Research Methodology
Chapter-IV  

RESEARCH METHODOLOGY

Research methodology is of paramount importance in any scientific inquiry since validity and reliability of the facts primarily depends upon the system of investigation. The aspects concerning the research methodology have been categorised under the following heads:

RESEARCH DESIGN

4.1 The locale of the study
4.2 Selection of research area
4.3 Selection of district
4.4 Selection of block
4.5 Selection of villages
4.6 Selection of respondents
4.7 Selection of training programmes
4.8 Selection of variables
4.9 Tools and techniques of inquiry
4.10 Statistical analysis

4.1 THE LOCALE OF THE STUDY

4.2 Selection of research area

Uttar Pradesh state was chosen as area of study and K.V.K. of Fatehpur district was also selected purposively.

4.3 Selection of district

The study was carried out in Fatehpur district because that was only district in the entire U.P. state where this institute has fulfilled home science unit to train rural women in home science and agricultural activities.
4.3 Selection of block

In Fatehpur district, the Krishi Vigyan Kendra of Thariyaon who is under jurisdiction of C.S. Azad University of Agriculture and Technology, Kanpur. The K.V.K. staff is looking after the institutional and non-institutional training of women organized at headquarter, block headquarter and some selected villages of different blocks.

Fatehpur district has 13 blocks for development work in which only one block namely Haswa was selected for this study. According to secondary data available at K.V.K. headquarter, majority of women was trained in Haswa block. Thus, investigator has decided that sufficient sample is available for the research. Therefore, Haswa block was selected purposively.

4.4 Selection of villages

A list of those villages was prepared where K.V.K. has organised training camp. From the list of 985 revenue villages, ten villages were selected on random basis. The selected villages were Thariyaon, Dharmdaspur, Haswa, Dharmrajpur, Bharampur, Aurai, Semeri, Sangava, Jamalpur Michiki and Attra.

Table 4.1 Showing the total number of respondents selected under selected villages

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of the villages selected</th>
<th>Number of rural women selected</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Trained</td>
<td>Untrained</td>
</tr>
<tr>
<td>1.</td>
<td>Thariyaon</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>2.</td>
<td>Dharmdaspur</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>3.</td>
<td>Haswa</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>4.</td>
<td>Baharampur</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>5.</td>
<td>Dharmrajpur</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>6.</td>
<td>Aurai</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>7.</td>
<td>Semeri</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>8.</td>
<td>Sangava</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>9.</td>
<td>Jamalpur Michiki</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>10.</td>
<td>Attra</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>
4.5 Selection of respondents

A village wise list of trained and untrained respondents was prepared with the help of K.V.K., staff and village Pradhan. From the list 8 trained and 8 untrained women were selected to each village on random basis. Thus, a total number of 150 (75 trained and 75 untrained) women were taken for final interview.

4.6 SELECTION OF TRAINING PROGRAMMES

Krishi Vigyan Kendra organized two kinds of courses for women i.e. institutional and non-institutional. The duration under non-institutional courses are of one to two days, whereas, for institutional courses it is ten days. About 15 to 20 courses of 1 to 10 days duration organized every year at Krishi Vigyan Kendra (KVK) Thariyaon, Fatehpur. For the purpose of this study, only 5 courses of different subjects were selected purposively for present investigation. The courses are given below:
- Fruits and Vegetable Preservation
- Stitching and Embroidery
- Child care Practices
- Interior Decoration
- Grain Storage

4.8 SELECTION OF VARIABLES

There are two types of variables viz., dependent and independent were studied.

4.8.1 Independent variables

A list of the rural women socio-personal characteristics, which were likely to have some relationship with effectiveness of training, was prepared on the basis of available literature, the variables, which, in view of specialists of extension education and training were selected for the study. The selected
independent variables were age, education type of family, religion, caste, family occupation, marital status, source of income, material possession, vehicle, social participation and previous training etc.

(a) Age

It refers to the chronological age of the respondent in terms of completed years at the time of interview for the present study. In case of age the number of years was taken as the score of this variable.

(b) Education

It is level of formal education of rural women ranging from illiterate to college level. The responses for illiterate, literate (can read only, can write only, both read and write), primary, middle, high school, intermediate, graduate and post-graduate were awarded scores of 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9, respectively.

(c) Type of family

Two types of family were recognized. These were nuclear or joint families. Single family is the one, which is composed of husband, wife, minor children and direct dependents. A joint family is composed of two or more couples and their children, including old persons. Scores assigned to the type of family were 1 and 2 for single and joint family respectively.

(d) Family occupation

Family occupation referred to the main occupation of the family of respondent, scores assigned to the family occupation were as house wife, daily wages, landless farm labour, caste occupation, business, service, farming and the awarded scores 1, 2, 3, 4, 5, 6, 7, 8.

(e) Marital status

It is the status of the respondent in terms of married, unmarried, widow and divorced. The assigned scores are 4, 3, 2, 1.
(f) Religion

It refers to Hindu communities persons belonging to different categories of socio-economic background.

(g) Caste

It refers to the respondent belonging to the following castes:
- Scheduled castes
- Scheduled Tribes
- Backward castes
- Forward castes

(h) Source of income

The income of family (respondents) from the main and subsidiary occupation is considered as the source of income and has been scored into following: Farming 6, Service 5, Business 4, Caste occupation 3, Landless farm labour 2 and Daily wages 1.

(i) Transport facilities

It refers to the conveyance used for different purposes like cycle, motor, cycle, riksha, car, zeep etc.

(j) Social participation

It connotes the status of membership or holding any other official rank in a village or outside village organizations by the respondents. The organizations considered for measuring this variable in this study were, Mahila Mandal, Self Help Group, Co-operative and other women organizations. The response quantification procedure followed was of assigning one score to membership in any organization and two scores to any office held in an organization.
(k) Previous training experience

It was defined as the participation of the respondents in previous training courses and was measured in terms of participation in the training courses. The responses were recorded into ‘Yes’ and ‘No’ categories.

4.9 Dependent variables

The operational definition of the selected dependent variables are mentioned below:

(a) Change in knowledge

The difference of quantified performance of knowledge between trained and untrained respondents.

(b) Change in skill

The quantified difference between skill performance score of trained and untrained respondents.

(c) Knowledge and skill test of respondents

Knowledge and skill test of respondents regarding Home Science Practices were gathered. These variables were operationalized in terms of knowledge possessed by the respondents (training and untrained) regarding various practices as fruit and vegetable preservation, interior decoration, stitching and embroidery, child care practices and grain storage etc. The scoring method was followed

<table>
<thead>
<tr>
<th>Correct</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorrect</td>
<td>0</td>
</tr>
<tr>
<td>And</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
</tr>
</tbody>
</table>

(d) Opinion of rural women towards management aspects

This dependent variable was interpreted in the study as the expressed opinion of the rural women about the management aspects of training
programme of KVK, viz. schedule of training, subject matter trainer and physical facilities, perceived training needs and problems and suggestions given by respondents.

**Study of variables**

The variables studied and their measurements in the present investigation were as under:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Variables</th>
<th>Empirical measurement</th>
<th>Statistical measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Socio-economic status of variables</td>
<td>Schedule developed</td>
<td>Chi-square &amp; Percentage</td>
</tr>
<tr>
<td></td>
<td>(i) Age</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td></td>
<td>(ii) Education</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td></td>
<td>(iii) Caste</td>
<td>-do-</td>
<td>Percentage</td>
</tr>
<tr>
<td></td>
<td>(iv) Religion</td>
<td>-do-</td>
<td>Chi-square &amp; Percentage</td>
</tr>
<tr>
<td></td>
<td>(v) Occupation of the respondents</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td></td>
<td>(vi) Occupation of the father/husband</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td></td>
<td>(vii) Marital status</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td></td>
<td>(viii) Type of family</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td></td>
<td>(ix) Source of income</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td></td>
<td>(x) Vehicle</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td></td>
<td>(xi) Social participation of respondents</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td>2.</td>
<td>Knowledge test on different practices</td>
<td>-do-</td>
<td>Mean score, Paired ‘t’ test &amp; Index member</td>
</tr>
<tr>
<td>3.</td>
<td>Skill test of respondents on different practices</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td>4.</td>
<td>Respective rank of trained respondents</td>
<td>-do-</td>
<td>Index and Rank</td>
</tr>
<tr>
<td>5.</td>
<td>Estimation of relationship</td>
<td>-do-</td>
<td>Correlation, standard error &amp; ‘t’ test</td>
</tr>
<tr>
<td>6.</td>
<td>Opinion of rural women towards management aspects of training programme</td>
<td>-do- and Scoring (scale 3 point) according to Likert 1932</td>
<td>Rank order &amp; weighted average</td>
</tr>
<tr>
<td>7.</td>
<td>Need of training other than areas already taught concerning home science practices</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td>8.</td>
<td>Problems faced by training in utilizing training</td>
<td>-do-</td>
<td>Percentage</td>
</tr>
</tbody>
</table>
4.9 TOOLS AND TECHNIQUES FOR INQUIRY

The data collection procedure, statistical methods and techniques for research is always necessary and a number of standard tools and techniques have been developed by various scientists were used with some necessary modifications.

4.9.1 Time of study

The data collection and writing work was completed during June 2003 to 2004.

4.9.2 Scale used

The three point Likert type scale was used as described under:

- Most need 3
- Some what needed 2
- Not needed 1

And

- Most appropriate 3
- Somewhat appropriate 2
- Not appropriate 1

Collection of data

The interviewer collected the primary data by personally visiting the selected villages and respondents. The interview schedule was prepared on the basis of pilot study, discussion with the professionals and scientists closely associated with existing problems of area.

Processing and analysis of data

After collecting the data, it was classified and tabulated so that it could be amenable to analysis. The data is analysed in relation to objectives and hypothesis of the study. The data analysis is done with the help of statistical
tools like Chi-square, paired 't' test, mean score, percentage, correlation coefficient and index number etc.

STATISTICAL TECHNIQUES

The following statistical techniques have been applied in the analysis of data:

Average

It is defined as the sum of the observations divided by its number. If $X_1, X_2, X_3, \ldots \ldots \ldots X_N$ observations then average is as:

$$\bar{X} = \frac{\sum X}{N}$$

For calculation average score, weighted average formula was used. If $n_i$ is number of participants and $x_i$ is scale values then

$$\text{Average score} = \frac{\sum n_i x_i}{\sum n_i}$$

Variance

It is defined as the mean of the squares of the deviation taken from arithmetic mean, the expression is as:

$$\sigma_i^2 = \frac{\sum (X - \bar{X})^2}{n - 1}$$

The square root of variance is known as standard deviation.

Level of significance

The maximum probability of rejecting the hypothesis when it is true or the maximum probability of Type I error is known as level of significance. The level of significance is denoted by a 'α' and for moderate precision it is taken as 0.05 and for high precision it is taken as 0.001.
The significant difference between two samples means

\[
t = \frac{[\bar{x}_1 - \bar{x}_2]}{\sqrt{\sigma_c^2 \left[ \frac{1}{n_1} + \frac{1}{n_2} \right]}} = \frac{\Sigma (X_1 - \bar{X}_1)^2 + \Sigma (X_2 - \bar{X}_2)^2}{(n_1 - 1) + (n_2 - 1)}
\]

\( \sigma_c^2 \) = pooled estimate variance

\( \bar{X}_1 \) = Mean of the first sample

\( \bar{X}_2 \) = Mean of the second sample

**Correlation coefficient (r)**

Karl Pearson has given a coefficient of correlation for the measurement of linear relationship which exists between two variables. If X and Y are two variables and if \( E(XY) = 0 \) then correlation coefficient (r) is

\[
r = \frac{\Sigma XY - \frac{\Sigma X \Sigma Y}{N}}{\sqrt{\left\{ \Sigma X^2 - \frac{(\Sigma X)^2}{N} \right\} \left\{ \Sigma Y^2 - \frac{(\Sigma Y)^2}{N} \right\}}}
\]

\[
r = \frac{\text{Cov.}(X, Y)}{\sqrt{\text{var}(X) \text{var}(Y)}}
\]

**Chi-square (\( \chi^2 \))**

In order to test the independence of two attributes, a chi-square test was applied as -

\[
\chi^2 = \sum_{i=1}^{n} \frac{(q_i - e_i)^2}{e_i}
\]

Where,

\( q_i \) = observed frequency of \( i^{th} \) cell
\( e_i = \) expected frequency of \( i^{th} \) cell

In \( r \times c \) contingency table, \( X^2 \) value is compared at \((r-1) \times (c-1)\) degree of freedom with theoretical value of \( x^2 \) at 5% level of significance.

**Percentage**

Simple compassions have been made on the basis of percentage, for obtaining percentage, the frequency of particular cell was multiplied by 100 and divided by the total number of $ in the particular category to which all of them belongs. This has been used in most of the places in thesis and has proved helpful in organization the date which has clarity.

**Arithmetic mean**

\[
\text{Arithmetic mean} = \frac{\sum X}{N}
\]

\( X = \) Variation
\( N = \) Number of observation
\( \sum = \) Summation of all items

**Mean score**

It was calculated to know the average value of the particular score. The formula is given below:

\[
\text{Mean score} = \frac{\text{Total score on particular item}}{\text{Number of respondents}}
\]

To test the significant difference between the mean trained and untrained respondents paired 't'- test was applied

\[
t = \frac{\text{Estimate}}{\text{S.E. (estimate)}}
\]

\[
t = \frac{|\bar{X}_1 - \bar{X}_2|}{\sqrt{Sp (1/N_1 + 1/N_2)}}
\]

at \((N_1 + N_2 - 2)\) d.f.

Where, \( \bar{X}_1 = \) mean of first sample
\[ \bar{X}_2 = \text{mean of second sample} \]
\[ N_1 = \text{size of first sample} \]
\[ N_2 = \text{size of second sample} \]
\[ S^2_p = \frac{N_1S_1^2 + N_2S_2^2}{N_1 + N_2} \]