling is done. The sample selected at random may be high, low or average with regard to the trait measured. This error can be minimized by selecting a large sample.

Cell B refers to errors of bias in sampling, i.e. sampling errors which do not cancel out, but rather lean systematically in one or the other direction of the population value. This error is due to any decision of researcher for selecting subjects for the sample. The systematic error exists, the data are of limited use as the basis for generalizing to the population. Thus, Cells A and B refer to the errors and sampling.

Cells C and D refer to errors. In the process of measurement, rather than to errors in sampling. The errors in Cell C which occur from the simple fact measurement derived from any instrument of less than complete reliability are inevitable in some degree of error. The error of measurement is cancelled out by selecting a large sample. Sum of errors of measurement is always zero.

Cell D concerns with another bias-that is due to systematic errors of measurement. If, in the testing of subjects for intelligence, the test administrator allows an extra three minutes for the test, there will be probably be systematic tendency for the sample statistics to be higher than the population parameters.

The systematic errors are the bad errors in both in sampling and in measurement. The magnitude of random sampling errors as they affect the sample statistics as given below:

$$SE_M = \frac{\sigma}{\sqrt{N}}$$

If greater accuracy is required, it can be obtained by increasing the size of sample or the homogeneity of the variable under-investigation or by using adequate sampling design.

If the results obtained are systematically higher or lower than the corresponding true value, the sample is biased and the discrepancy is called an error of bias.

Size of Sample

One of the first questions that the researcher typically asks, concerns with the number of subjects that need to be included in his sample. Technically, the size of the sample depends upon the precision the researcher desires in estimating the population parameter at a particular confidence level. There is no single rule that can be used to determine sample size.

The best answer to the question of size is to use as large a sample as possible. A larger sample is much more likely to be representative of the population. Furthermore with a large sample the data are likely to be more accurate and precise. It was pointed out in that the larger the sample, the smaller the standard error. In general, the standard error of a sample mean is inversely proportional to the square root of *n*. Thus, in order to double the precision of one's estimation, the sample size would need to be quadrupled.

It is often suggested that one should include at least 30 subjects in a sample since this number permits .the use of large sample statistics. Statistically speaking, a sample $n = 30$ is considered large, since with this n, the t-distribution and the normal curve are practically the same for hypothesis testing purposes. In experimental research, one should select a sample that will permit at least 30 in each group. Descriptive research typically uses larger samples; it is sometimes suggested that one should select 10-20 per cent of the accessible population for the sample.

Determine the Size of Sample: It is the crucial problem for the research scholars to determine the size of sample. In an experimental study, it is essential to equate the control and experimental groups, but in survey study sample should be representative of population. Therefore, size of sample is an important aspect for the representativeness. Mouly has suggested a statistical criterion for determining the size of the sample.

Other things being equal, the larger the sample, the greater the precision and accuracy of the data it provides. It is a common belief that the precision of data is determined primarily by the size of the sample, rather than by the percentage of the population represented in the sample. The term 'large sample' is vague, it varies with nature of study. The exact procedure by which to determine the sample size required varies with the nature of the variable and its sampling distribution, but the basic procedure can be illustrated in connection with the mean of random samples based on normal probability distribution. The chances are 95 to 5 that a sample in separated sampling will fall within the interval $M \pm 1.96\ SE_M$.

The next question is the degree of accuracy required. Generally 95 to 99 per cent confidence intervals are acceptable i.e. 5 to 1 per cent error. If the variable of the study is the intelligence and the sampling errors were kept within 5 per cent at the 95 per cent confidence level. The investigator can use the formula for the standard error of the mean to provide the required size of sample.

$$1.96\ SE_M = 5,$$

$$1.96\ \frac{\sigma}{\sqrt{n}} = 5$$

Where

σ = S.D. of the population

n = Size of the sample

5 is percent of sampling error

In this illustration I.Q. distribution $s = 16$

$$\sqrt{n} = 1.96 \times \frac{16}{5} = 9.30$$

$$n = 96$$

If the investigator wants more precise, the sampling error is kept within 1 per cent at the 99 per cent confidence level. The following formula is used for determining the size of sample:

$$2.58\ SE_M = 1\ ;\ 2.58\ \frac{\sigma}{\sqrt{n}} = 1$$

$$2.58 \times 16 = \sqrt{n}\ \sqrt{n} = 41.28$$

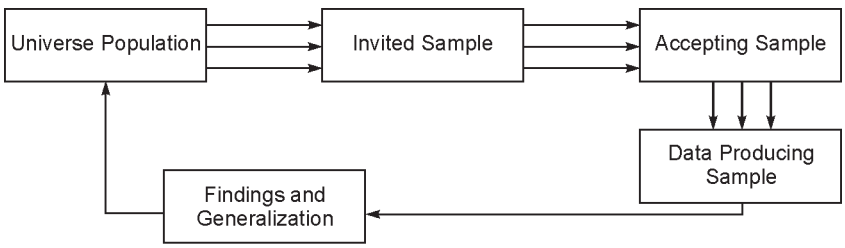
$$n = 16$$

Thus, he would need a sample of 96 case in order to meet the conditions of 5 per cent error at 95 per cent confidence level. He would require a sample 1681 case for 1 per cent error at the 99 per cent confidence level.

Generally in behavioural research more than one variable are taken into a study. In such situation he should consider standard deviations of the distributions of the variables. The highest S.D. is to be considered for calculating the size of the sample. In this way a researcher can determine the exact size of sample indicating the sampling error in per cent. He should not use an arbitrary criterion for determining the size of his sample.

THE SAMPLING CYCLE

Five stages of sampling cycle are proposed here, as sketched in figure. In this cycle, the researcher identifies the universe that is relevant for his research problem and then identifies his population, that is, that portion of the universe to which he has access. Then by applying the techniques for sample selection, he decides how large a sample he needs, selects, and invites that number to participate. To this point, the researcher has completed control over the process, but at this point the respondents assume most of the control. For now, some do and others do not accept the invitation, and so typically more invitations are extended until sufficient number accept so that the sample is of desired size. Those who do accept from the accepting sample then the researcher applied his data gathering technique to the accepting sample depending upon factors like the data gathering design, methods and techniques, all or only some of the accepting sample actually produce data. Those who do form the data producing sample, it is from these data that the researcher obtains his findings and makes his conclusions.



The Sample Cycle

REPRESENTATIVES

Completing the sample cycle by applying findings and generalization to the population and universe makes sense in one set of circumstances only, when the various samples can be considered representative of the population and universe. But as the Sample Cycle is intended to illustrate and emphasize, representativeness is a securing concern throughout the sample process. When we identify the universe of relevance for our respondents and research problem and select the population, we face the first representative question can the population be considered representative of the universe? If it can move on to identify and select the invited sample, and from this derive the accepting sample. At this stage there is second concern with representativeness of the accepting sample to the population.

When the data gathering instrument one administered and the researcher learns what kind of attribution has taken place in terms of the data producing sample which has emerged. he must face the

critical issue of determining if he can consider the data producing sample representative of the accepting sample and therefore of the population but we are using ambiguous concept at the heart of this discussion "representative". We want every stage to be representative of proceeding stage but representative in terms of age, shoe, size, sex, voting record, we could extend a list of possible human characteristics and attributes endlessly. We want representativeness in terms of these variables that are known to be related to the phenomenon under study.

IDENTIFYING A REPRESENTATIVE SAMPLE

The representative issue comes to the four first in the identification of the population within the universe. For every research problem there is one completely relevant universe, but any number of population. For example, for a study concerned with the relative teaching ability of liberal acts of graduates and school of education graduates, the obvious universe of relevance is all liberal acts and education graduates functioning as a teacher who graduates two year prior to the date at which the study will collect its data. But clearly no researcher will have access to this universe.

Next step in the sampling cycle is the identification of the invited sample at this stage we can seek to guarantee that the invited sample is representative of the population on selected characteristics. In doing so we must consider two different aspects of representativeness: (1) assuring that all significant aspects of a characteristics are represented in the sample, and (2) assuring that each aspect is of the same proportion of the sample as it is of the population.

Assuring that all significant aspects of a characteristic are represented in the sample is achieved through a process called stratification. This involves in dividing the population into sub-groups or strata on the basis of the characteristics for which we seek representativeness and creating our sample by separate selections for each stratum.

In summary, it might be repeated that there is no best sampling design. Validity of sample data, like validity of all data, is a specific concept to be evaluated from the standpoint of the specific case. It is, therefore, difficult to generalize. Nevertheless, it is generally true that the aspect of sampling to which investigators of educational problems might most profitably devote their attention is minimizing possible bias rather than devising complicated design.

RELIABILITY OF SAMPLING

There are three ways of deciding the reliability of sample:

1. By Selecting Another Parallel Sample

Results analysis for sub-sample and compare with main sample. This process establishes the reliability of the sample.

2. Statistical Technique

Reliability of the statistics also indicates the reliability of sample this can be estimated by using statistical method: method is standard error of mean-The means of randomly selected samples, which are normally distributed, have their own standard deviation, known as the standard deviation, or standard error, of the mean. The standard error of the mean of a sample is computed from the formula:

$$\sigma_M = \frac{\sigma}{\sqrt{N}}$$

where σ_M = Standard error of mean
σ = Standard deviation of the population
N = Size of the sample.

The standard error of the sample means that it has a smaller value than the standard deviation of the individual scores. This is understandable because in computing the means of Sample, extreme scores are not represented by the means which are middle scores values:

From the formula $\sigma_M = \frac{\sigma}{\sqrt{N}}$, it is apparent that as the size of the sample N approaches infinity, the mean approaches the population mean and the standard error of mean approaches zero.

$$\sigma_M = \sigma_M = \frac{\sigma}{\sqrt{N}} = 0$$

As N is reduced in size and approaches one, the standard error of the mean approaches the value of the standard deviation of the population scores.

$$\sigma_M = \frac{\sigma}{\sqrt{1}} = \sigma$$

This analysis suggests that other factors being equal statistical inferences based upon small samples have larger margins of error than those based upon larger samples. Thus, the distribution of sample means is similar to the distribution of population, *n* scores except the range of sample means and their standard deviation are smaller in value.

The value of the true mean of an infinite population is not known, for it can not be calculated. One might say that it is "known only to God:". But a particular mean calculated from a randomly selected sample can be related to the population mean in the following way:

Approximately 68 per cent of the sample means will lie within a range of $\pm \sigma_M$ of the population mean. 95 per cent of samples means will lie within $\pm 1.96\ \sigma_M$ of the population mean.

99 per cent of sample means will lie within $\pm 2.58\ \sigma_M$ of the population mean.

The mean of the samples means will approximate the population mean.

APPLICATION OF SAMPLING TECHNIQUE IN VARIOUS TYPES OF RESEARCH

HISTORICAL RESEARCH

In historical research the problem of sampling is not so important because historical research is based upon past records, events and facts but in Case Study-Method judgement sample and purposive sample is used because the purpose of case study method is to improve the case and not to conclude therefore non "probability sampling is applied.

NORMATIVE SURVEY METHOD

In this method random sampling is frequently used because in normative survey large sample is selected-systematic, multi stage and multiple sampling can also be used in normative survey method.

EXPERIMENTAL METHOD

In experimental method most precise and comprehensive method of sampling is preferred. Therefore, stratified sampling technique is used but in educational situation it is often difficult to use this stratified sampling than cluster sampling technique is preferred.

In the field of education research cluster sampling techniques is most frequently used and it has some limitations but it has usability in teaching learning situations and educational research.

EXERCISES

1. What do you mean by research design? Differentiate between research methodology and research design. Illustrate your answer with suitable example.
2. Enumerate the characteristics of good research design and indicate potential problems in preparing a research design.
3. Define the term 'Sampling'. Differentiate between sample and population and illustrate your answer with examples.
4. Distinguish between probability sampling and non-probability sampling. Mention the assumptions of a probability sampling.
5. What do you mean by the term 'Randomization'? Indicate the methods of randomization and their advantages and limitations.