# PEDAGOGY OF HOME SCIENCE


## DR. T.SUBHASHINI

**M.Sc (CD) MPhil., M.Ed., M.SC., (Psy)**

**M.A(Soc) Ph.D., Edn)**

**Assistant Professor of Home Science Education**

**Lady Willingdon IASE**

**Chennai**

## 6. PEDAGOGY OF HOME SCIENCE

**Objectives**

At the end of the course, the student- teachers will be able to

- understand and appreciate the importance of study of Home Science at the secondary and higher secondary levels
- realize the role of Home Science in shaping the personality of an individual
- familiarize with the different techniques if teaching and evaluation in Home Science
- promote the skills of preparing objective based question papers for different topics in Home Science
- be aware of the recent trends in instructional technology and use it in teaching Home Science develop in organizing and administering Home science laboratory in school
- promote the skills in teaching Home Science effectively as an academic and vocational course develop skills in analyzing the different aspects of Home Science and make them suitable to the Indian conditions.

**Unit- I Aims, Goals, Objectives and Values of Home Science Education**

Aims, Goals, Objectives and Values of Home Science Education Relevance to family and world – History of Home science education – Need for Home science to women – Home science as a subject in the academic stream – Relationship with the other subjects – Cognitive, affective and psychomotor on Bloom's model in Home science at different levels: primary, secondary, higher secondary and college in relation to the needs of pupils and society – Annual plan – Unit plan and lesson plan – Preparation of lesson plan.

**Unit II Planning the Instructional and Learning Strategies**

Year plan – Unit Plan – Lesson Plan – Microteaching – Practice of microteaching for any five skills: explaining, demonstration reacting stimulus variation, use of chalk board and probing questioning relevant for reaching – Link practice in Home science – Home science teacher's characteristics.Instructional strategies in teaching Home science – Heuristic method, Dalton method, individualized instruction, individual projects, team teaching, lecture demonstration, discussion, seminar, symposium, role play, using O.H.P. etc. - Learning Strategies - Assignment – Problem solving – Usage of programme instructional material – CAI – Multimedia – Instructional packages – Midday meal programme – Nutrition – Extension and adult education programme - Web Based Learning.

**Unit- III Equipments Resources and Audio-Visual Aids**

Home science exhibition – Home science club – Home science lab – Equipping the lab, organizing and its maintenance – Records and registers to be kept – Home science textbooks and reference books – Principle and criteria of good textbooks – Review of books used – Textbooks library: organization, storage and usage – Guest lectures by eminent home scientists – Audio-Visual Aids: Radio, record player, cassette recorder, slide projector, models, filmstrips, TV, VCR, charts, diagram, specimen – Need for improvised aids

**Unit- IV Curriculum Designing and Recent Trends**

Selection, organization and gradation of subject content – Principles to be followed linear, spiral and concentric types of content selection – Logical and psychological organization - Curriculum revision – Improvement – Assessment of different school curricula - Recent trends in teaching Home science –Home science towards community science – problems and issues in Home science education – Home science education in developed countries – Diagnosis and Remedial Teaching – Agencies of Home Science.

**Unit- V Evaluation**

Essay and objective type tests: advantage and limitation – Norm referenced and criterion referenced tests – Blueprint – Construction of achievement test – characteristic of good test – Interpretation of test results: mean, median, SD and correlation.

**Practical**

1. Writing specific instructional objectives for teaching a unit Home science.
2. Preparation of ten frames of PLM on a small unit.
3. Doing a project and reporting.
4. Preparing 3 OHP transparencies to teach any one unit in Home science.
5. Construction, administration and scoring of an achievement test and analyzing the scores.
6. Participating in Home science club activity and reporting.
7. Demonstrations regarding nutrition, textiles and home management – adolescents / rural community and recording.
8. Script writing for a radio talk on a topic in Home science.
9. Preparing improvised aids.

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# CONTENTS

## UNIT I

# AIMS, GOALS, OBJECTIVES AND VALUES OF HOME SCIENCE EDUCATION

**STRUCTURE:**

## 1.1 INTRODUCTION

Science and Technology have made great strides and brought within the reach of man much material wealth, comfort, pleasure and leisure. But it has been found from the beginning of civilization the development of agriculture, industries and the consequent increase of wealth enhanced the physical standards of life, lasting happiness depended upon the quality of life, traditions and values in the "HOME'

Education gives its votaries a philosophy, which helps them utilize knowledge of physical, natural, biological and social science in the development of character and achievement of goals in life. Education is like a spring from which water comes up again and again, even as it is drawn out.

For the development of wholesome personality, each stage of education is important. The secondary stage is particularly favorable for inspiring the adolescents towards understanding and adopting the attitudes and skills necessary for harmonious, personal, home and community living. At the high school stage, pupil begins to dream and think and even plan for their future growth.

The goal of secondary education is defined in terms of the values, aspirations and living conditions of pupils. Home Science has much to contribute to general education since it helps to prepare the pupils for a satisfying, personal and community life. The duties, men and women need to perform, as members of the home and nation have been recognized and with that recognition the curricular and studies suited to fulfill those needs are being evolved.

There is an increasing trend for married women managing or running the home along with their careers. But neither the schools nor the universities provide the education needed for their dual role. The result is instead of becoming helpful co-partners in living, they are puzzled and handicapped, but think little about the food they have to prepare and serve.

They learn English but not how to bring up their children. They may know the history, but little about our great cultural traditions and values. They are taught a great deal of Mathematics without any relation to their own budget. Home science, which is the Science and art of building better homes, can impart dynamism in the families to meet the pressing situations. The major task of Home Science is to inspire people with

a new idealism and renewed patriotism. It helps to cultivate courage, confidence and sacrifice for the achievement of ideals and presentation of freedom. This is the spiritual aspect of Home Science Education.

Home Science Education provides the techniques and ability essential for group living and getting on well with others. It enables to develop a high degree of independence and initiativeness. Also facilitates to think through a problem to get proper information and workout solutions for it.

Home Science is concerned with daily living of people – the food they eat, the clothes they wear, the homes in which they live, family relationship, health environment and bringing up of children, the values people cherish and how they use their resources to achieve happiness.

## 1.2 OBJECTIVES:

This unit is framed to give general ideas of aims, goals, objectives, and values of Home Science Education. After going through this unit, the students will be able to

- Understand the meaning of Home Science Education.
- List out the aim, goal and objectives of Home Science Education in Higher secondary Schools.
- Recognize the values of Home Science Education.
- State the importance of Home Science Education relevance to family and world setting.
- Describe the need of Home Science to women.
- Enumerate the correlation of Home Science with other subjects.
- Explain the taxonomy of educational objectives.

## 1.3 DEFINITIONS OF HOME SCIENCE:

**Rajammal P. Devdas** defined, Home Science as “education for home life”. The home and family reflect the progress of the country. Good citizenship, mutual respect, contentment, health, co-operation, a wholesome personality and efficiency in work which are derived from happy homes.

**The world Book Encyclopedia** defined, Home Science as the field of study that deals with the management of household.

## 1.4 IMPORTANCE OF HOME SCIENCE:

- Helps in family living
- Helps the society
- Helps in economic development
- Helps in gaining knowledge about the implications of the changing natural environment.

## 1.5 FIELDS OF HOME SCIENCE

- Food and Nutrition
- Child development and Family Relations
- Clothing and Textiles
- Home Management
- Home Furnishing and Interior Decoration.

## 1.6 AIMS OF HOME SCIENCE EDUCATION

- To establish values which give meaning to personal, family and community living.
- To select goals appropriate to the established values.
- To make and carryout intelligent decisions regarding the use of personal, family and community resources and services.
- To inculcate scientific attitudes and ability to express the art in daily life.
- To achieve good interpersonal relationships in the home and community through living, proper planning and working with others.
- To prepare for life through participation with appreciation for dignity of labour
- To create a home and community environment conducive in the healthy growth of all members of the family at all stages.
- To nurture the young and foster their physical, mental and social growth and development.

- To enrich personal and family life through refreshing and creative use of leisure gainfully.
- To appreciate and preserve the best in our ancient culture.
- Aim refers to the conscious purpose that is kept by us before our eyes while performing any act.
- It helps to take stock of the results of our activities. It acts as a yardstick to measure our success or failure in life. The important aims of teaching home science are as follows:

**Utilitarian aim**

- Home science is a practical subject and it prepares us for a better self-confidence in the young girls and they can independently prepare their needs.
- A course in home science also prepares the pupil for different types of employment. It also enables them to choose and construct home furnishing and to recognize the importance of their care and use. They also learn to apply various scientific principles for the selection and use of fabrics. It also helps the students in improving the qualities of leadership.

**Intellectual aim**

- The main emphasis in teaching of home science depends on one's intellectual development. Home science emphasizes upon originality. Home science provides a good training in various fields and offer ample scope to exercise intellect which inculcates confidence, responsibility, personality and vigorous energy and skills. It provides the opportunities for taking decisions which are based on sharp thinking and judgment. Students also state testing their own thinking and that of others. They acquire the ability to apply scientific principles for the solution of their household problems. It enables the student self-reliant. They also learn to work independently by applying own knowledge and intellect.

**The social aim**

- Knowledge of home science socializes the girls. They learn to identify themselves with all the members of the family. They develop sympathetic

understanding of human life, mutual faith, mutual adjustment, responsible attitude and a clear understanding of various human problems.

- Home science students are expected to learn how the family, school and communication arte interdependent and this helps to develop a healthy relationship between the members of the family, school and society. It also helps to broaden the outlook of girls so as to relate the family to the national education system and even the national political system.

**National aim**

- Home is the first school of citizenship. The teaching of home science aims at developing a feeling for nation. Instead of teaching a child in a different way, home science advances vast scope to train the young mind at home. Home does not mean the four walls of the house; it extends into the community and nations. The most important contribution of home science is to inspire among homemakers a desire to serve the nation and to promote international understanding and good will.

**Practical aim**

- Home science is a practical subject and is related to different aspects of life. It is related to food; nutrition and cookery; housing and home-management; textiles, clothing and laundry; first aid and home nursing; child development and mother craft and human relationship etc.
- In home science classes students are provided opportunities for practical learning in all the above stated fields of life. This practical knowledge provides them the opportunities to express their talents creatively. They also get opportunities for appreciating the aesthetic and psychological factors in food.

**Development of right attitudes**

- Attitudes of all individual depend upon their intellectual and emotional factors. Desirable attitudes are based on an appreciation of things which are worthwhile in life. It is the responsibility of home science teachers to develop such right attitudes amongst her pupils and for this it is essential that teacher

herself show such traits as self-control, sympathy and patience. Scientific attitudes refer to an attitude that is not affected by personal feelings and is based on facts only.

**To develop a sense of belongingness**

- To develop a belongingness of the pupil to home, community and nation and to the world is one of the aims of teaching of home science; such a sense can be developed in the pupil if they are provided with detailed information about the multifarious relationships that exist. In addition to give various facts the teacher should make it a point to give their correct interpretation and to explain the principles involved. If taught in a proper way the learner feels that she belongs to the family, the society, the nation and to the world.

**Competence in solving the problem**

- At present we observe a tendency in the students for each problem there is some readymade solution available in the book. Such an attitude may hinder the life of the students. However, a student of Home Science always tries to find a solution to any problem by herself. It gives the students self-confidence and they can find solutions to various problems in life.

**Development of specializations**

- Nowadays a number of *job oriented* courses in home science have been developed. Such courses are referred to as "Vocational Home Science", e.g., dietitian, institutional manager and nursery school teachers etc. The ample job opportunities after such courses will place woman in various positions and they will be able to actively participate in various spheres of life. This will lead to the development of an individual in a family and also in a profession.

**Development for research for increased and technical application of scientific knowledge**

- An important aim of teaching home science is the development of research and application, e.g., teaching of home science should help a nutritionist for undertaking research based knowledge for the improvement in meal planning and management of cooking and food catering agencies such as canteens,

messes etc. Research in home management will help to widen its horizon in various ways. To develop improved evaluation methods in home science, the research is more desirable.

- Various aims of teaching of home science are to be attained during the various stages of education. Some of these may be emphasized more at a particular stage depending upon the physical and mental development of the child.

## 1.7 THE OBJECTIVES OF HOME SCIENCE EDUCATION:

At the elementary stage the pupil should be helped in becoming familiar with the basic notions and concepts of running a home. This can be build through perception and purposeful action by the teacher. The knowledge of daily activities can be given by demonstrations, examples and narration of stories. Thus school education forms an integral part in receiving a sound knowledge of home science. There is a need to emphasize the systematic study at the nursery and the primary stage. The objectives of home science education are as follows:

- To appreciate the importance of conducive family living
- To understand the family goals
- To realize the role of each person in the family
- To understand the job of home making and acquire appropriate home making skills.
- To assume a fair share of the responsibility of maintaining good home and family life.
- To show appreciation for one's home, in love, loyalty and cooperation.
- To realize the importance of good relations among family members.
- To accept the family's decisions concerning the use of its resources.
- To recognize that all families may have difficulties and ability to face them.
- To identify the important psychological, moral and spiritual values.
- To create a comfortable, convenient and attractive physical home environment.
- To develop a balanced personality, possessing good health, happiness, self-reliance, respect, confidence and love
- To sensitize about the responsibility of their homes, community and country.

- To contribute to the economic, social, moral, ethical and spiritual standards of their communities.
- To achieve good relationships in the home, school and society.
- To appreciate dignity of labour.
- To acquire the skills and scientific information necessary for managing resources.
- To express and appreciate art in daily life
- To appreciate and preserve the best in Indian culture.

## 1.8 THE PHILOSOPHY OF HOME SCIENCE

- Utilization of modern Home science to improve home living,
- study of humanities to improve family life
- sound scholarship for intellectual thinking
- Research to increase information on facts of life.
- Use of all resources to make home and family life effective parts of the social fabric.
- Emphasis on the control of material things to realize the higher spiritual blessings and gain energy to make life more beautiful, gracious, meaningful and worth –while.

## 1.9 THE BASIC GOAL OF HOME SCIENCE EDUCATION

- **To help pupil in their home living.**

This goal is achieved through food that is both satisfying and nutritionally balanced and adequate, clothing that is both artistic and economical, houses that are convenient comfortable and beautiful, and the members of the family are well adjusted and cooperative.

The study of home science offers boys and girls, general education and opportunity to achieve their three most cherished goals are all round development of their personalities, preparation for a career and the ability to manage their homes. Successful home and family life and home making are challenges that demand the best in education. Spiritual values are most important in family living. One of the goals of home science education is to help pupils and lead satisfactory, personal, family and community life through the knowledge, skills, understandings and appreciations.

Home science education enables pupils develop the qualities needed for responsible and creative living in their parental families and in the families they will establish after marriage. Another goal of home science education in the secondary schools is all-round development of the pupils, their personality, intellectual skills and abilities. It helps them to set up values, aspire to reach them and find joy in the fulfillment of their aspirations.

## 1.10 VALUES OF HOME SCIENCE

The study of home science has initiated and directed a urging desire to achieve higher standards of living and the will to live better. Some of the important values of home science are as follows:

### Vocational Value

The knowledge of home science provides an opening to many professions. It also forms the basis of many courses of study which are purely vocational in nature, such as dietics, nursing, teacher ship etc. It also helps to solve the problem of leisure as the study of home science forms the basis of many useful hobbies and other productive activities in the later life of the student.

### Foundations of good citizenship

The home science syllabus encompasses various opportunities to the students for completing the work allotted to them in time and thus prepares them to be good planners, efficient executives and responsible leaders. They are expected to come forward and accept various responsibilities in the school. Purity in personal life is devotion to the family and simplicity which are considered to be the glorious attributes of Indian women hood and act as the basic foundations on which the art of home science resides.

### Universality

Home is the fundamental social institution that has existed since times immemorial. It is a primary social group that is characterized by a common residence, co- operation, reproduction, learning, cultural heritage and socio-economic satisfaction.

In spite of great scientific and technological advancement, the most modern and civilized society of the day, has not been able to give a complete and full satisfying substitute for home. So we can say that the origin and development of home is of universal nature. It can, therefore, thus be concluded that teaching of home science is universal.

**Self reliance**

While going through the course of home science, a student has to rely on her. Her own judgment, reasoning and initiative alone are of use to her at every step. It thus develops self reliance in her.

**Solution to household problems**

We know that the two basic factors *heredity and environment* have an influence on personality development of a child. By environment we mean home, parent, family, friends, surroundings, food, clothing, education, relation etc. Though the effect and interplay of various environmental factors are a complex process and so we cannot easily say which one of the various factors of environment plays the more decisive role in shaping the character of an individual. The study of home science we acquire the ability to give each of the environmental factors its right place and proper emphasis. Thus the study of home science helps in solving many domestic problems.

**Preparation for the change to come**

In the olden days girls learnt the household works through example and practice and there were no special arrangement in the form of formal courses in home making. In the present time though the home making has been modified yet it is basically remain unchanged. These days home science occupied important place in the educational curricula of the all grades from nursery schools to the university level.

**As general education**

Home science education is quiet helpful in preparation of home making, in the development of right values. It also makes a contribution towards increasing health and happiness and enable pupil to understand the functions of parenthood, responsibilities of family membership and management of one's resources. Thus, if the aim of education is the preparation of life then home science has tremendous

scope for general education. It is considered as one of the important subject for girls in high school stage. The secondary education commission points out that the present day education does not confirm to the objectives of general education, especially in case of girls, and that education should be more closely connected with the home and community. Therefore they have urged that the teaching of Home Science for girls in school is essential and home making should become integral part of educational background to girls.

**Preservation and transmission of culture**

Good home and good communities are basic to democracy. Homes also determine the production, distribution and consumption of wealth in a society. Homes help to preserve and transmit our cultural heritage from one generation to other. It is home science which enables the students to know the importance of home in providing emotional education to the child right from the day of its birth. This education humanizes the family and the society.

**Economic importance**

In the modern period, a large number of women seek careers outside the home. Thus may be due to economic necessity or may be due to the availability of ample leisure time. Knowledge of home science provides many opportunities to such women in various fields. In this way they can combine home making with wage earning.

**Ability to live a richer and purposeful life**

One of the aims of teaching home science is to create an environment and outlook that enables people to live richer and lead a purposeful life. Happiness of the family is the desired goal of all the activities undertaken in teaching home science. The teaching of various topics such as family, health, nutrition, home improvements, childcare, textiles and clothing etc. All are directed towards the goal of happiness of the family.

Thus we conclude that in addition to its educative and economic roles, the teaching of home science inculcates the following qualities in the pupil.

- It provides an emotional basis for home.
- It attempts to meet the demands of modern times.
- It helps in the scientific study of home management.
- It prepares the women to adjust themselves to social changes and needs.
- It helps for appreciation of values.
- It creates proper attitudes.
- It develops ability to solve household problems.
- It provides the knowledge of proper healthy habits and skills.
- It helps in the preservation, promotion and transmission of culture.
- It contributes towards school organization

Values are judged by human mind and then translated into action. They actually determine the future course of human action. They are actually related to what should be done and what should not be done by a person. The purpose of values is to improve the social situations of human beings.

- **Social Values:**

Home Science cannot remain narrowly focused on the family alone just as social work, started in the last century with a preoccupation on the family in need, in this century, gradually recognized the influence of societal factors and the need for systematic change.

Today, society is moving towards a so-called western culture. In this changing society and family, there is need to understand the role of home science education in a changing social structure with its unique new problems for the urbanized and urbanizing sections of our society. Home science education helps to know about the changing status of women, population profiles etc. It plays a major role to overcome difficult issues like physical and mental violence which women face as a part of modernity.

It paves way for living together and working together. Children learn best under guidance. Home Science helps in developing ability to adopt along with people.

- **Economic Values:**

Home Science Education helps the pupils to acquire knowledge and skills for managing economically their time, talents, energy, efforts money and other resources to derive maximum satisfaction in life.

Demands of a technological society can be meet through proper use of new innovations in Science, for example use of labour saving appliances in the household. Work simplification techniques will enable pupil's physical efforts, energy and time and economies the budget in the long run. It helps in purchasing consumer goods and do services appropriate to an overall consumption plan and wise use of economic resources.

Home Science deals with life style issues and emphasizes on training home based business for self-employment, community based practices, to develop skills and to resource poor households. It deals with economic development in the changing environment

- **Intellectual Values:**

  Home Science is a subject that emphasizes on original expression. When the individual gets the chance and knowledge in expressing itself in the best way it exercises intellect, reasoning, expression, confidence and responsible personality. They provide enormous energy for working. It gives power and value to make decisions on the basis of clear thinking and judgements. It enables students to steer through the problems and looking the matter from all sides. The home science students become self-reliant in this manner and then work independently in the practical classes and they exercise their intellect in their proper way.

- **Moral Values:**

  Pupils studying home science will highlight moral values in all aspects by offering prayers daily, fostering patriotism and pride in national solidarity among the members of the family, living with harmony with all people, leading an orderly and disciplined life and set good example to others. Moral values are most important in family living.

- **Cultural Values:**

  Rapidly changing trends in customer, fashions and other mores give evidence for the existence of gap. Home Science education can be successfully used to conserve traditional values. The family ensures the continuity of species, racial culture, national civilization and social traits. It is the connecting link between one generation and another.

- **Philosophical Values:**

Achievement of "Better homes and families" is the major philosophy of home science. There are several problems in our society which deserve for immediate solution. The appalling extent malnutrition, the staggering dimensions of illiteracy, the growing menace of population explosion, the stifling poverty, the spiraling price levels etc are increasing. Under this context the study of home science will make pupils sensitive to these problems and help them to locate the roots and causes, and outline appropriate measures to remove them.

## 1.11 THE RELEVANCE OF HOME SCENCE EDUCATION TO FAMILY AND WORLD SETTING:

### 1.11.1 The World Setting

One of the first steps in the improvement of Home Science instruction is the intensification of the teacher's awareness of the world in which she and her students are living. Realize that the world is not static and be ever alert to the rapid changes are constantly taking place.

**Scientific and Technological Developments**

The scientific developments in this century have been breath taking. A man who was born sixty years ago in a horse-and-buggy era is now of interplanetary travel.

Technology has the potential to make it possible for all individuals to enjoy more leisure and lighter workloads. Already in the design and experimental stages appliances that employ ultrasonic sound waves to cook food, to wash clothes, and to clean house. Synthetic fibers are used to make clothes that are light, easy to clean, and (in some instances) disposable. Homes of exciting new materials will be designed with movable walls and open roofs. Many of these new homes are prefabricated. The developments in food technology will be equally dramatic meat will be tenderized on the hoof by special feeding processes; and new preservation techniques will make it possible to keep food indefinitely without refrigeration.

First, there is the task of orienting students to the world of work. There is also the task of devising different types of education to prepare for the new jobs that must be filled. Furthermore, there is increasingly important task of helping workers to learn new skills when old ones become outmoded. Finally, there is the task of encouraging individuals to plan, prepare for technological change and to examine the implications of this change for family life.

**The Affluent Society**

Personal income among all economic classes has increased notably. More families will have more money to spend after they have taken care of such essentials as food, housing, clothing, medical care, and transportation. Half of all disposable personal income will be discretionary. Individuals will have more leisure time and will be able to afford many more services. This rise in the general level of living will pose a special challenge for Home Science teachers, they will have to help individuals and families to spend this income wisely, for the higher and greatest satisfaction.

**Poverty**

The plight of the poor has attracted considerable attention in our press and in the federal government. Although the government has several antipoverty programs, and is planning more, it will undoubtedly take a number of years for this problem to be alleviated. Poverty itself is a problem which gives rise to many problems. Research studies indicate that poor diet, inadequate housing, insufficient clothing, and inadequate health and educational facilities are closely related to low income families which are found in every section of the country, all home economics teachers must be aware of this serious social problem. Special attention should be directed to health education so that they can avoid or choose well-made merchandise, and to protect themselves against fraud.

**Population Explosion:**

The world population is increasing at fast rate in a year. Many of the countries in these areas have poor soil and inadequate water resources which cannot sustain larger crops, and lack the capital to purchase the necessary farm equipment and fertilizers. Moreover in many countries, the farmers lack the incentive for increasing the farm yield because their profits go directly to the state.

The growing population has presented a number of problems such as overcrowding of schools, traffic transportation congestion, and unemployment.

The population explosion and its concomitant problems will have a profound effect on family living and consequently on the teaching of home economics. Living space, for example, will be more limited, and homes will have to be planned accordingly. As schools, work facilities, and public area become more crowded, homes will have to be more of a sanctuary from tensions and frustrations to provide privacy and relaxation. Families will become more dependent on outside sources for services and goods. Critical shortages of human necessities may occur. The home economics teacher through her instruction will be an important agent in facilitating these home and family changes.

**Threat of War**

Both the poverty-stricken and the affluent are concerned about the possibility of atomic war, which would destroy the world and its people.

The United Nations has contributed in many ways to peace and to projects to improve the health and self-sufficient of many people's throughout the world. Many home economists have contributed to these programs, especially in developing countries.

Whether the people of the world can meet this test of survival in the nuclear age will depend to a great extent on the ways in which they implement their goals and values. A home economics teacher in her class-room can help her students to be aware of the immense problems of working toward world peace and to contribute in their own ways toward its accomplishment.

### 1.11.2 The Family Setting

Because home economics is a family-centered profession, teachers must be well informed about the family structure and functions. Although its functions have changed over the years, the family is still one of our most vital and fundamental social institutions.

Boys and girls may decide to marry before they are considered old enough to vote. The pattern of early dating is no doubt one very important influence upon these early marriages.

Studies reveal that teen-age marriages are much more likely to end in divorce or to be unhappy than marriages of older partners. The functions of the family, as interpreted by sociologists, have been changing. Family functions: economic, status-giving, educational, religious, recreational, protective, and affectional.

**Divorce**

The divorce rate has greatly raised now, area by helping women to recognize their responsibilities, to discover their potential, and to become more self-reliant. In our mobile society, young women must be prepared to find themselves far from parents, grandparents, and other relatives; they must learn to be exceedingly resourceful in their roles as wives, mothers, homemaker, and workers.

**The Aged**

Among population the number of the aged is due to increased longevity of life. The problem facing the elderly is to find a meaningful life in a society that finds them more or less superfluous.

Illness is a critical problem for this age group. One third of the patients in mental hospitals are aged. In addition to the mental and social problems created by chronic illness, an acute financial burden may result as serious illness. However, Medicare may play a role to alleviate part of this problem.

The aged are, in reality, an important community and family resource. Most members of this older group can make many more contributions than we realize. Although many families complain about the conflicts and misunderstandings that arise between the young and the elderly, it is possible to improve these relationships, leading to the greater happiness of all concerned. It is especially important that younger members of the teachers are in a position to help families work out these problems, and to provide adult classes that will furnish occupation, entertainment, and satisfaction for our senior citizens.

**Making Decisions**

In our complex society, families are faced with the problem of making many decisions concerning the distribution of time, money, and other family resources.

Making decision is important for the Home Science teacher to know something about what a home may mean to different people. Many consider social status first; others give precedence to such factors as self-respect, good taste, and efficient. For some, privacy and relaxation are the highest values. The home economics teacher can help the family to identify the values it occupies highest, and to work out a plan for achieving them.

Families will also need special assistance in the spending of their income. Another area that is demanding considerable attention is the matter of morality and moral values. A home economics teacher may feel that there are many directives for likelihood of divorce. Among them low income, lack of education, and lack of religious affiliation are included.

It is clear that divorce has adverse effects not only on the marriage partners but on their children as well and aged in the family. All professions concerned about the stability of families must renew efforts to reduce family disruption. Through education, young people can be helped to become aware of the changes in the functions and roles of the family in modern society. They may also be made aware of their own potential for marriage and how this potential may be developed. Finally, they may be helped to develop the maturity of mutual respect and partnership that are essential for a successful marriage life.

**Working Women**

One phenomenon of the present-day is the working woman. Three fifths of all part-time work is done by married women. The largest concentration of women is in the clerical field, service workers such as waitresses, beauticians, and hospital attendants, factory operatives, and professional and technical employees. Some services, such as nursing and household work, are staffed almost entirely by women.

Many of these women who work are mothers and as such, they face a serious problem: lack of child care and family services. Young women must be helped to see that their earning power has a direct relation to their level of education. Women must realize that changes are occurring in them of job opportunities available. It is assumed that there is a logical order inherent in knowledge itself and that concept and principles, characteristic of the various fields of learning, can be structured.

The educators emphasize that schools should identify a number of explicit goals and then consider the means for reaching them. This emphasis would include consideration of the ethical means of dealing with knowledge, the relationship between values and behavior, and the development of a personal value system and personal philosophy.

Nowadays, when students are bombarded, through the mass media and other means, with statements that may be deceptive or simply empty verbalizations, they must be fortified with certain guidelines for reactions. They must be made aware that not all knowledge that comes to them will be factual. They must be helped to develop perception to the feeling of others, an awareness of underlying assumptions, sensitivity to the emotional content of ideas, and a consciousness of the range of different feelings within oneself.

## 1.12 HISTORY OF HOME SCIENCE EDUCATION

The need for conducting special courses for women in schools and colleges has been recognized in other countries over a long time. In the U.S.A., U.K., New Zealand, Australia and Europe, Home Science is a recognized field of education.

It is only recently that countries in Eastern Asia have started giving attention to the organization of Home Science courses in educational institutions and Agricultural Extension. The first Technical Meeting on Home Economics for South and East Asia was convened in 1956, by the Food and Agricultural Organization of the United Nations in Tokyo, Japan. At this meeting, delegates from Hawaii, India, Indonesia, Japan, Korea, Malaya, Philippines, Thailand and Vietnam outlined Home Science programme suitable to their cultural background and needs.

During the last decade, Home Science has received great attention in the field of education in India. Educationists, administrators, governments and philanthropists are encouraging Home Science education at all levels. More than 40 colleges affiliated to the following universities offer Home Science at the Pre-university, Intermediate, Bachelor's and Post-graduate and rural institute levels: the Universities of Aligarh, Allahabad, Andhra, Baroda, Calcutta, Delhi, Gauhati, Gujarat, Jammu and Kashmir, Jabalpur, Kerala, Lucknow, Madras, Mysore, Nagpur, Osmania, Patna, Punjab, Rajasthan, Saugar, S. N. D T. Women's University, Bombay, Sir Venkateswara, Utkal, Vallabh Vidyapith. The Annamalai University and the new Agricultural University in Uttar Pradesh are also contemplating the introduction of Home Science.

The following colleges have provision for teaching post-graduate courses leading to the M.Sc. Degree: Sri Avinashilingam Home Science College (Coimbatore), Faculty of Home Science (Baroda), Lady Irwin College (Delhi), and the Women's Christian College, South India Educational Trust and Queen Mary's College (Madras).

Home Science has been introduced into nearly 400 multi-purpose or higher secondary schools in all the states. Forty-six Home Science wings are training Gram Sevikas in the different States.

When Home Science was first introduced into schools and colleges, it was called by various names-Domestic Science, Domestic Art, Household Science, Household Art, Household Economy, Household Administration, Home Craft, House Craft, Euthenics (The Science of controllable environment), etc. It is now known as Home Economics in the U.S.A and as HOME Science in the U.K and other Commonwealth countries including India.

## 1.13 NEED FOR HOME SCIENCE TO WOMEN

Home science gives greatest scope for assisting in national developmental efforts, since it is immediately connected with production, consumption and conservation of food and other commodities and resources. Thus women studying home science will become efficient managers of the nation's critical resources. Home science is an ideal discipline for helping families to manage human and material resources. The following fields are included in Home Science for the development of Women namely

- Planning for life
- Pollution control
- Technological development
- The growth of entrepreneurship
- Home science and agriculture
- Uniqueness of home science
- Energy consumption
- Employment opportunities

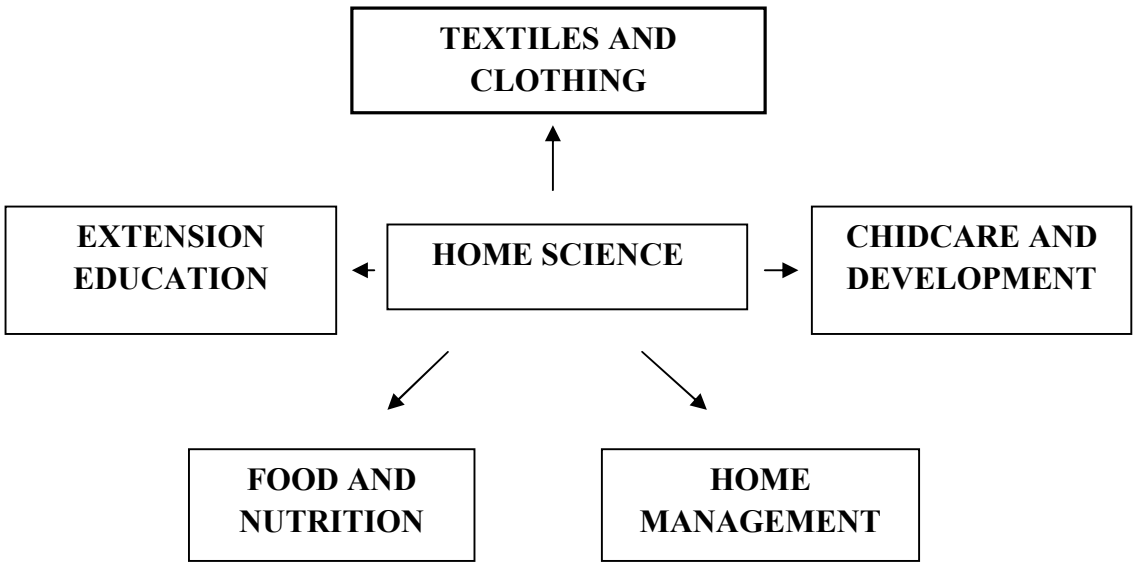



Fig: 1 Field of Home Science for Woman

**Food and nutrition**

Knowledge of nutrition helps pupils to improve their eating habits through wise selection of food at every meal. They gain knowledge regarding the different aspects of narration of the body. They learn to plan, prepare and serve efficiently which are nutritious, economical and appetizing. Also study the experiences related to low cost nutritious foods, maintaining height weight charts and judging different methods of cooking, preservation of foods to conserve nutrients, increasing food supply through home garden and poultry, which indirectly facilitate nation man power resources.

**Child care and development**

Knowledge on the need and stages of development of children, how to take care of children to develop fully, understands the pupil's role as future parents and participation in duties pertaining to bringing up children. It deals with the physical and emotional needs of children and relationships among family members and the need and the problems of the members of the family. It contributes pupil to understand how to get along with people and how to solve problems within a family and child rearing practices.

**Home management**

This area helps to gain knowledge of home management, skills for managing economically their time, talents, energy, efforts, money and other resources to attain maximum satisfaction.

- Modern technological knowledge helps us to know new innovations in science.
- Work simplification techniques and enable pupil's physical effort, energy and time.
- Stimulate the sense for the economy in preparing the items like polishes and insecticides in the home itself.
- Learn how to convert household waste into wealth
- Helps to study various housing science, plants, design and furnishing.

**Textile and clothing**

This area helps to recognize and solve their clothing problems by planning and selecting suitable attractive clothing with due considerations for color and design within their budget.

- Learn how to care for clothing properly and help pupils to save money.
- Selection of clothing based on personal need and environment, decoration of clothing through stitching artistic designs and promotes aesthetics values.
- Learn the clothing needs of family, time, effort and money necessary to meet the needs.
- Gain knowledge and experiences in removing stains, how to launder clothes properly, how to make garments and household articles, dry cleaning knowledge and protecting clothing from moths and insects.
- Pupils develop taste and confidence in such work and prepare themselves well in advance for them.

**Responsibilities for the future**

Uniqueness of home science is the main scope of the subject and welfare, wealth and all round full development of individuals is the responsible citizen. This concept is included in home science curriculum in various ways like food and nutrition, population control, controlling various diseases etc.

Home science subject teach the women about the application of non conventional and renewable energy. It gives importance for personal and financial resources on education related to the needs of nation, time management, energy management and other management of resources.

Thus the home science education has the scope to cultivate deep faith in spiritual values, preserve the best in our culture discarding the useless practices in the traditions of the past, prepare towards the vocation, making decisions wisely and cope with changing situations in life.

## 1.14 HOME SCIENCE AS A SUBJECT IN THE ACADEMIC STREAM:

### Home Science in Kindergarten:

Children in pre-basic, nursery or kindergarten schools learn Home Science through such activities as keeping themselves clean, washing their own hands and utensils, cleaning and serving food, playing together, keeping things in the right places and taking care of their belongings. Organized group practices are the first step towards the appreciation of the art and joy of living together. Various projects in the nursery schools provide the children with the opportunity to appreciate art, music and beauty.

### Home Science in Elementary Schools:

In the elementary schools, regular courses have been outlined and definite periods f time are allotted to the teaching of Home Science. In some schools, Home Science is taught as part of Hygiene and Physiology. Some of the lessons included are on nutrition, cooking, budgeting, cleanliness and decoration of the home.

### Home Science in High School or the Secondary Stage:

In a number of States, the Department of Education have made provision for the teaching of Home Science at the secondary level either as an out-of-school or optional subject or as an examination subject offered for one, two, three or four years of the secondary stage. Madras was the first State to introduce Home Science as a bifurcated course in 1948.

The Secondary Education Commission appointed by the Government of India pointed out that the then existing system of education did not, especially in the case of girls, provide general education and that education should be more closely connected with the home and community. Therefore, it declared that the teaching of Home Science in girls' school was essential and that it should become an integral part of the educational background for girls.

The Secondary Education Commission gave importance to Home Science as an independent group of subjects to be taught during the last four years of secondary school. The All-India Secondary Education Council further included Home Science as one of the subjects in the other elective groups. Thus, in the present revised scheme, it is possible for a girl to take Home Science completely as a diversified subject or as one of the many subjects in the optional groups such as the science, the humanities, or the fine arts.

The Government of India has encouraged the starting of Home Science classes in several Higher Secondary and multi-purpose High Schools in the country. A 'Draft Curriculum' for the three years' course was prepared in 1956 and sent to the State Board of Secondary Education who has adopted it with suitable modifications.

In post-basic education, ample provision has been made for learning Home Science through such activities as preparing food, serving food, calculating the nutritive values of food, preserving food, keeping the home and its, surroundings clean, personal hygiene, applying art and beauty in everyday life, managing money and other resources, subsidizing the income through such craft as spinning, paper-making or weaving, and caring for children. Through these the students acquire the knowledge and skill essential for successful living. If education is preparation for life, then Home Science, by virtue of its intimate relationship with and concern for individual and community life has a tremendous scope in general education.

**Home Science in Colleges and Universities:**

Several colleges offer Home Science either at the intermediate level or at the degree level. There is no uniform curriculum for Home Science in college programmes. In many institutions, Home Science is one of the optional subjects at the intermediate or degree level. Some of the institutions devoted mainly to Home

Science are Lady Irwin College, Delhi; the Faculty of Home Science, Baroda; the Central Institute of Home Science, Mysore; the M.H. College of Home Science, Jabalpur; the Viharilal College of Domestic Science, Calcutta; and the Avinashilingam Home Science College, Coimbatore. In these colleges, a full three or four years' Home Science curriculum with the basic sciences, arts and the special areas of Home Science subjects has been outlined leading to university degrees.

The depth of the curriculum in Home Science in the colleges depends upon the level for which it is meant and the traditions of the university to which the colleges are affiliated. However, any college curriculum in Home Science should be built around three disciplines – the science, the humanities and the fine arts. These should include:

- ***The physical science,*** including physics and chemistry with their applications in nutrition, textiles, health, home nursing, home management and household equipment.
- ***The biological science,*** including bacteriology, physiology and hygiene with their application in nutrition, health, home nursing and child development.
- ***The social science,*** including economics, sociology, civics and psychology with their application in home management, household and consumption economics, child development, family relationships, food and nutrition, textiles and clothing.
- ***The fine arts*** with their application in housing, home furnishing, household equipment, food preparation, textiles, clothing, art in everyday life, child development and family relationships. Students apply their knowledge of colour, literature and music to create beauty in everyday living, in family festivals and ceremonies and in the selection and arrangement of clothes.

Round this core the Home Science subjects are built, as a synthesis of the arts and sciences, to solve the everyday problems of home and family life. In Home Science programmes, students study child development, family relationships, home management, textiles and clothing, food and nutrition, family health and home nursing, housing, household equipment, art in everyday life, home science education and spiritual, moral and cultural values.

It is necessary that the core subjects and the requirements prescribed for Home Science in the different universities have a basic common minimum to enable student graduating from one university to get admission into another university for post-graduate or teachers' training courses without difficulty.

**Home Science in Teachers' colleges:**

About six colleges offer Home Science for the Bachelor's Degree in Education. In these colleges, graduates who had taken subjects other than Home Science for the basic degree can also take Home Science for the B.T. Preparation for teaching Home Science should emphasize the need for correlating the requirements of home conditions to the teaching and learning in school.

## 1.15 RELATIONSHIP WITH OTHER SUBJECTS:

The major aim of education is the unification of knowledge existing in different branches of learning. It is not desirable to impart education in isolated manner. The knowledge has to be knit together in correlation, which will contribute for wholesome productivity.

Correlation enhances Home Science teaching meaningful and effective for the pupils learning. It establishes reciprocal relationship that exists among different subjects.

**a) Correlation between Home Science and Literature.**

The job of creating a real home is quite difficult job always fall on the shoulders of the housewife. She is expected to provide for good health, happiness, comfort, convenience, love and affection to all members of the family. She can perform it well if she has a loving nature and is emotionally attached towards the family. In literature we find much about emotions, feelings, love, affection etc. and these are used in practice in home science. Mothers can teach their children nursery rhymes and group song from the study of literature. Hence home science can be related to literature.

**b) Correlation between Home Science and Economics:**

Home science is also known as home economics. Home science has now moved out of home to reach the community and the nation. It is closely correlated to economics inside the home, while dealing with both material and human resources. All these resources are an integral part of family and in this aspect home science takes the help of economics.

**c) Correlation between Home Science and General Science:**

There is a close correlation exist between home science and general science. This can be observed in a large number of topics such as nutrition, textiles and clothing, cooking, laundry, Health and Hygiene etc. When we are teaching in home science class about food adulteration, malnutrition, various foods and their nutritive values or about various diseases we have to make use of our knowledge of general science. Similarly, while teaching about plants and their cultivation, fertilizer etc. the home science teacher makes use of the knowledge of general science.

**d) Correlation between Home Science and Physical Education:**

Physical education is concerned with the knowledge needed for improvement of health and maintenance of good health. Such knowledge is quite essential for the home-makers and in home science knowledge about personal hygiene and clothing, importance of physical exercises etc, is imparted. Thus we find a good deal of correlation between home science and physical education.

**e) Correlation between Home Science and Moral Education:**

The moral education is an essential part of child's education. Highest love for man / women is morality. Moral values are learnt by the child infancy from onwards in her home and surroundings through some informal way. However, a formal education on moral values is imparted to the child in her home science classes.

**f) Correlation of Home Science with Arts, Music and Crafts:**

In Home Science we teach the pupil about painting, colour combinations in dressing decoration, handi-craft, history of sculpture etc. In all these fields we can easily bring about the correlation of home science with arts, crafts etc.

**g) Correlation between Home Science and Mathematics:**

Home management as an important aspect of home science, depends on several managerial processes such as planning and assembling resources, directing and controlling work processes and evaluation of results achieved. All these process quite dependent on each other. A proper management requires a proper use of money materials, time and energy to achieve the goals. It is essential to correlate home science with mathematics. If a middle class family plans to save some money for some social function they have to make adjustments here and there in their budget and for this they have to make use of their knowledge of Mathematics. Similarly while making daily purchases we have to use our mathematical knowledge.

It can be easily seen that knowledge of mathematics is required for all our activities that we undertake in household management, cooking, laundry, health and hygiene etc. Thus we find that there is a close correlation between mathematics and home science.

**h) Correlation between Home Science and Social Studies:**

In social studies we are interested to study about man and his interaction with other people, other institutions, with variety of situation and for services. Home is the basic unit of society and of social sciences. In home science we also deal with home as the basic unit interlinked to community. Thus Home Science and Social Studies are closely correlated.

## 1.16 TAXONOMY OF EDUCATIONAL OBJECTIVES

Many educationists and psychologists had formulated a systematic classification and organization of educational objectives.

Teaching is a process which goes ahead in a phased manner. The curriculum is constructed according to the level at which students are to be taken. But only construction of the curriculum is not enough here. The taxonomy has an important role to play in the presentation of the content. A teacher teaches her students according to the level that she has decided to take her students. For example, if a teacher wants to take her students to the application level, she will first help the students to comprehend the knowledge and then will teach them how to apply the acquired knowledge in different situations. Thus, teaching of a teacher goes up step by step. Taxonomy of objectives tells us every steps, levels and learning principles.

We can evaluate our students only according to the levels of teaching objectives that we formulated in the beginning. For example, if we have made the students frame the definition of social stratification and we are asking them to enable and correct different concepts of the definition, then students would not be able to answer the question.

**Taxonomy** is a term derived from the Greek words **"taxis"** meaning **"arrangement"** and **"namos"** meaning **"law"**. So taxonomy means lawful or orderly arrangement. Taxonomy is classification. Dr. Benjamin S. Bloom and his associates have classified instructional objectives into three major domains as Cognitive,

Affective and Psychomotor (or Cognitive). These three domains are interrelated and inter-dependent.

1. **Cognitive domain:** This domain is related to cognitive abilities of human behavior. This taxonomy was given by B.S. Bloom in 1956.
2. **Affective domain**: This domain is related to feeling aspect of human behavior. This taxonomy was given by Maseea in 1964.
3. **Psychomotor domain:** This domain is related to physical abilities and skills of human behavior which are manifested when process is over. This taxonomy was given by Sympson in 1969.

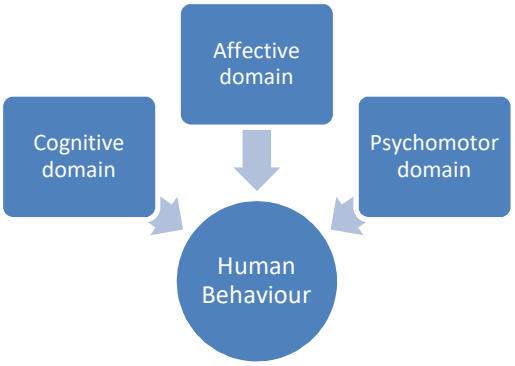



Fig: 2 Educational Objectives

The above diagram clarifies that all the three domains are not seen all the time simultaneously in the behavior of a human. Sometimes, only one domain manifests and sometimes a composite of two or three domains are seen. Cognitive domain of learning is given much importance in the class but other domains are not neglected altogether.

**Taxonomy Table 1.1**

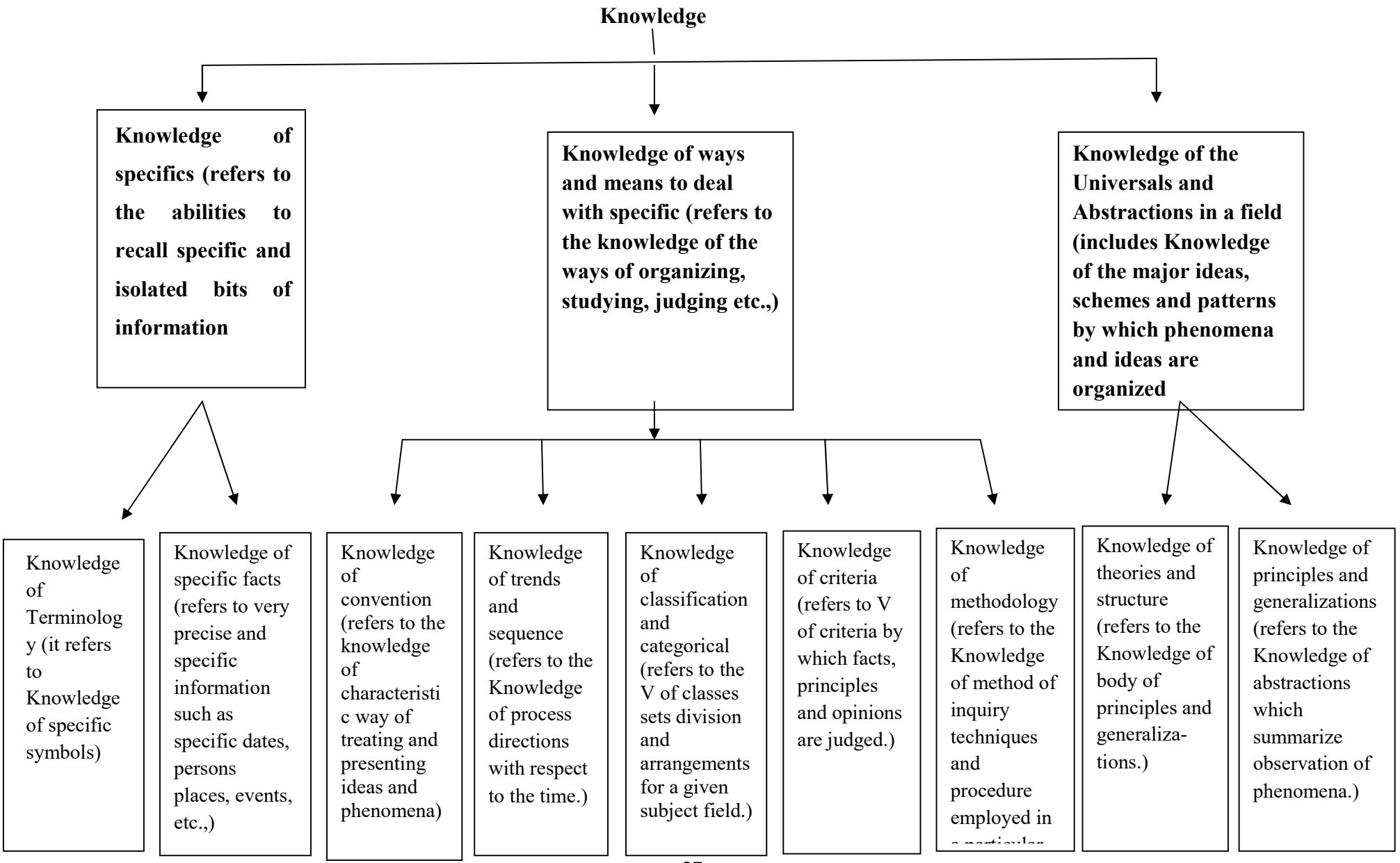
| **Cognitive domain** | **Affective domain** | **Psychomotor domain** |
|---|---|---|
| Knowledge | Receiving | Imitation |
| Comprehension | Responding | Manipulation |
| Application | Valuing | Precision |
| Analysis | Organizing | Articulation |
| Synthesis | Characterization | Materialization |
| Evaluation | | |

### 1.16.1 Cognitive Domain

Cognitive domain of educational objectives is concerned with intellectual aspect of the mental process. This domain includes those objectives which deal with recall, recognition of knowledge and development of intellectual abilities and skills. Cognitive abilities of students are developed by this domain. Its base is cognition. This domain starts with recognition and recall abilities of mind.

Student is able to present all the above facts and information through recognition or recall, she will be considered at knowledge level. In order to achieve this objective the teacher stresses on cramming and drilling of facts and information in the class which is reproduced by the students when needed.

1. **Knowledge**: Simplest level of complexity. This requires a learner to answer questions, solely by rote memory and to recall simple definitions, facts, rules, sequences, procedures, principles and generalizations. The subcategories of knowledge are :


Knowledge
Knowledge of specifics (refers to the abilities to recall specific and isolated bits of information
Knowledge of ways and means to deal with specific (refers to the knowledge of the ways of organizing, studying, judging etc.,)
Knowledge of the Universals and Abstractions in a field (includes Knowledge of the major ideas, schemes and patterns by which phenomena and ideas are organized
Knowledge of Terminology (it refers to Knowledge of specific symbols)
Knowledge of specific facts (refers to very precise and specific information such as specific dates, persons places, events, etc.,)
Knowledge of convention (refers to the knowledge of characteristic way of treating and presenting ideas and phenomena)
Knowledge of trends and sequence (refers to the Knowledge of process directions with respect to the time.)
Knowledge of classification and categorical (refers to the V of classes sets division and arrangements for a given subject field.)
Knowledge of criteria (refers to V of criteria by which facts, principles and opinions are judged.)
Knowledge of methodology (refers to the Knowledge of method of inquiry techniques and procedure employed in
Knowledge of theories and structure (refers to the Knowledge of body of principles and generaliza-tions.)
Knowledge of principles and generalizations (refers to the Knowledge of abstractions which summarize observation of phenomena.)

## 2. Comprehension:

This is the second level of cognitive domain which starts when first level of objectives achieved. It involves translating from one level of abstraction to own words, to give an example of a principle or concept to quality statements, to extrapolate trends into the past or future or to point out implications or sequences. It also consists of three sub-levels.

**a) Translating the facts, events, laws and principles into easy language.**

**b) Interpreting the facts, events, laws and principles into common words and simple language.**

**c) Extrapolating facts, events, laws and principles** i.e. drawing additional conclusions from the given conclusions.

If a student is able to do all three activities mentioned above, we will say that she has proper understanding of the knowledge gained. For example elite class means very rich class of the society, students can identify the people belonging to the elite class in the society, it is comprehension level of learning. Answering paragraph questions in languages is also the example of comprehension level of behavior.

In order to realize this objective, the teacher stresses much on the depth of knowledge obtained. She also teaches the students how to manipulate a subject matter in other ways.

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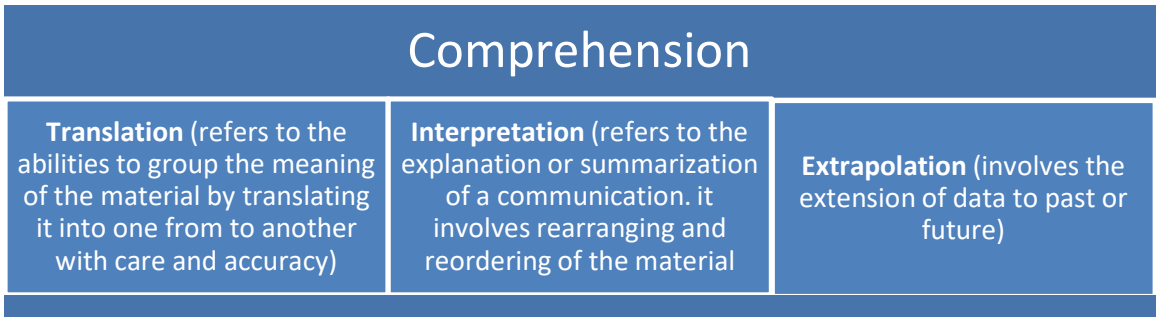



## 3. Application:

Third level of complexity refers to the ability to use principles, ideas in a particular and concrete situation. Learning outcomes in this area require a higher level of understanding. After getting maturity at the comprehension level, students are taught to apply the knowledge in new and unfamiliar situations. It also consists of three sub-levels.

**a) Generalizing the laws and principles and seeking new uses of facts.**

**b) Finding faults in the laws and principles.**

**c) Applying laws and principles in new situations to expand the horizon**

**of knowledge.**

If a student can do all the three activities given above by her, she is said to have acquired application level of learning. Once this objective is achieved, students can use words in their own sentences, they can write the summary of the lesson, and they can do experiment in the laboratory and so on.

In order to achieve this objective, the teacher creates new situations every now and then to enable the students to apply the acquired knowledge.

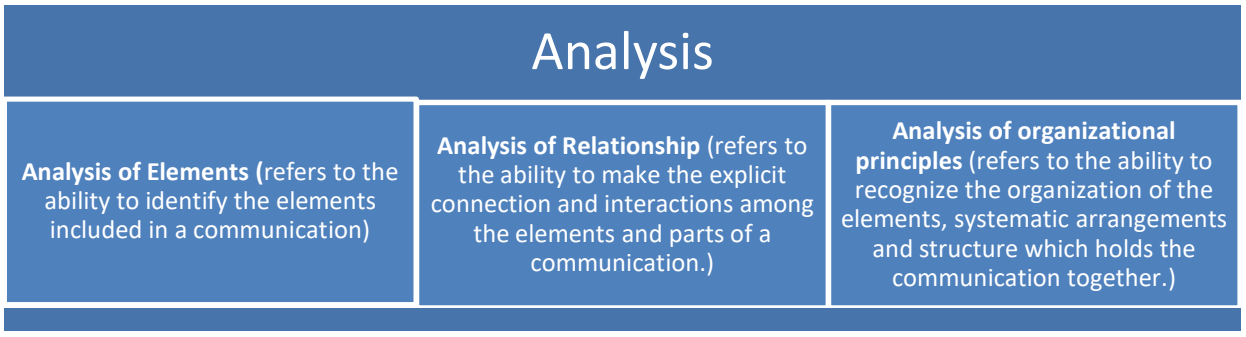
**4. Analysis:**

Fourth level of complexity refers to the ability to breakdown the information into the constituent parts to make organization of ideas. Analysis of any fact, event, law or principle is possible only when a student has already crossed the application level of learning. Analysis means dividing a subject matter, laws or factors into different feasible parts following certain rules. This level of objectives also has three sub-levels.

a) **Analyzing the elements of events, laws or principles.**
b) **Analyzing the inter-relationship of different facts, events, laws or principles.**
c) **Analyzing the underlying principles and rules of facts, events or laws.**

If a student is competent to carry out all these operations, she is said to be at analysis level. For example, before writing an essay, the student finds out different headings and sub-headings and completes the essay on the basis of them.

In order to achieve this objective, the teacher presents new problems before her students in the class. Then she teaches them how to analyze from different angles on the basis of certain rules. She herself presents the lesson in the class only after analyzing it.



## 5. Synthesis:

Fifth level of complexity refers to the ability to put together the elements of information into a new whole or unified organization. Synthesis means joining the divided parts in such novel manner that a new useful structure is formed. This ability is developed only after mastery at analysis ability. This helps in developing the creative potential of students.

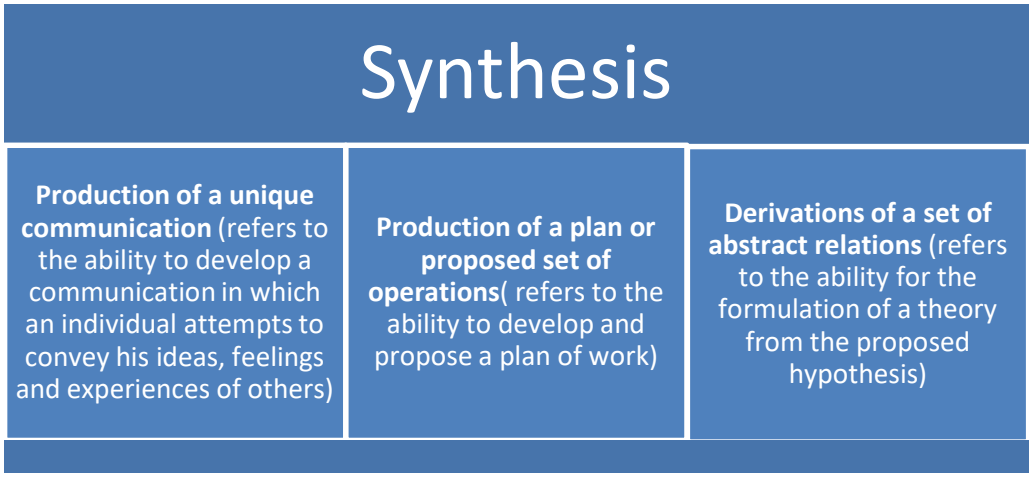
Synthesis is the fifth level of behavior in the hierarchy of cognitive domain. It also consists of three sub-levels.

a) **Producing unique communication material.**

b) **Producing new useful structure by synthesis on the basis of divided parts.**

c) **Finding out abstract relationship among different concrete elements.**

If a student can do all those three types of activities, we will say that she has the potential of synthesis, writing stories, poems, essays etc by themselves or drawing map of a place on the basis of recall are some examples of synthesis level of learning.




## 6. Evaluation:

Most complex form of cognitive measurement is evaluation which involves placing a value judgment on data in order to make a decision. The learner at this level evaluates such information as historical evidence, editorials and theories of their internal consistency or by external standards.

This is the top level of cognitive domain. Evaluation refers to throwing critical views on facts, events, laws and principles and their generalization and testing these facts, laws and principles on new criteria in such a manner that all their positive and negative aspects becomes

manifest. The examinations which are conducted for administrative services consist of more than one-third questions of this type. Evaluation ability is very rare which is found in only 3% to 6% people of the society.

Evaluation level of learning has no limit at all. Evaluation provides criterion standard to check facts, events, laws and principles on one hand and on the other, this ability helps to develop new laws and principles. Scientists, writers and administrators do possess this ability.

In order to achieve this objective, the teacher teaches her students to criticize facts, events, laws and principles in a healthy manner. For this purpose they are taught rules and procedure of healthy criticism.

**Evaluation**

| | |
|---|---|
| **Judgement in terms of internal criteria**. It is an evaluation by logical accuracy, consistency and other internal criteria. | **Judgement in terms of external criteria**. This refers to the judgement of the values of a given material with reference to the external factors which are affecting the given material. |

### 1.16.2 Affective Domain:

Affective domain is concerned with attitude, emotions, interest, mental sets and values of students. The development of this domain is not easy because every student differs in attitudes, tendencies, emotions and values and it is very difficult for a teacher to understand each student of the class. Despite this difficulty, every teacher must try to develop this domain of behavior also in order to develop cognitive domain. Hierarchy of this domain is comprised of five levels as given below:

### 1. Receiving:

This level is directly related to the sensitivity of the child which is created in her when stimulus is given. The teacher presents the stimulus in the class either by questioning or showing any material aid. Three interrelated activities come under this level.

a) **Sensitivity to the stimulus.**

b) **Willingness to accept the stimulus.**

c) **Control on stimulus.**

An individual will receive a stimulus only when the above conditions are fulfilled.

**Receiving**

| | | |
|---|---|---|
| **Awareness presumes minimum consciousness** | **Willingness to Receive, willing to attend** | **Controlled (or) selective attention**. (students express a preference for some activity and actively select it from others) |

**2. Responding:**

A student responds, when she is motivated by the stimulus and acquires new knowledge in the process. This level also consists of three sub-levels.

**Responding**

| | | |
|---|---|---|
| **Acquiescence in responding.** (keywords to describe this level are obedience and compliance) The learner starts making the response, but has not fully accepted the necessary for doing so. | **Willingness to respond** (Refers to the learner's capacity for voluntary activities) The learner is sufficiently committed for exhibiting the behavior that she does voluntarily on her own. | **Satisfaction in Response**. The learner's voluntary behavior in responding is accompanied by feeling of satisfaction. The learner enjoys or finds pleasure in doing activities. |

**3. Valuing:**

Valuing refers to those values which a student gives special importance in her life. She succeeds to manifest stable emotions in her behavior by these values even in changing situations. In order to achieve this objective, a teacher teaches some imitable values by her teaching. For example attending the blackboard work is a value. Accept this value to the class by adopting various strategies. It consists of the following three activities on the part of the students.

**Valuing**

| | | |
|---|---|---|
| **Acceptance of a value**- at this level, the student has only a tentative commitment towards some belief or | **Preference for a value**- At this level, the student has not only begun to accept some belief but willing to pursue | **Commitment**- The learner clearly perceives the holding values and connects it to her cause personal value. |

| | | |
|---|---|---|
| attitude which she considers as worthy. | actively the values of the object. | |

**4. Organizing:**

This is the fourth level of affective domain where different concepts and ideas are organized in order to form a coherent system. Here students do the following activities with different types of values.

**Organizing**

| | |
|---|---|
| **Conceptualization of a value-** (involves an abstract and therefore symbolic set of interrelated values. These values are conceptualized by analyzing their interrelationship and by drawing generalizations that represent the value system. | **Organization of a value-** The learner's behavior is to bring together the different values into a systematic relationship with one another. |

**5. Characterization by a value complex:**

This is the highest level of the affective domain. Here student gets specialization in one or two value systems after knowing so many of them. Students at this level are not only have an organized value system, but are capable of behaving in accordance with a consistent (i.e.) **"Philosophy of Life**". The student is so perfect in that value system that she is identified by it, for example, punctuality to the class is a system which consists of lots of values. If a student has got specialization in this system, she will be described as punctual student. When this stage of learning comes, the student can do the following activities.

a) **Seeking the solution of the problem.**
b) **Working efficiently with no burden.**
c) **Concentrating fully in the task.**

With the help of these levels of objectives, a teacher can mould the character of students in a manner which is very conducive in playing positive role for making teaching learning a successful process.

**1.16.3 Psychomotor Domain:**

Psychomotor domain deals with the ability and the skills which are physical in nature but activated by inner mental process. It is mainly concerned with a variety of learning activities like

handwriting, typing, physical education, laboratory science, industrial arts, vocational and technical education. This domain includes those objectives which deal with brain and motor skills. This taxonomy is based on the concept of co-ordination between various muscular actions. Behavior which includes muscular action and requires neuro-muscular co-ordination is grouped under this domain. The development of this domain is especially emphasized in training institutions. It is also consists of five levels of hierarchy.

**1. Imitation:**

This is the first and the lowest level of the domain. Here the student tries to do in the same manner as she sees. It is totally based on imitation. For example pupil teacher imitates the demonstration teaching of the teacher trainer. Copying the alphabet from the book or drawing a picture from another book or improving the handwriting by seeing the blackboard writing of the teacher are some other examples of imitation.

**2. Manipulation:**

It is an indicative of the creative potential of the pupil. Here she not only imitates the others but endeavors to do something new. For example, she introduces some new points in her teaching which are not given in the book. This manipulation is, however not necessary to be correct. We may call it as the initial effort of a trainee.

**3. Precision:**

It is reproducing a given act. This includes accuracy, proportion and exactness in performance. It execute skill reliably and independent of help by the students. The student learns to perform a task or activity with expertise and to high quality without assistance.

**4. Articulation:**

This includes co-ordination, sequencing and harmony among acts. This is the perfection stage of the control. Whatever a student does here is perfect in every respect. She works so nicely that her taste is liked by the people, adapt and integrate expertise to satisfy a non-standard objective. The student relates and combines associated activities to develop methods to meet varying, and novel experiences.

**5. Naturalization:**

Automated mastery of activity and related skills as strategic level takes place. At this stage she can do a work in whatever manner she likes. Here, perfection is shown without using the mind fully or without doing any deliberate efforts.

e.g.: jumping, feet as a target, writing correct spelling without using the power of recall and so on. Here the student defines aim, approach the strategy for use of activities to meet strategic need.

**Domain based Home Science Educational Objectives:**

**Knowledge Objectives**

To impart knowledge is the basic aim of Education and so it naturally is the basic aim of teaching of any subject including Home Science by imparting knowledge of Home Science to the students it is expected that she acquires knowledge of terms, concepts, techniques and principles relating to the subject of Home science.

Knowledge objective is considered to have achieved if the student is able to recall and recognize various terms, concepts facts, principles and processes etc

**Skill or Ability Objectives**

These objectives aim at development of certain skilled and abilities in the student. The following skills and abilities are intended to be developed:

- Experiment skill
- Drawing and decoration skill

This objective is considered to have been achieved if the student etc.

a) Fits the apparatus for various purposes
b) Cleans apparatus
c) Arranges article in proper order
d) Measures volume, weight etc correctly.
e) Follows the correct order in performing an experiment
f) Observes precaution while doing cooking, sewing, needle work etc
g) Decorates school and home
h) Observes and records data accurately and systematically
i) Makes graph, charts etc from the data available and
j) Develops ability in cooking, childcare, laundry work, treatment of sick etc

**Appreciation Objectives**

In regard to the objective of development of appreciation of the subject the following things are kept in mind.

To develop a power of appreciation of achievements in household management and its role in human life and society.

This objective is considered to have been achieved if the pupil

a) Shows thrill and excitement at the new innovations in household management, tailoring, laundry, cooking etc.
b) Enjoys collecting and exhibiting pictures of household activities
c) Enjoys looking after home management, cooking, laundry etc.
d) Shows enthusiasm and excitement in declaring her own experimental achievements in cooking, tailoring etc.
e) Enjoys to read about achievements and sacrifices of great home makers or housewives

**Attitude objectives**

An attitude objective consists in the formation of certain attitudes and habits. In this regard the following are aimed at

a) To develop the habit of completing a task systematically and logically
b) To develop the power of concentration and self study
c) To develop clear expression
d) To develop initiative and confidence
e) To develop rational outlook i.e. to express opinion precisely, systematically and logically without any bias or prejudices
f) To develop the capacity to utilize the subject in day to day life
g) To develop the capacity of analyzing a problems
h) Formation of behavior pattern
i) Application of knowledge and
j) Generalizations

This objective is considered as achieved if the pupil

i) Does not accept or reject anything without valid reasons
ii) Has a keen desire to know how and why of any thing
iii) Is prepared to face hazards in his investigations
iv) Has no hesitation in admitting his mistakes
v) Suspends a judgement till it is repeatedly confirmed

vi) Remains unbiased while approaching a problem

vii) Considers all the details and

viii) Observes principles of health and hygiene

**Understanding Objective**

Understanding objective aims at developing an understanding various terms, concepts, facts, processes, techniques and principles of Home science

This objective is considered as being achieved if the pupil

a) Can illustrate term, principles etc by giving suitable examples
b) Can express the same fact in various ways,
c) Can locate and correct an error
d) Can compare and contrast between related terms and concepts
e) Is able to classify substances and facts
f) Is able to discriminate between allied substances, concepts etc and
g) Is able to identify relationships

**Application objectives**

The pupil is expected to apply his knowledge of concepts and principles to new and unfamiliar situations

This objective is considered to have been achieved if the student

a) Analyses situations
b) Formulates hypotheses
c) Tests hypotheses
d) Draw inferences
e) Verify inferences
f) Establish relationships
g) Predicts result and
h) Finds new uses for substances

**Positive attitude**

This attitude is considered as achieved if the pupil

a) Likes the teacher
b) Gets interest in the subject and
c) Likes the company of other students of Home science

**Interest**

Development of interest in household pursuits is one of the major objectives of teaching home science. This objective is considered as being achieved if the pupil.

a) Engages herself in household activities
b) Visit places of household interest
c) Reads allied literature from various sources such as books and journals
d) Performs extra experiments
e) Takes an active part in debates etc, involving topics of household management and
f) Improves apparatus for various experiments

## 1.17 SUMMARY:

In this unit, we studied the definition, importance and different field of Home Science and its aims in various disciplines. Furthermore the objectives of Home Science Education in higher secondary level and its values have been stated. We also discussed the relationship between Home Science education and family atmosphere in addition to the need of Home Science to woman. The correlations of Home Science with other subjects and taxonomy educational objectives categorized by Cognitive, Affective, and Psychomotor domain have also been stated. Recognition of aims, objectives and values of Home Science is vital for students to understand their home environment in which they can fulfill their psychological, philosophical and social needs.

## EXERCISES:

- Make a discussion with your peer groups and identify the aims and objectives of Home Science Education.
- Enumerate the need of Home Science to women
- How will you find the relationship of Home Science education to family atmosphere?
- “Reciprocal relationship that exists among Home Science with different subject”- Discuss.

## UNIT II

## PLANNING THE INSTRUCTIONAL AND LEARNING STRATEGIES

**STRUCTURE**

2.8 Link Practice

2.8.1 Need for link lesson

2.9 Home Science Teacher's characteristics

2.10 Instructional strategies in teaching Home Science

2.10.1 Heuristic method

2.10.2 Dalton method

2.10.3 Individualized instruction

2.10.4 Project method

2.105 Team teaching

2.10.6 Lecture cum demonstration method

2.10.7 Discussion method

2.10.8 Seminar

2.10.9 Symposium

2.10.10 Role playing method

2.10.11 Over head projector

2.11 Learning strategies

2.11.1 Assignment method

2.11.2 Problem solving method

2.11.3 Programmed instructional method

2.11.4 Computer assisted instruction

2.11.5 Multimedia approach

2.12 Midday meal programme

2.13 Nutrition

2.14 Extension and adult education programme

2.15Web based learning

2.16 Summary

Exercise

## 2.1 INTRODUCTION

The following unit helps to study the various types of planning that enables a pupil teacher to plan for the year for the unit and for a lesson to be taught for the students in Home Science. The importance of planning is to organize a lesson in an effective way which helps the students to gain proper way of learning strategies in their academic domain. The process of teaching-learning strategies includes various techniques to enhance the learning process of the pupil. In order to promote the appropriate learning the role of a teacher is vital who should apply different techniques in the classroom teaching. Microteaching is a technique which helps to master the various teaching skill by the teacher trainer

## 2.2 OBJECTIVES

This unit provides a clear understanding of the various instructional plans for a Home Science teacher for better teaching process and skills to be adopted for teaching a lesson. After going through this unit the students will be able to

- Understand the year plan and unit plan with its merits and demerits
- Identify the general and specific instructional objectives
- State the importance of lesson plan and its various approaches.
- List out the strategies to write the lesson plan.
- Know the meaning and characteristics of microteaching
- Recognize the phases of microteaching
- Describe the various types of microteaching skills with its components
- Differentiate link lesson with microteaching
- Enumerate the characteristics of Home Science teacher with their instructional strategies.
- Discuss the learning strategies of Home Science students
- Acquire the knowledge about type of programmed instructional materials

## 2.3 YEARLY PLAN

In yearly planning, in the teaching of a subject, the teacher tries to take a complete view of what she has to do in the whole session regarding the instructional work of her subject. In this way, by a yearly plan, we mean the sectional programme that has to be chalked out by the teacher in her subject of teaching in the shape of teaching-learning activities to be carried out. For chalking out such programme, a teacher has to take care of the following things:

- The total number of working days available for teaching-learning of the subject during the year.
- The total number of periods or time available during the year.
- The nature and scope of the subject in relation to the number of topics included in the syllabus, the contents covered in the topics, the types of learning experiences to be provided to the student, the objectives of teaching-learning to be realized, etc.
- The means and material available for the teaching-learning of the prescribed syllabus in teaching a subject.

**2.4 UNIT PLAN**

A variety of meanings have been assigned to the term unit. Some of them are :-

- The lesson for the day.
- It is a block of work.
- As a chapter in a text book, a project and
- As a method of instruction rather than a method of organization of instructional materials etc.

Writers of text books and curriculum makers have always found it convenient and helpful to organize instructional material in unit blocks or chapters.

The concept of breadth and comprehensiveness of a unit suggests that larger blocks of time and learning be included. A unit provides integration of approach because of its being a whole component. It is internally consistent in a series of related activities and is focused on a simple theme or problem or goal. A unit makes learning definite and expressive by continuous and cooperative evaluations. A unit being problematic encompasses problem-solving and demands adequate supplementary reference and source material. A unit being a common concern of the group, it encourages pupil participation in planning. A unit being balanced sociologically by common and individual learning. It converges on variety of activities for large and small groups, as well as for the individuals. It tends to cut across subject matter areas with varied contents and contains all inclusive subject matter. It also covers thought processes or experiences. With organized information, its total environment comprises the various aspects of behavior that knows feeling and willing as well.

Unit planning improves the process of learning. It improves structuralization of the course content and accelerates the teaching-learning process, thereby making teaching more meaningful, purpose-oriented and goal-oriented. It helps the teacher in the better realization of educational objectives and facilitates teaching learning process as well.

Unit planning has a reference to the curriculum planning process. The curriculum planning has three primary phases namely:

i) Pre-operational, this comprises of specifications of objectives and selecting learning experiences which are capable of being achieved.

ii) Operational, in which learning experiences are presented in well planned and designated manner with proper sequence.

iii) Post-operational, in which contents and learning experiences are evaluation for their efficiency, appropriateness, sufficiency, consistency and objectivity.

Unit planning emerges as a mode of operating the curriculum in the second phase. As such, it is one of the many ways of planning, designing, organizing and structuring the learning experiences for the pupils. It functions as an effective device in teaching learning process. The unit planning needs to be analyzed in term of the curriculum up to several units in their entirety or parts before the units are put to operations.

The distinctive features of a unit planning are that it:

- Encourages fresh planning and presentation by the teacher instead of stereotyped text book methodology as employed in traditional planning.
- Promotes insight and curiosity to learn and plan the learning materials.
- Adds marking system for flexibility.
- Extends learning experiences beyond the prescribed syllabus and text book in an integrated way.
- Helps in articulating future problems and needs of the pupils.

**Definition of a Unit Plan:**

According to Sanford “a unit is an outline of carefully selected subject matter which has been isolated because of its relationships to pupils’ needs and interests.”

**The composition of teaching a unit:**

The whole syllabus is divided into small workable sections, which include related topics. It becomes easier for the students to follow the smaller portions. It should be well-understand that the teaching units are not just a collection of unrelated topics or lessons but are integrated ones. A number of related lessons may be combined to complete one teaching unit. Each lesson is a part of the whole unit and leads to the development of next lesson in the unit.

- It should consider the needs, capabilities and interests of the pupil.
- It should take into account the previous experiences and background of the pupils.
- It should provide for new experience, which the students have not received earlier.
- It should be flexible so as to allow the above average pupils to go beyond the limits of the unit.
- It should be related to the social and physical environment of the pupil.
- It should help to anticipate and satisfy some of the future needs of the pupil.

**Steps in Unit Planning:**

Unit planning is a part of year planning and it is a middle ground between course planning and lesson planning. It is longer than lesson planning, but shorter than course planning.

Unit planning involves the following stages.

**I. Content Analysis:**

After choosing the unit, the teacher has to do detailed analysis of the contents of the unit to get in-depth knowledge of the terms, concepts, principles, generalizations constituting the unit. This helps the teacher to break up the unit into meaningful sub-units and lessons retaining the continuity throughout the unit.

**II. Stating the General and Specific Objectives:**

The teacher should identify the general objectives and state the specific objectives or learning outcomes to be achieved as a result of learning the unit.

**III. Planning the Learning Activities:**

The third step is to select suitable learning experiences that may lead to the realization of the stated objectives keeping in mind individual differences, the psychology of learning, the content and objectives. Suitable learning activities can be planned, to which the students will be exposed to during the instruction of the unit. The teacher also has to plan scientific teaching strategies that will be employed for each segment of the unit.

**IV. Evaluation Procedure:**

The last step of unit planning is to select appropriate evaluation tools and techniques to assess the content coverage, the realization of the stated objectives and the effectiveness of teaching strategies.

**Uses/Advantages of Unit Plan:**

Unit planning contributes to the educational process in the following ways:

- Unit plan breaks up a lengthy unit into smaller sub-units or topics so that pupil can easily grasp the scope of these during a brief overview.
- It helps the teacher to present the various principles and concepts constituting the unit in an orderly and systematic manner, without losing their continuity.
- It enables the pupils to see clearly the relationship between the various facts, processes and principles that make up the unit.
- It helps the teacher to plan a variety of learning experiences, keeping in mind the individual differences, the nature of content and objectives to be achieved.
- It provides frequent opportunities for the students to review and reorganize their learning.
- The study outline of the unit plan provides the students with directions as to what to study, and how to do it most effectively.

**Objectives Based Teaching:**

Instructional objectives play a key role in the teaching and learning process. If the instructional objectives are clearly stated, they serve as guides for both teaching and evaluation. Instructional objectives are those objectives, which a teacher wants to achieve through his teaching.

**Types:**

(i) General Instructional Objectives

(ii) Specific Instructional Objectives

**(i) General Instructional Objectives:**

It is an intended outcome of instructions that has been stated in general terms to contain a class of behavior (Ex.: comprehends the literal meaning of written material). It is typically, further defined by a set of specific learning outcomes or specific instructional objectives.

**(ii) Specific Instructional Objectives:**

It is an intended outcome of instructions that has been stated in specific behavioral (performance or measurable) terms. (Ex.: identifies details that are explicitly stated in a passage) Specific instructional objectives describe the observable behavior; the learners will be able to exhibit when they have achieved general instructional objectives. Specific instructional objectives are also called specific learning outcome (or) behavioral objectives (or) measurable objectives.

**Importance of Specific Instructional Objectives:**

- They delimit the meaning of the objectives.
- They help to distinguish one objective to another.
- They give insight into teaching-learning situations.
- They serve as the bases for item construction.

**Functions of Specific Instructional Objectives:**

- Provide the desired 'directions'.
- Determine the nature of instructional activities.
- Provide a basis for systematizing or planning an instructional programme.
- Give unity and coherence to instructional programme.
- Guide instructional decision.
- Help to make the intangible instructions into tangible.
- Help to determine and describe correctly.

**Writing instructional objectives**

**How to state objective?**

One of the biggest controversies in recent years about the writing of objectives has been on whether these objectives should be stated in behavioral terms. A behavioral objective is one that specifies what the learners will be doing when we evaluate whether or not he has attained the objective. The behavioral objectives use action verbs, whereas non-behavioral objectives do not. Behavioral objectives tend to be more specific than non-behavioral objectives and that is why behavioral objectives are generally known as specific objectives or specifications.

Hence when we use the term 'objectives', we refer to 'non-behavioral objectives' and when the word 'specification' is used, it refers to 'behavioral objectives' i.e. specific objectives.

Objectives contain non-behavioral verbs, while specifications contain behavioral verbs. As a result, specification indicates the change of behavior that is observable and measurable, while an objective indicates no change of behavior.

**Criteria for writing statement of objectives:**

'To solve', 'to use', 'to compare', 'to describe', 'to explain' etc. are action verbs. The statement should be in the form of an overt activity or a behavioral outcome which is observable and measurable. This ultimately increases objectivity in evaluation. The statement should indicate clearly the behavior as an expected outcome so that the teacher can organize her learning activities accordingly, which may prove more effective, fruitful and meaningful.

**Planning for specific behavioral changes:**

Cognitive theories of learning advocate that the learner can modify her behavior by discriminating the right from the wrong response.

**Principles of specific behavioral changes:**

1. Behavior is formed as a result of an action.
2. Only after a behavior occurs, it could be reinforced.
3. Immediate result that follows a response is more effective and useful.
4. Following a reinforcement new reinforces get generated.
5. Complex behaviors slowly grow out of simple behaviors.

Repeated actions cannot be formed into a behavior, but only satisfying results of actions shape the behavior. Results of actions which strengthen the behavior are called reinforces. Hence a lesson plan must have these reinforces. The success of a learning situation depends upon the chances for the appearance of right responses from the learners and their reinforcement. The result that immediately follows a response is more powerful in fixing behavior than the delayed ones. This principle of immediate feedback is made use of the lesson plans prepared.

Behaviors which are reinforced continuously get themselves turned into intrinsic motives. For example those who used to answer correctly in the class are motivated internally to learn further

everything correctly. This is explained in the fourth principle which is stated as 'Nothing succeeds like success"

The fifth principle states that complex behavior gets shaped slowly from simple behavior. When the behavior approaches the final goal, it requires more and quick reinforcement for example in a running race, when a person approaches the goal post; she had to pump up with more efforts and energy to win.

**2.5 LESSON PLAN**

The day-to-day planning of the contents and sequence of each day's work is of great importance to each individual teacher. The daily lesson plan forces a teacher to determine what learning activities will go in the class during the period. A teacher who goes to the class without planning for the lesson runs the risk of wasting time and effort. Indeed the very act of writing the plan, out forces a crystallization of the plan in the teacher's mind. This in itself is an important step towards a successful summation of what is being planned.

**Definitions of lesson plan:**

Good defined a lesson plan as an "outline of the important points of a lesson arranged in the order in which they are to be presented to students by teacher."

In the words of Lester, a lesson plan is actually a plan of action. It therefore includes the working philosophy of the teacher, her knowledge of philosophy, her information about and understanding of her pupils, her comprehension of the objectives of education, her knowledge of the material to be taught, and her ability to utilize effective methods.

**Importance of lesson plan:**

Lesson planning makes the teacher's work regular, organized and systematic.

- It forces consideration of goals and objectives, the selection of subject matter, the selection of procedure, the planning of activities and the planning of education devices.
- It prevents waste of time, as every step has been planned with forethought unnecessary repetition is thus avoided.
- It enhances self confidence of the teacher as it paves the way for the teacher to enter the class without anxiety.
- It helps to pick and choose the particular aspects that need emphasis.
- Lesson planning helps in establishing proper correlation between the different branches of the

subject.

- It helps in providing drill and practices in concepts.
- It helps the teacher on the right track as she is conscious of every step that she has to take.
- It helps the teacher in selecting and using more relevant and appropriate, illustrative material to make the concepts concrete.
- Planning helps the teacher to visualize students' difficulty and plan for remedial programmes.

**Various approaches to lesson planning:**

A teacher can follow any of the following approaches for planning a lesson

- Herbartian Approach
- Morrison's or Unit Approach
- Bloom's or Evaluation Approach

**Writing the lesson plan:**

Lesson plan is always done well in advance before going to the classroom. Generally a lesson is divided into many stages or steps. When a detailed lesson plan is being developed all the following steps are used in some form or the other. These are based on the Herbatian steps in planning a lesson.

I. Introduction
II. Presentation
III. Generalization
IV. Application
V. Recapitulation
VI. Assignment

**I. Introduction:**

The introductory phase is called the 'warm up' phase. The purpose is to create interest in students in the topic. The teacher may relate the new information to the one already taught or to the previous knowledge possessed by them. The new information is anchored with the existing knowledge.

**II. Presentation:**

The transaction of ideas is done step by step following psychological approach. Starting from known things, the teacher leads the students to the new information by using comparisons, analogies, illustrations, demonstrations and other audio-visual aids including the chalk board.

**III. Generalization:**

In Home Science lessons generally the learning material leads to certain generalization leading to establishment of certain formulae, principles or laws. An effort should be made that the students draw the conclusions themselves. Teacher should guide the students only if their generalization is either incomplete or irrelevant.

**IV. Application:**

In this step the knowledge gained is applied to certain situations. This step is in conformity with the general desire of the students to make use of generalization in order to see for them whether the generalizations are valid in some other situations.

**V. Recapitulation:**

In this step the teacher tries to ascertain whether her students have understood and grasped the subject matter or not. This is used for assessing the effectiveness of the lesson by asking questions on the contents of the lesson. “Teach little, Revise more” is an, excellent slogan for a teacher.

**VI. Assignment**:

Although giving assignment is an essential step in Herbartian scheme of teaching procedure, for reinforcing what has been taught, it is very much criticized now. Yashpal Committee also recommended banning of home assignments in primary schools.

A lesson plan is undoubtedly a plan of action. Some of the important features of a good lesson plan are given below:

- Objectives of the lesson plan, both general and specific should be very clear.
- Content should be chosen keeping in mind the nature of the subject, the past experiences of the student and the syllabus.
- Keeping in mind the objectives and content, a suitable method is chosen.
- There are several audio-visual aids for teaching science.
- The teacher can select appropriate aids to best suit her needs.
- The stage has to be set for learning by stimulating the interest of the students using relevant motivation technique.

Active participation of the students should be sought using activities. Effective and sufficient blackboard work for presentation and summarizing is necessary. Questions to review the lesson as well as elicit answers during presentation are important. Summarization helps students crystallize their concepts. This can be done by using the blackboard or through questions.

A sample lesson plan on the topic "work" is given. However, there is no set format for writing lesson plans. Some teachers use short forms giving just the key concepts and cues for learning activities. Others use an intermediate form, with more details. New teachers and teacher-trainees are advised to write the long form of lesson plan, giving clear descriptions of what is to take place during a lesson.

**Merits of Herbartian Lesson Planning:**

- It ensures that the lesson has been prepared well.
- The planning is based keeping in view the logical and psychological aspects associated and hence incorporates basic principles of teaching.
- It is an easy and simple approach.
- Content matter is given utmost importance.
- The objectives / purpose / aim of lesson is made clear.
- It employs deductive thinking for learning.
- It links previous knowledge of students to impact present / new knowledge.
- This approach can be used for any class size or organization.
- It helps is applying knowledge to new / unfamiliar situations.
- It helps in achieving cognitive objectives of teaching.

**Limitations of Herbartian Lesson Planning:**

Although Herbartian lesson plan is the most widely used approach in lesson planning it has some limitations. They are:

- It emphasizes mainly on the content aspects.
- It confines teaching only to memory level.
- It does not bring out the abilities and interests of students.
- It helps in achieving cognitive objectives only and does not bother about affective and psychomotor domains.
- The approach has teacher as the pivot and dominates the teaching - learning process.
- Emphasis is on presentation / teaching rather than on learning.

---

**Format of a Lesson Plan**

Name of teacher:

Class:

Subject: Section:

Topic:

Duration:

Date:

General Objectives:

Specific Objectives:

Aids Used:

References:

| Steps/Content | Learning Specification | Learning Experiences | Evaluation |
|---|---|---|---|
| Motivation | | | |
| Presentation | | | |
| Recapitulation | | | |
| Assignment | | | |

**2.6 MICRO – TEACHING**

**2.6.1 Introduction**

Micro teaching is a teacher training technique which helps the teacher trainee to master the teaching skills. The idea of micro teaching originated for the first time at Stanford University in USA. When an experimental project on the identification of teaching skills was in progress under the guidance and supervision of the faculty members (Bush, Allen, McDonald Acheson and many others), the team of experts were assigned the development of testing and evaluation tools to measure the attainments of teaching skills.

At this juncture Keath Acheson, a research worker was investigating the utility of videotape recorder in the development of technical teaching skills. This instrument could be used for recording the class interaction and the behaviors of the trainee intensely and accurately. This led to the development of a systematic and accurate method of giving feedback to the teacher trainee.

### 2.6.2 Meaning and Definition

Micro teaching is a technique or device of importing training to the inexperienced or experienced teachers for learning the art of teaching by practicing specific skills through a scaled down teaching encounter. It is most often applied to the use of closed circuit television to give immediate feedback of a trainee teacher's performance in a simplified environment.

**"**Micro teaching is defined as a system of controlled practice that makes it possible to concentrate on specific teaching behavior and to practice teaching under controlled conditions**"** - **Allen and Eve (1968)**

**"**Micro teaching is a training technique which requires student teacher to teach a single concept using specified teaching skill to a small number of pupils in a short duration of time**"** - **B.K. Passi and M.S. Lalitha (1976)**

### 2.6.3 Nature and Characteristics of Micro Teaching

- It is relatively a new experience or innovation in the field of teacher education.
- It is a training technique and not a teaching technique.
- It is micro - or miniaturized teaching in the sense that it scales down the complexities of real teaching with the provisions such as :

  (i) Practicing one skill at a time

  (ii) Reducing duration of the lesson to 5-10m

  (iii) Reducing the class size to 5-10 pupils

  (iv) Limiting the content to a single concept.

- There is provision of adequate feedback
- It provides opportunity to select one skill at a time and practise it through its scaled down encounter.
- It is highly individualized training device permitting the imposition of a high degree of control in practicing a particular skill.

### 2.6.4 Phases of Micro Teaching

Micro teaching involved three phases namely

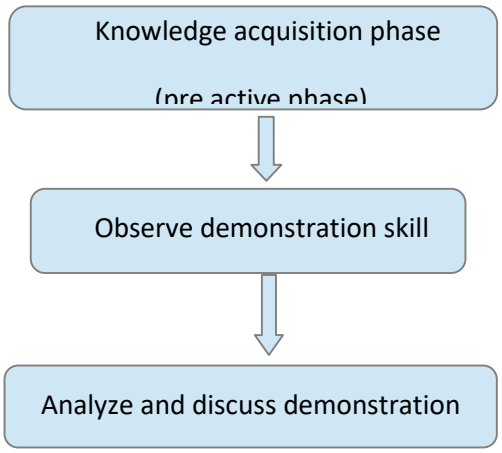
I Knowledge Acquisition phase

II Skill Acquisition phase

III Transfer phase

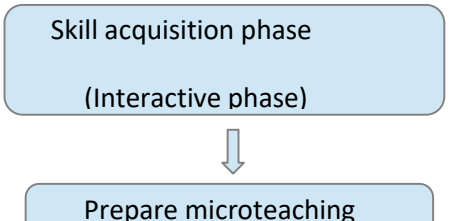
**I. Knowledge Acquisition Phase :- (Pre – Active Phase)**

In this phase the teacher trainee learns about the skill and its components through discussion, illustration and demonstration of the skill. The teacher trainee learns about the purpose of the skill and the condition under which it proves useful in the teaching – learning process. The trainee discusses and clarifies each and every aspect of the skill.




**II. Skill Acquisition Phase (Interactive phase)**

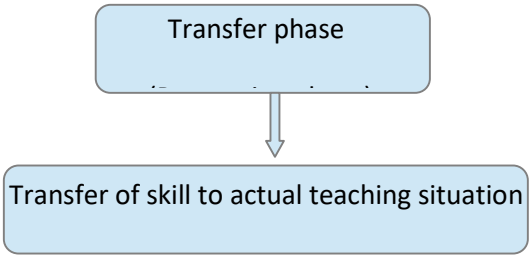
Based on the demonstration presented by the expert, the teacher trainee practices the teaching skill through the micro teaching cycle and continues efforts, evaluative performance and feedback will be provided.



**III. Transfer Phase (Post – active phase)**

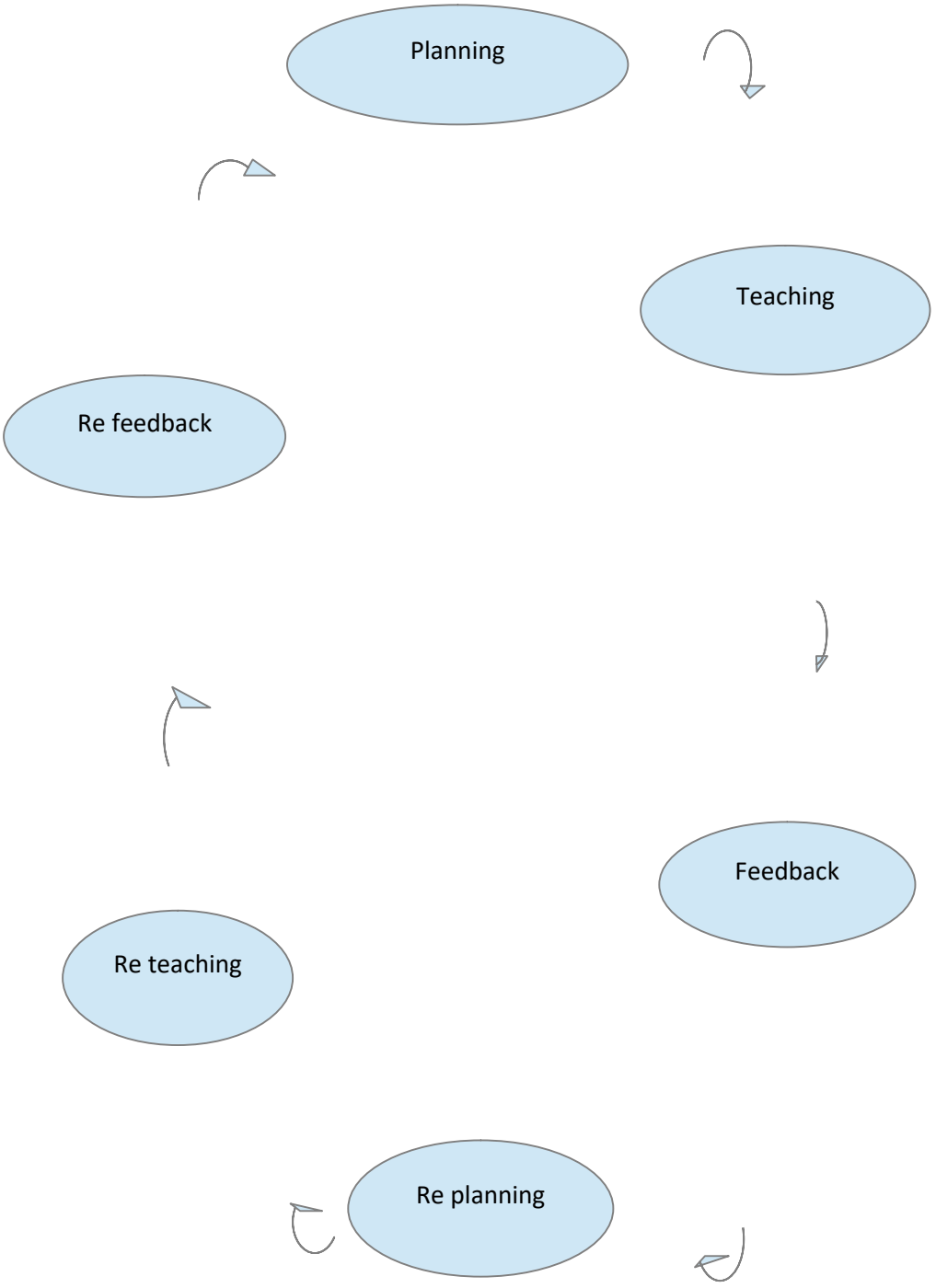
After attaining the mastery level and command over each of the skills the teacher trainee integrates all these skills and transfer to actual classroom teaching done during this transfer phase.

Transfer phase




**2.6.5 Micro Teaching Cycle**

Micro teaching cycle involves six steps; they are Plan, Teach, Feedback, Re-plan, Re-teach and Re-feedback




**Step I**

**Planning:**

Planning involves the selection of topic and related content. The use of components of the skill under practice may be made easy and convenient. The topic is analyzed into different activities by the teacher and the pupil. The activities are planned in such a logical sequence where maximum applications of the components of the skill are possible.

**Step II**

**Teaching:**

Here the teacher trainee attempts to use the components of the skill in suitable situations coming up in the process of teaching – learning as per their planning. If the situation is different and not as visualized in the planning of the activities, the teacher should modify their behavior as per the demand of the situations in the class. The teacher should have the courage and confidence to handle the situation arising in the class effectively.

**Step III**

**Feed back:**

This term refers to giving information to the teacher trainee about the performance. To improve their performance in the desired direction the teacher educator gives the strength as well as weakness relating to their performance.

**Step IV**

**Re-plan**

The teacher trainee re-plans the lesson incorporating the points of strength and removing the points that were not skillfully handled during teaching in the previous attempt either on the same topic or on another topic suiting to the teacher trainee for improvement.

**Step V**

**Re-teach:**

This involves teaching to the same group of pupil if the topic is changed or to a different group of pupil if the topic is the same. This is done to remove boredom or monotony of the pupil. The teacher trainee teaches the class with renewed courage and confidence to perform better than in the previous attempt.

**Step VI**

**Re-feedback**

Based on the modified teaching the information about their performance is given in the desired direction in each and every skill practice.

**2.6.6 Microteaching procedure / steps:**

**Orientation:**

Before teaching, the student teacher should be given theoretical information about the concept, significance, procedure, requirements and techniques of microteaching.

**Discussion of teaching skills:-**

In this step they gain knowledge and understanding about the analysis of teaching through the component teaching skills. Discuss the role of teaching skills in teaching and the component teaching behavior comprising various teaching skills.

**Selection of a particular teaching skill:-**

The student teachers are persuaded to select a particular skill for practice. They are also provided with necessary orientation and processing material for the practice. The student teacher may be given a necessary background for the observation of a model or demonstration lesson on the selected teaching skill.

**Presentation of a model demonstration lesson:-**

Depending on the availability of the resources and the type of skill involved demonstration or model lesson can be given in a number of ways by a teacher educator or an expert demonstrating the use of the skill.

**Observation of the model lesson and criticism:-**

In a demonstration given by an expert the student teacher are expected to note down their observations in an observation schedule and give criticism in the way of feedback.

**Preparation of micro lesson plan:-**

The student teachers are required to prepare micro-lesson plans by selecting proper concept for the practice of demonstrated skill.

**Creation of micro teaching setting:-**

Micro class setting includes 5 to 10 number of pupil mostly peers, the type of supervisors may be teacher educators and peers with 6 minutes of time duration and the micro teaching cycle time is 36 minutes.

**Practice of the skill:**

The student teachers takes class for 6 minutes with their prepared micro lesson, for a micro class consists of 5 – 10 peers, supervised by teacher educator and peers with the observation schedule.

**Providing feedback:**

The feedback is provided in terms of the use of component teaching behavior comprising the skill under practice so that they may be able to modify them in the desired direction.

**Re- planning:**

After the feedback from the teacher educators and peers the student teacher tries to re-plan their micro lesson for which they will be given 12 minutes time.

**Re-teaching:**

In the rearranged setting on the basis of prepared plan the student teacher will re-teach the micro lesson for 6 minutes

**Re-feed back:**

On the basis of their performance in the re-taught micro lesson the student teacher is provided re-feedback.

**2.6.7 Advantages of Microteaching:**

- It paves way for macro lesson.
- It is an increased control of practices.
- Feedback is immediately given.
- Microteaching is training for real teaching.
- Specific skills can be developed.
- Teaching under simulation condition is also possible.

- More useful for the training of one or more skills.
- It simplifies the study of interaction.
- It develops integration of theory and practice.
- It helps in the research work related to classroom teaching.
- It provides for self-evaluation.
- Its objectives are well defined.
- It is easily observable, measurable, achievable, modifiable and practicable

**2.6.8 Disadvantages of Microteaching:**

- Does not take into consideration the overall environment of teaching.
- It is skill oriented instead of content oriented.
- It has limited scope for developing the skills.
- Its lab is more expensive.
- It needs more devices like video, tape recorder and other devices.
- It needs sufficient time to impart the teaching skills.
- Availability of experts is generally scarce.
- This skill alone is not enough to attain perfection in teaching.

**2.7 TEACHING SKILLS:**

Gage defined the teaching skills "as specific instructional activities and procedures that a teacher may use in his classroom". This specifies that a teaching skill and a group of teaching acts and behavior intended to facilitate pupils learning activity directly or indirectly.

Teaching skills have three basic components like perception, cognition and action. Stanford University (Allen and Rayan 1969) listed out some fourteen teaching skills, Singh L.C. (1979) identified twenty two general teaching skills, Later on Menou et al (1983) have suggested a list of seventy four skills.

Some of the important skills are:

- Skill of Introducing the Lesson.

- Skill of Stimulus Variation.
- Skill of Explaining.
- Skill of Reinforcement.
- Skill of Probing Questions.
- Skill of Achieving Closure.
- Skill of using Blackboard.

**2.7.1 Skill of Introducing the Lesson:**

It is essentially a pre-instructional technique that requires a brief time for gaining students attention. Training in introduction provides trainees to use present knowledge and skills to make students involved in lesson.

Success of teaching a lesson depends on its introduction. The attention of the students towards learning the matter starts with the introduction of the lesson. In this the new knowledge may be properly linked with the existing knowledge of pupil. The Introductory questions should be based on the previous knowledge related to the present content and the teacher has to proceed from known to unknown. The skill of introducing a lesson establishes rapport with the learners and facilitates concentration on teaching.

The skill of introducing the lesson may be defined as proficiency in the use of verbal and non-verbal behaviors; teaching aids and appropriate devices for making the pupils realize the need of studying the lesson by establishing.

**Components:**

- Use of previous knowledge (UPK)
- Preliminary attention gaining (PAG)
- Use of appropriate device (UAD)
- Arousing motivation (AM)
- Relevance and continuity or sequencing of questions and statements (RC)
- Topic declaration (TD)

**Use of previous knowledge:**

Refer to the level of achievement from the previous experiences. Testing the previous knowledge of students helps the teacher to establish integration between the pre-existing knowledge of

the students and the new knowledge that the teacher wants to impart. Through this skill the teacher knows the status of motivation, intellectual abilities and socio-cultural background of the student.

**Preliminary attention gaining:**

In the beginning of a lesson, the students may not be in an attentive mood being mentally unprepared for learning. The teacher's duty is to create desire for learning among the students. The teacher attracts the students towards their teaching by doing some attractive activity and creating curiosity. The teacher can employ different attractive activities such as telling a story, recalling the previous experiences etc.

**Use of appropriate device:**

To motivate the students the teacher should make use of appropriate devices such as examples, analogies, similarities, story-telling, questioning, lecturing, role playing etc. The devices used must be appropriate to the age, experience, maturity etc. Use of unrelated devices that will confuse the learners should be avoided.

**Arousing motivation:**

The teacher should link the required previous knowledge to present knowledge with motivation in introducing a lesson. Teacher can use questions or activities to motivate the students towards the current topic or concept before declaring the topic.

**Relevance and continuity of questions and statements:**

A teacher should try to observe relevancy in his behavior. What is to be stated, asked, demonstrated, or illustrated should contribute maximum towards the introduction of a lesson by

- Testing of the previous knowledge.
- Making the pupil feel the need of studying the lesson.
- Utilization of the past experiences, establishing cognitive and affective rapport with the pupil and pinpointing the aims of the lesson.

**Topic Declaration (TD):**

It indicates the beginning of presentation of the lesson. By the process of topic declaration the students understand what they are going to learn in that period.

**2.7.2 Skill of Explaining:**

It may be defined as the art of learning the use of interrelated appropriate statements by the teacher for making the pupil understand the desired concept, phenomenon or principle.

A teacher has to learn the skill of explaining in order to make the pupil understand many ideas, concepts or principles that need explanation. Explanation is nothing but a few interrelated appropriate statements. The quality of explanation depends on preparation of the teacher and the degree of understanding of the students.

**Components:**

- Using appropriate beginning and concluding statements
- Cognitive link
- Compare and contrast and
- Meaningful repetition.

**Using appropriate beginning and concluding statements:**

Beginning statement is the introductory statement to begin explanation. The purpose of this statement is to create readiness among the pupil to pay attention to the point being explained. It is an opening statement announcing what is going to be explained by the teacher. It prepares the pupil mentally to receive the explanation.

The concluding statement is given after explanation in order to summarize or conclude the whole explanation.

**Cognitive Link:**

A teacher introduces new concepts using the principles of 'known to unknown', 'concrete to abstract', 'easy to difficult' and 'simple to complex' to establish a link between the old concept and the new one. A new concept can be introduced and developed only through a series of sub-concepts. All sub-concepts must be linked with one another logically.

**Compare and Contrast:**

While teaching different concepts, one should note that some of them are closely interrelated. There may be some similarities and some dissimilarity between them. The comparison of concepts may attract the attention of the learner. This component serves the purpose of discrimination between two related but different concepts.

**Meaningful Repetition:**

By repeating a brief description of a concept, a term or a definition at regular intervals, the idea gets fixed in the minds of the learners. Repetition must be purposive, deliberative, meaningful and relevant. Over-repetition creates boredom to the learners. As such over repetition should be avoided.

**2.7.3 Skill of Stimulus Variation:**

Skill of stimulus variation may be defined as a set of behaviors for bringing the desirable change of variation in the stimuli used to secure and sustain pupil's attention towards classroom activities.

Boredom is often a major problem in the classroom and the instructional styles of many teachers do not recognize this factor. This skill is related to procedure by which the attention of the class can be secured. This involves deliberate changing of various attention-compelling behaviors of the teacher in order to maintain pupil's attention at high level.

Continuous use of the same stimulus for a long period reduces the attention in that activity. The teacher's behaviors influence pupil's attention. Variations in stimulus secure more attention among the students.

**Components:**

- Teacher's Movement (TM)
- Pupils Movement (PM)
- Teacher's Gestures (TG)
- Sensory Focus (SF)
- Change in Voice (CV)
- Pausing (P)
- Change in Interaction Pattern (CIP)
- Audio Visual Switching (AVS)

**Teacher's Movement (TM) :**

The teacher should move from one place to another on the teaching dais and towards all the students to attract the attention of the entire class. These movements must be purposeful, well planned and meaningful. Example: movements towards blackboard to discuss a point on the blackboard.

**Pupils Movement (PM):**

The physical participation of the student is essential to sustain the attention. This physical participation can be in the form of handling apparatus, dramatization and writing on the blackboard.

**Teacher's Gesture (TG) :**

Use of gestures is an important teacher behavior to bring variation in teaching. The appropriate gestures increase the effectiveness of verbal communication. Expression of feelings and emotions involving non-verbal behavior is called gestures. The movements of head, hands, eye movement and body for more expressive and dynamic presentation.

**Sensory Focus (SF)**:

It refers to the behavior that help in focusing the pupils attention on a particular object, concept, idea, rule or generalization, verbal, gestural or verbal-gestural focusing, calling attention to specific materials as 'listen to this', 'look at this', it is important to note, look here in the map etc.

**Change in Voice (CV):**

The attention capturing behavior of the teacher is related to the art of bringing appropriate variation or change in the tone, pitch or speed of voice, modulation of voice etc.

**Pause:**

Short deliberate intervals of silence used with conveying information, lecturing and explaining. A pause of approximately three seconds is regarded as quite effective in securing and sustaining pupil's attention.

**Change in Interaction Pattern (CIP):**

The interactive act of teaching constantly communicates between the teacher and pupil as an initiatory or responsive act. There are three main interactions namely:-

- Teacher - Group interaction
- Teacher - Pupil interaction
- Pupil - Pupil interaction

For bringing effectiveness in teaching a teacher should learn the art of bringing variation in interaction styles.

**Audio - Visual Switching:**

A teacher while imparting knowledge to her pupil uses either audio or visual medium. A teacher should change the medium in order to secure and sustain attention i.e. from

- Audio to Visual.
- Visual to Audio.
- Combination of aural or visual.

**2.7.4 Skill of Achieving Closure:**

In the skill of achieving closure the teacher can consolidate the main points by putting a new question based on the topic taught. The questions should be logically linked to cover the whole lesson as summary of the lesson. They may use charts, models, diagrams etc. for consolidation of the lesson. The teacher can review the past knowledge of the students, both previous and newly gained knowledge and also provide for future learning in the form of homework or assignments.

**Components:-**

- Consolidation of major points.
- Providing opportunities to apply new knowledge to a new situation.
- Linking previous knowledge to new knowledge and new knowledge to future knowledge among the students.
- Homework or assignment.

**Consolidation of Major Points:**

The teacher should consolidate the major points presented in the content matter at the closure or recapitulation process. It helps in remembering important points of the presented content matter at the closure. It helps in remembering important points of the lesson.

**Providing opportunity to apply new knowledge to new situation or in different situation:**

Whatever the students gain new knowledge in the lesson taught, they apply in real life situations, with proper understanding ability and interest. This will lead towards the better progress on their education.

**Linking previous knowledge to new knowledge and new knowledge to future knowledge:**

By giving different examples the teacher establishes a link from the previous knowledge to new knowledge and from the new knowledge to future.

**Home work or assignment:**

It is an important task in closure. At the end of teaching, the teacher provides home work or assignments to recall or to apply or to learn different situations related to the topic taught.

**2.7.5 Skill of Using Teaching Aids:**

The objective of preparing the teaching aids is achieved only through its proper usage. In most of the cases, the teaching aids are not shown at the proper time due to unplanned teaching.

**Components:**

- Ready for presentation.
- Suitability of presented teaching aids.
- Timely presenting of teaching aids.
- Attractiveness of teaching aids.
- Preservation of teaching aids for reuse.

**Ready for presentation:**

The teaching aids should be prepared, arranged and readily kept in the classroom.

**Suitability of presented teaching aids:**

The type of teaching aids should be appropriate to the concept and size and clarity of teaching aids should be suitable to the content.

**Timely presentation of teaching aids:**

According to the need in the teaching learning process the teaching aids should be presented. It must be used in an order of presentation.

**Attractiveness of teaching aids:**

For the students to learn quickly and to develop interest in the concept, the teaching aids should be attractive.

**Preservation of teaching aids for reuse:**

The used teaching aids should be preserved for reuse whenever their need is felt in the teaching learning process.

**2.7.6 Skill of Blackboard Writing:**

Blackboard is the powerful teaching aid to teach. A good blackboard work brings clearness in perception and it can be suitably used for displaying notes and diagrams during a lesson and for working through calculations in a classroom situation.

**Components**:

- Legibility of Handwriting
- Neatness in Blackboard works
- Appropriateness of Blackboard works
- Cleaning board after usage.

**Legibility:**

The legibility of the handwriting on the blackboard should be visible enough to be seen by the whole class.

- Each letter should be distinct.
- Adequate spacing between two letters and two words.
- The size of small letters should be same and size of the capital letters should also be same.
- The size of the capital letters should be slightly greater than that of the small letters.
- Thickness of the lines should be of same width.

**Neatness in Blackboard works:**

It is necessary to make the Blackboard neat and clean before starting the class.

Straightness of lines: The neatness of the blackboard increases if it is in straight lines parallel to the base of the blackboard. There should be adequate spacing between the lines. In order to keep the blackboard work neat and clean there should be no overwriting. Erase the unrelated and irrelevant work that is not required. Retain the relevant matter for clear understanding.

**Appropriateness of blackboard work:**

Continuity in points should be followed. Brevity and simplicity should be maintained. The teaching points should have some continuity in the content and write only a few important points bearing in mind that the chalkboard is not suitable for elaborate work. At the time of writing, the teacher should stand on one side of the blackboard with an angle of 45 degrees, so that the written work is visible to the learners on the blackboard.

**Cleaning board after use:**

Keep the chalkboard clean. Teacher should clean the blackboard from top to bottom and not spread dust in the classroom. After completion of the lesson, the teacher should clean the entire blackboard before leaving the classroom.

**2.7.7 Skill of Probing Questions:**

The skill of probing questions involves going deep into student's response through step-by-step questioning with a view to elicit the required response. Each question is followed by a variety of student responses, such as no response, wrong response, partially correct response, incomplete response and correct response.

The specific sets of behaviors (student response situation) are outlined in the ensuing skill components the skill of probing questioning comprises component behaviors of seeking further information, redirecting, refocusing and developing critical awareness.

**Components:**

- Seeking further information (SFI)
- Refocusing (RF)
- Redirecting (RD)
- Developing Critical Awareness (DCA)

**Seeking further information (SFI):**

Dealing with an incomplete response situation and partially correct response situation consists of eliciting additional information from the responding pupil to bring the initial response to the expected response in a more complex and novel situation.

**Refocusing (RF):**

To deal with 'correct response situation' the teacher refocuses pupil response and wants the pupil to relate it to some area already learnt or requires the pupil to consider the implications of the given response in a more complex and novel situation.

**Redirecting (RD):**

For more student involvement and to deal with 'no response' 'incomplete response' and 'partially correct' response, the same question is redirected to many students for response.

**Developing Critical Awareness (DCA):**

This involves asking ‘why’ and ‘how’ of the correct response the teacher expects the pupil to justify her response or explain its rationale. This process develops the critical awareness of the pupil.

**2.7.8 Skill of Reinforcement:**

The term ‘reinforcement’ is taken from psychology. The skill of reinforcement is used to avoid the unpleasant experiences and replace it with the pleasant experiences. The pleasant experiences are called positive reinforcements and the unpleasant experiences are called negative reinforcement. The positive reinforcement are used for strengthening the responses or behaviors of individuals and negative reinforcement for weakening or eliminating the undesirable responses or behaviors. These reinforcements are in the form of verbal and non-verbal. The reinforcements are classified into four components**:**

- Positive Verbal Reinforcements (PVR)
- Positive Non-Verbal Reinforcements (PNVR)
- Negative Verbal Reinforcements (NVR) and
- Negative Non-Verbal Reinforcements (NNVR)

**Positive Verbal Reinforcements (PVR):**

The verbal behavior (statements) of teacher accepts student’s feeling, repeats and rephrases student responses, summarizes student ideas etc. Using praise words such as ‘good’, ‘very good’, ‘excellent’, ‘fantastic’, ‘splendid’, ‘right’, ‘yes’, ‘correct’, ‘fine’, ‘continue’, ‘go ahead’, ‘carry on’, ‘well done’ etc., and extra verbal expressions such as ‘uh-uh’, ‘ho-hum’ etc. are positive verbal reinforcements.

**Positive Non-Verbal Reinforcements (PNVR):**

Teacher’s gestures, conveying pleasant feeling and approval of student responses such as smiling, nodding of head, delighted laugh, clapping, keeping eyes on the responding student and giving ear to the student indicate positive non-verbal reinforcements.

**Negative Verbal Reinforcements (NVR):**

Teacher’s statements such as the use of discouraging words like ‘no’, ‘wrong’, ‘incorrect’, ‘stop it’, ‘you don’t know even this’, ‘I do not like what you are doing’, ‘do not do like this’, ‘that is not good’ etc., correspond to negative verbal reinforcements.

**Negative Non-Verbal Reinforcements (NNVR):**

The teacher demonstrates her disapproval to indicate non-verbal expression of a student's inappropriate behavior or incorrect response to her questions. Frowning, raising the eyebrows, hard and disapproving stares etc. are the non-verbal negative reinforcements.

The first two components positive verbal reinforcements (PVR), positive non-verbal reinforcements (PNVR) indicate the skill of desirable reinforcements. The later two components negative verbal reinforcements (NVR) and negative non-verbal reinforcements (NNVR) indicate the skill of undesirable reinforcements. The undesirable reinforcements, which affect students learning adversely, are to be avoided as far as possible. The teacher can withdraw the negative reinforcements in classroom interaction by practicing the reinforcement skill in microteaching.

**2.8 LINK PRACTICE IN HOME SCIENCE**

Experience has proved that the provision of a bridge between microteaching and full-class teaching definitely helps the trainees to transfer effectively all the skills learnt in the microteaching sessions.

'Link practice' is the term used to describe such a bridge. It normally involves the integration of all the skills.

Link lesson is a transitory phase between microteaching and the regular macro-teaching in normal classrooms. The link lesson is prepared for the duration of 20 minutes starting with the skill of induction and ending with the skill of closure with two or three other skills being covered in between these skills with 20 to 25 students.

There is a very big contrast between microteaching and full-class teaching practice. Micro teaching is practiced under stimulated conditions, the macro-teaching present's problems of classroom management. Hence in link practice, the trainees are given the chance of teaching practice to the pupil. The skills of introducing the topic and closure which are not practiced in micro-teaching sessions are now effectively used in the proper place in the link lesson. There is no meaning to practice these two skills in micro-teaching sessions in isolation. It is most inappropriate in microteaching to introduce a lesson which does not take place and is also impossible to provide closure to a lesson which has not taken place at all. Hence, in the link practice lessons, trainees gain sufficient practice and control over the use of components of the skills appropriately with the content.

In the microteaching sessions the trainees learn the use of teaching skills and their components individually taken one by one in the simulated, simplified and controlled situations. It is the integration of two or more selected microteaching skills which forms a macro-lesson that is of 40 or 45 minutes period. The transition from a microteaching session to a macro teaching session is done by taking a few

selected skills, with more content than in a micro lesson through link practice. A link lesson gives a student trainee an experience of a real class.

A full unit can be chosen for link practice. The unit is divided into several smaller portions and with a few selected micro-skills a link lesson can be framed. This gives an opportunity to use even those skills which may not have been practiced before. When mastery has been attained in various skills the teacher trainee is allowed to teach the skills together. The training programme that integrates various isolated skills is known as link practice.

**2.8.1 Need for Link lesson:**

The Link lesson is prepared for duration of 20 minutes starting with the skill of set induction and ending with the skill of closure with two or three other skills being covered in between these skills. The duration of the link lesson is longer than micro teaching and involves 20 to 25 students, link lesson covers 3 to 4 skills. Link lesson is a transitory phase between micro teaching and the regular macro teaching in normal class rooms.

**Micro teaching → Link Lesson → Macro teaching**

| **Particulars**: | **Micro teaching** | **Link Lesson** | **Macro teaching** |
|---|---|---|---|
| **Time Limit:** | 5-7 minutes | 20-25 minutes | 40-45 minutes |
| **Class Size:** | 5-10 students | 20-25 students | 40 students |
| **No. of Skill**s: | 1 skill | 3 to 4 skills | All the skills |
| **Content Size:** | One concept (small) | A part of unit | A whole unit |

It helps the trainee to transfer effectively all the skills learnt in the micro teaching sessions.

It helps to bridge the gap between training in isolated teaching skills and the real teaching situation faced by a student teacher. Linking of different teaching skills is characterized by the appropriateness of the use of skills, adaptability to other situations, proper sequencing of the skills and optimum proportion of each skill in teaching and coordination of different elements involved in teaching.

This linking may be done in two ways that is integration as a whole. Integration in parts means 3 or 4 teaching skills are integrated and transferred into a lesson. Integration as a whole means all the individual teaching skills by taking them as a whole and transfers them into a real teaching situation.

**Lesson Plan Format**

**LESSON PLAN**

**NAME OF THE STUDENT TEACHER:** M. Suganya

**NAME OF THE GUIDE TEACHER :** Mrs.C. Jhansi

**NAME OF THE SCHOOL :** Chennai Girls Higher Secondary School

**CLASS :** XI

**SUBJECT :** Family Management and Child Care

**UNIT :** Pre-School Children

**TOPIC :** Neo-Natal Period and Pre School Period

**DATE :**

**NUMBER OF STUDENTS :** 38

**General Instructional Objectives:**

The student

- Acquires knowledge about the development of neonates and pre-school children
- Understands the transitional change from neonate to pre-school stage
- Applies his or her knowledge in day today life, while handling the pre-school children.
- Develops the skill to explain the developmental growth of a neonate.

**Specific Instructional Objectives**:

The student

- Recalls the fact that growth and development are inter-related.
- Recognizes the specific qualities of a neonate.
- Gives explanation about the pre-school children.
- Classifies the growth pattern of pre-school children.

- Differentiates between neonate and pre-school period.
- Lists out the needs of a preschool child
- Analyses the factors that satisfy the needs of preschool children.
- Enumerates the principles involved in habit formation
- Infers the causes of habitual problems.

**TEACHING MATERIALS:**

A **chart -** Development of a neonate

A **flipbook-** Growth and development of pre-school children

**Flash cards** - Factors affecting growth and development of neonate to pre-school stage.

**TEXT BOOK USED**: Family management and child care book of Tamil Nadu

**REFERENCE BOOK**: Nutrition and dietetics- Srilakshmi

| STEPS/ SPECIFICATIONS | CONTENTS | TEACHING - LEARNING EXPERIENCE | EVALUATION |
|---|---|---|---|
| **MOTIVATION** | **Teacher**: Good morning students<br>**Student**: Good morning miss.<br>**Teache**r: Have you sometime touched a new born baby?<br>**Studen**t: no miss, yes miss (alternate responses from the | | |

| STEPS/ SPECIFICATIONS | CONTENTS | TEACHING - LEARNING EXPERIENCE | EVALUATION |
|---|---|---|---|
| | students)<br><br>**Teacher**: will a new born baby be the same after 2 years?<br>**Student**: no, miss. Baby will grow big the baby will stand, walk. It will talk, smile, cry…. | | |
| **INTRODUCTION**<br>**PRESENTATION** | **Teacher:** absolutely, there are certain changes that place in a new born-baby<br>Today we are going to learn about the "neonate and pre-school children" | Teacher writes the topic on the blackboard | |
| **DEFINES** | **Neonate:**<br>The new born baby, from birth to two weeks of time is called a neonate<br>It is fully a dependant period. | Teacher defines a neonate. | Define neonatal period |
| **EXPLAINS** | The neonate depends wholly on others. In the womb the environment is highly suitable. The | The teacher Shows **the chart** | Explain the neonatal period |

| STEPS/ SPECIFICATIONS | CONTENTS | TEACHING - LEARNING EXPERIENCE | EVALUATION |
|---|---|---|---|
| | needs are received from the mother, but after birth the neonate starts breathing, intake, digests and excretes the waste. All the activities of a child are coordinated during this period.<br>Growth is rapid, co-ordination of muscles takes place, maturity of the nervous system occurs. Development of the senses occurs. | Teacher explains the neonate period.<br><br>Students underline the important words in the text book.<br><br>Teacher explains the pre-school period<br>Students keep following | |
| **DEFINES**<br><br>**LISTS OUT** | **Pre-school stage**:<br>It is an important period in a man's life. Changes occur in all aspects of growth. 2nd week to the 2 years of age is pre-school<br><br>**Important features of pre-school period:**<br>• Physical growth occurs to certain | Teacher explains the aspects of preschool period. | Define pre-school period. |

| STEPS/ SPECIFICATIONS | CONTENTS | TEACHING - LEARNING EXPERIENCE | EVALUATION |
|---|---|---|---|
| **EXPLAINS** | level.<br>• Social growth takes place.<br>• Intellectual growth expands<br>• Listening skill develops which in turn leads to the intellectual growth.<br>• The child learns to express and control its emotions.<br><br>**Needs of a pre-school child:**<br>a) Biological needs: food, water, oxygen, rest, sleeps and safety of the child, entertainment, recovery from any disease, falls under this category. | Teacher explains about the needs of pre-school children | List out the important features of pre-school children.<br><br>Enumerate the needs of a pre-school child |

| STEPS/ SPECIFICATIONS | CONTENTS | TEACHING - LEARNING EXPERIENCE | EVALUATION |
|---|---|---|---|
| **EXPLAINS** | **Social needs:** basically indicates the emotional need. When the emotional needs are not fulfilled, the child then may develop habitual problems<br>Love, affection, freedom and expression of the feelings leads to a cordial relation with the society.<br><br>**Intellectual need:** This helps the child to achieve the goal by thinking reasoning, coordinating the facts. By answering questions, by creating the suitable environment, one can kindle the interest and thereby help the intellectual growth.<br><br>**Factors fulfilling the** | The students listens keenly<br><br>The teacher writes the needs on the black board.<br><br>Teacher shows the **flash cards** on growth of neonates and preschool children<br><br>The students interestingly watch them. | Write about the intellectual need of a child.<br><br>Explain the factors fulfilling the needs of |

| STEPS/ SPECIFICATIONS | CONTENTS | TEACHING - LEARNING EXPERIENCE | EVALUATION |
|---|---|---|---|
| | **needs of children**:<br>Learning the features of child growth and development.<br>Our aim and expectations should be clearly explained to the child.<br>Creating suitable environment.<br>To be the role model for the child.<br>Accept and respect the child.<br>Help the child reach his destination. | The teacher shows the **flip** book on growth and development of pre-school children.<br><br>The students eagerly follow that. | children |
| **DEFINES**<br><br>**LISTS OUT** | **Habit formation:** it can be defined as the repetitive action of a child with or without any logical reason a child performs an action regularly, and then it is called a habit.<br><br>Habit forms important part in a man's life. Bad | | Define habit formation. |

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|---|---|---|---|
| | habits may not lead to a healthy development; hence good habits must be inculcated during this period. | | |
| | **Principles developing good habits:** | Teacher explains the principle of developing good habits | Explain the principles in developing good habits |
| | **Principle of repetition**: to form a habit certain action should be repeated. | | |
| | **Principle of effect**: the effect of an action makes the child decide whether to continue with it or to stop it. So better ton praise or to reward a child to develop its action s a good habit. | | |
| **EXPLAINS** | | | |
| | **Principle of learning:** the maximum habits are from the parents, only few habits are learned. | | What is principle of continuity and consistency? |
| | **Principle of continuity** | | |

| STEPS/ SPECIFICATIONS | CONTENTS | TEACHING - LEARNING EXPERIENCE | EVALUATION |
|---|---|---|---|
| **LISTS OUT**<br><br>**EXPLAINS** | **and consistency:** while developing a habit, we should be strict in the repetition of the action or else it would be forgotten easily.<br><br>**Set up definite specifications for new habit:** if we like to develop a regular learning habit in a child, at what time and what portion the child should learn, must be insisted.<br><br>**Start along the right track**: the right track should select at the early stage.<br>**Habitual problems:**<br>**Causes:** physical causes<br>Feel of insecurity<br>Parental<br>Bad role models<br>Self experience of the child. | Teacher lists out the causes of habitual problems.<br>The students note down the points in note books.<br><br>Teacher explains the habitual problems<br><br>Students listen | When to start along the right track?<br><br>What is habitual problem? |

| STEPS/ SPECIFICATIONS | CONTENTS | TEACHING - LEARNING EXPERIENCE | EVALUATION |
|---|---|---|---|
| | **Habitual problem found among children:**<br>**Bed wetting:** Insecure children do this. Instead of punishing, the child should be motivated to develop confidence in them.<br><br>**Thumb sucking:** Hunger and insecure feeling causes this. Love, affection and lovable family environment should be availed.<br><br>**Telling lies:** fear of punishment leads to tell lies; the environment must be created to make the children speak the truth. | | What are the habitual problems found in children? |

**RECAPITULATION:**

- Rapid growth occurs, and senses develop during neonatal period.
- Physical, social, intellectual growth occurs during pre-school period
- The Childs's needs are biological, social and intellectual.
- Learning and understanding a child, will lead to the fulfillment of its need.

- Repeated actions lead to habit formation.
- Good habits should be formed at early stages.

**ASSIGNMENT:**

- Explain the neonatal period.
- Give the special features of the pre-school children.
- Enumerate an account on habit formation.

**Signature of the Guide teacher** **Signature of the Supervisor**

**Signature of the Student trainee**

**2.9 THE HOME SCIENCE TEACHER**

A poor teacher tells;

An average teacher explains;

A good teacher demonstrates;

And a great teacher inspires.

For an effective teaching of Home Science, we need well equipped Home Science laboratories but more important than this we need well-qualified Home Science teacher, the quality of education depend mainly upon the quality Home Science teacher and not on the material facilities only. An efficient and resourceful Home Science teacher carry on her work quite efficiently even with inadequate facilities. But it is rather a sad commentary that the continued failures to recognize and reward merit, and salary scales which always keep teachers blow the margin of subsistence have all conspired to bring about a sense of frustration among teachers. The result is an attitude of indifference towards effective teaching. It is, therefore, of primary importance that the plight of the teacher should be improved first in order to make the teaching most efficient and effective.

**HOME SCIENCE TEACHER'S CHARACTERISTICS**

Besides possessing the personal qualities, every teacher should possess, the following broad requirements;

1. Basic academic qualifications.
2. Trained in the modern methods and techniques.
3. Practical knowledge of child psychology and of the learning process.

- **Basic academic qualifications:**

The basic academic qualifications are laid down by the education department or the employer but in all cases the Home Science teachers in higher secondary school should have B.Sc., Home Science and M.Sc., Home Science Degrees.

- **Trained in modern method and techniques:**

New methods and techniques are being employed in the teaching of Home Science. Home Science club, improvisation of apparatus, programmed instruction, teaching materials, and many other new concepts are coming in, it is therefore essential that the Home Science teacher should be trained in:

i) The class-teaching methods and planning of lessons.
ii) Laboratory organization.
iii) The techniques necessary for vitalizing Home Science teaching programme in schools.
iv) The care and repair of apparatus.
v) Preparation of instructional materials, etc.

- **Practical knowledge of child psychology and of the process of learning:**

The teacher should have knowledge of child psychology so that the teacher may guide the student according to their interests, capabilities and help in educational, vocational and personal problem. The teacher should also know the different laws of learning which can be applied to Home Science teaching.

**Some Suggestions to Home Science Teachers:**

1. The first requisite for the Home Science teacher is that she should have a thorough grasp of the subject-matter that she has to teach. Preferably she should plan her lesson before-hand.
2. The teaching should be pupil-centered rather than subject or teacher-centered. The approach should be inductive.
3. Adequate opportunities should be provided for the individual laboratory work by students.
4. She should keep herself in touch with the latest development in Home Science.
5. Teaching-learning process should be a co-operative endeavor of the teacher and the pupils. She should give knowledge to the students and at the same time learn with them.

6. She should make good use of teacher's manuals and laboratory guides, if available.

## 2.10 INSTRUCTIONAL STRATEGIES IN TEACHING HOME SCIENCE

### 2.10.1 Heuristic Method

Heuristic is derived from the Greek word **HEURISKIN** meaning discovery. This Method was advocated by Professor Armstrong who felt that by placing a student in the position of a discovery he would learn much more than being merely told about things. It is based on the principle of learning by doing. Heuristic method is basically training in scientific method. Knowledge is of secondary consideration where student learns to collect data, interpret data and arrive at solutions by rejecting superfluous statement.

The term **"Heuristic Method"** can be used to describe any problem solving or creativity technique that involves creating a basic model as a method or trial- and error approaches.

**Objectives of Heuristic Method:**

The objectives are to:

- Develop in the students the habit of enquiry and research
- Instill in the student the habit of listening observing, asking and discovering
- Make the students more reflective
- Lay the foundation for future learning
- Inculcate the spirit of scientific inquiry
- Heuristic Method also gives all the opportunities to the students to acquire knowledge which is fully based on learning by self experimenting

**The essential conditions for Heuristic learning are:**

- Freedom of action to the student

- Providing a responsive environment
- Guidance of the Home Science teacher
- Encouragement to continue learning through Heuristic method

**Role of the Home Science Teacher:**

- The success of the Heuristic method depends on the teacher.
- Finding a suitable problem to the success of the method. The Teacher should keep in mind the age, ability and level of the students along with the facilities available.
- The teacher should act as a guide and instructor to the students providing them with sufficient background information and help.
- Detailed instruction sheets should be given to the students.
- The teacher should help in developing values and attitude consistent with Home Science, by allowing freedom of thought and action.
- Arrangement for supplementing the students' knowledge should be made by the teacher with library facilities or field trips.
- A gifted teacher should help the students to draw inferences from their experiments and observations.

**Merits of Heuristic Method:**

- It is student centered method that involves "learning by doing".
- It is a method where student's show utmost interest in training that develops scientific attitude.
- It exploits the full potential of the student's capability as it involves competition among students.
- Every student gets an opportunity to interact with the guide during this method thus enabling individual attention.
- It encourages learning with clear understanding and logic of the concepts which will minimizes rote learning.

**Demerits of Heuristic Method**

- Providing separate assignment of work for each and every student demands time as well as money.
- Textbook may not be a guide for all the doubts of the students which arise during execution of the work.
- Teaching faculty must be a knowledge repository to facilitate students which is hard to find everywhere.
- This method should be assisted with laboratory and library.
- This is not suitable for the lower grade students.

### 2.10.2 Dalton plan

The **Dalton plan** is an educational concept created by Helen Pankhurst. **Dalton plan,** also known as the Dalton Laboratory plan was first introduced experimentally in a high school in Dolton, Massachusetts. In 1913, Helen Pankhurst, who was for some time active in promoting the Montessori method of teaching in United States undertook to modify the traditional high school curriculum by converting classrooms into laboratories or academic workshops. Although the laboratory, under this plan, remains in the charge of a teacher, the teacher's main duty is to present an atmosphere of study, to counsel, to direct and, in general, to supervise the learning activities. The classroom is a unit for conference between pupil and teacher, rather than for lectures.

Under the Dolton plan, instead of doing traditional homework, each pupil works on long or short-time contracts, varying in length from a week to a month. She/he may not receive a new contract until the previous one has been satisfactorily completed. The contracts are a series of directive questions related to a particular unit or topic. Pupils' work at their own speed, choose the laboratory appropriate for the work in hand, and enjoy the freedom of movement, to use books, and to consult with teachers and other pupil. In some Dalton schools, group activities such as literary meetings, debates, dramatics are scheduled as well.

**Objectives of Dalton plan**

The objectives are to tailor each students program to their needs, interest and abilities to promote both independence and dependability, to enhance students social skill and sense of responsibility towards others. Bathurst developed a three - part plan that continues to be the structural foundation of a Dalton education. They are

- The House
- The Assignment
- The Laboratory

### 2.10.3Individualized Instruction

It is an instructional system suited to the needs and abilities of the learner. The teacher works on a personal one-to-one basis with the learner. It gives scope to the learner to work at her own pace. An instructional system is individualized when the characteristics of each learner play a major role in the selection of objectives, materials, procedures and time.

**Characteristics of Individualized Instruction:**

The main common characteristics are as follows:

- The learner's outcome or the terminal behavior, which we aim to achieve, is specified in operational terms.
- The behavior of the learner is measured prior to the entrance into a given instructional sequence.
- The instruction is tailored according to the needs, abilities and interests of the learner.
- The learner selects the objectives. They are active by making frequent responses in the instructional sequence.
- Immediate feedback is given by informing the results of the performance on a task.
- The learner is given freedom to go ahead at their own pace.
- The learner is led to the terminal behavior gradually step by step.
- Mastery over an instructional sequence is possible if the learner is given time and properly sequenced materials.
- Repeated testing and immediate scoring serve as proctors.
- Multi-media are possible taking into consideration the types of objectives and the characteristics of learners.

**Methods of Individualized Instruction:**

A number of methods have been adopted with great success in imparting instructions at different levels. The five methods, which involve the principle of individualizing instruction, are as follow:

- Programmed instruction.
- Personalized system of instruction.
- Computer assisted instruction.
- Teaching machine.
- Learner-controlled instruction.

**Procedure for developing individualized instructional material:**

The materials can be in the form of printed material, films, machines, laboratory sets etc. The materials are developed in the form of small learning units called modules. The module may be self-contained, partly self-instructional and include multimedia. The following procedure is generally followed.

- Select a unit; break it down into small manageable units.

- Prepare performance objectives for the learning units or modules.
- Identify the activities for the student to meet the objectives.
- Determine through a pre-test the competency needed by the students.
- Prepare an outline of the study guide- the title, the objectives, activities, some instructions to the students, exercises, self-evaluation and time of teachers' assessment.
- Try out the module with a few students and see whether sequence of instructions and available materials are adequate.
- Refine the module on the basis of the observation and comments of the students and colleagues.

**Merits of Individualized Instruction:**

- It permits each child to progress at its own pace.
- It permits each child to learn according to the interest, abilities and mode of learning.
- It increases the experiences of the child for investigation.
- It provides a learning environment that encourages the child to be motivated intrinsically.
- Immediate feedback and frequent testing act as proctors.
- Multimedia can be used in individualizing instruction.

**Demerits of Individualized Instruction:**

- It required a small class.
- More time is needed to prepare and collect materials.
- Materials for individualizing instruction are not readily available.
- It required well-equipped library, laboratory and other facilities.

**Suggestion for the teachers**

- The teacher with limited resources can implement new innovation.
- Give more opportunities to the students to express their ideas.
- Try to achieve openness in classroom relationship by providing freedom to reasonable limits.
- Recognize and accept different ways of responding to learners' individual needs and styles.
- Encourage the learner to discover and exercise her own resources to find out solutions for the problems.

- Use techniques placing learners in different roles.
- Clear the way for stretching learners' minds and abilities towards creativity and self-fulfillment.

**2.10.4 Project Method:**

Project method was propounded by W.H. Kilpatrick. It is based on the philosophy of pragmatism. It gives the children a superficial knowledge of many things. The project is a kind of life experience which is motivated by a strong desire to learn and teach. This method is a reality method of living. Project is related to home, school and community and it is very useful in teaching many topics in Home Science.

For Example: Celebration of festivals may be undertaken to provide an opportunity to students to learn interior decoration, cooking, entertainment etc., Successful completion of this method depends upon Selection, Planning, Execution and Evaluation.

**Definition of Project Method:**

"A Project is a whole – hearted purposeful activity proceeding in a social environment" **– Kilpatrick**

"A project is bit of real life that has been imparted into school."**– Ballard**

"A project is a problematic act that is carried to completion in its natural setting"**– Stevenson**

"A Project is a unit of activity in which pupils are made responsible for planning and purposing" **– Parker**

By analyzing these definitions, we see that the project has some purpose and planning to achieve in social, real and natural situations created in the school.

**Principles of Project Method**

- The principle of freedom
- The principle of purpose
- The principle of activity
- The principle of experience
- The principle of social experience (or) sociability
- The principle of utility
- The principle of correlation
- The principle of interest.

**Types of Project Method:**

According to W.H.Kilpatricks projects are of following four types:

(**i) Producer Project:**

In this project emphasis is directed towards the actual construction of a material object (or) article.

**(ii) Consumer Project:**

The objective is to obtain the projects either directly or through vicarious experience, such as reading and learning stories, listening to a musical delectation etc.

**(iii) Problem Project:**

In this project method the main objective is to solve a problem involving the intellectual process such as determining the density of a certain liquid.

**(iv) Drill Project:**

The objective of drill project is to attain a certain degree of skill in a reaction as learning a vocabulary.

**Steps Involved in Project Method:**

**I. Providing a Situation:**

The teacher can create a situation in such a way the pupil can frame themselves the problems, which are interesting to them to work as a group.

**II. Choosing the Project:**

The choice of the project is left to the students and role of the teacher is limited to guidance. Dr.Kilpatric observes the part of the pupil and teacher in school work mostly depends on who does the proposing.

- The purpose of the project should be clearly defined and well understood by the pupil.
- The project should be common and acceptable by all.
- In case of wrong choosing, the teacher should tactfully guide them to see that their project is not good and should allow them to choose another project.
- The teacher should allow the students to write down the reason for choosing / selection of project.

**III. Planning:**

Planning a project is very important for the success of a project

- The student should plan out the whole scheme under the guidance of the teacher.
- During planning maximum participation of students should be ensured.
- All the pupils' are taught to write down the plan properly.
- Pupils are encouraged to express their views and suggestions on the proposed project.

**IV. Executing:**

- The teacher should assign duties and distribute work among the pupils of a group according to their interest and abilities.
- Students are interested in reaching the goals and they must be given an assignment on referring books and collecting data.
- It is a long time consuming step in project and it requires patience to complete it.
- A single project promotes great activities of knowledge.
- The teacher should encourage, guide and watch the progress of students and should give instructions wherever needed.

**V. Evaluating:**

After the entire project of the work is over, the pupil should list down the various short coming and difficulties they faced during the process of completion of work.

**Recording**:

The students keep a complete record of work how they planned, what discussions were held, how duties were assigned etc., and finally criticism of their own work and some important point for future reference and guidance.

- The students review the project and find out the mistakes.
- Self – criticism is an important training and should not be neglected.

**Role of the Teacher in Project Method:**

- The teacher is not a dictator or a commander but a friend, guide and working partner.
- The teacher must be practical psychologist to understand the interest and requirements of the pupil
- The teacher should help the pupil to avoid mistakes. They should also help them to observe keenly and obtain information from various sources.
- The teacher should help the students in developing the character and personality by allowing them to accept the responsibilities and discharge them efficiently.

**Example:**

The teacher wants a flower garden in the school, instead of ordering the students to plant a flower; she takes the students to a flower garden. The children are pleased to see the flower and wonder, why there are no flowers in their school?

Their hearts are full of great desire to plant a flower garden in their school. The students will come back to the school, and plan the project and start the execution. They evaluate their work and record everything they do. The teacher will teach a number of subjects through this project in a correlated way.

The students will read different books to gather information and then enter into discussion. They also study the names of flowers; write application to the Principal for sanction.

**By this method (or) way, the students learn**: to find out the cost of seeds, to find out the effect of seasons main wind etc.also, they do hard work by preparing plants and flowers of papers. They get lot of information on different subjects in correlated way

**2.10.5 Team Teaching**

The present system of education demands too much from a teacher by curtailing their freedom. They have to teach same subject matter every year and forced to teach the same content to two or three section of the same class. It is very boring for them and stifles their interest in the subject. Sometimes they are assigned to teach the subject in which they have no interest to teach but she is forced to do so. More-over the present day classrooms are appropriate only for the average students. In these circumstances, when teacher and students have to work under so many constraints, we feel an urge to use team teaching.

**Meaning and definition of team teaching**:

The term 'team teaching' has been defined by several persons as they have designed and conducted experiments to understand the nature of team teaching.

Team-teaching" is a form of organization in which individual teachers decide to pool resources, interests and expertise in order to devise and implement a scheme of facilities of their schools.

**Carlo-Oslon** has defined team teaching as**: "An instructional situation where two or more teachers possessing complementary teaching skills cooperatively plan and implement the instruction for a single group of students using flexible scheduling and grouping techniques to meet the particular instruction".**

Another definition of team teaching is **"An arrangement whereby two or more teachers with or without teaching aids co-operatively plan, instruct and evaluate one or more class groups in an appropriate instructional space and given length of time so as to take advantage of the special competencies of the team members."**

**Characteristics of Team Teaching**

It may be inferred from the definitions of team – teaching that it has the following characteristics:

- It involves two or more teachers to teach a class.
- In this type of teaching, a group of teachers are responsible rather than an individual teacher.
- A team or group of teachers of the same subject work together to deal a significant content to same group of students jointly.
- It can be termed as co-operative teaching in which individual teachers plan to pool resources, interests and their expertise for teaching content for the same group or class of students.

- Every individual teacher gets appropriate instruction, space and length of time so as to use special competencies of teaching content to a group of students.

**Types of Team Teaching**:

There are different styles of organizing team teaching in schools. One of the common methods adopted is that the teachers teaching the students of same standard and subject join together collaborate and perform the task. The whole team can plan the lecture and discuss which teacher is best suited for lecture for small group discussion, for guiding library work, for setting up demonstration and visual aids that can be used in presentation in large groups and for preparing evaluation materials. Each of the members in the team has a specific assignment.

All the students of a section meet at the large hall for a large group instruction. One teacher gives a lecture and another teacher demonstrates. This lecture is arranged after thorough preparation in consultation with the other teachers in the team. The purpose of the lecture is to motivate the students and initiate them in the learning activity. Team teaching can be effective only when the lecture in a large group is immediately followed by small group discussions, under the guidance of all the teachers in the team. The large group is split up into small groups of homogenous abilities and the teachers pay individual attention and work as counselor or consultant to the small groups. The homogenous grouping can be accomplished on the basis of student's abilities, interests, needs and achievements.

Another style of team teaching can be that the team members join together, discuss the topics, plan the work, prepare the teaching aids and then go to their respective classes and teach the subject matter. In yet another approach, when a topic of common concern to different disciplines is to be discussed, teachers of these subjects after proper planning together, can go to the same class and teach the subject matter in co-ordinate manner. One teacher is followed by another teacher and the discussion is completed from each one's point of view. This may bring about the inter relatedness of knowledge through discussion by different subject teachers.

**Objectives of Team Teaching:**

**The Team teaching strategies have been designed to achieve certain objectives as**

- To make the best use of expertise of teachers under team teaching.
- To improve the quality of teaching. The services of the expect teachers are shared by a large number of students.

**Principles of Team Teaching:**

The team-teaching is based upon certain general principles which are helpful in organizing team teaching. The principles provide a guideline for planning and organizing team teaching. The following are the important principles of this team teaching.

### i) Principle of size and composition:

The size of the group or class should vary according to the objectives or purpose of team-teaching for example if the purpose of team-teaching is to remove the difficulties of the students in certain topic of a subject obviously, the size of the group should be small involving the students who have similar type of difficulties.

### ii) Principles of time factor:

The team-teaching is a well organized teaching task, and therefore time schedule should be prepared by allotting appropriate time to lead lecture task, and group work or follow up task. In this type of teaching time arrangement should be fairly fluid.

### iii) Principles of learning environment:

Every subject requires its own learning situation or environment. Therefore, learning environment must be generated by employing appropriate teaching aids and equipments. e.g. - laboratory, workshop, fieldwork, good library and lecture room etc.

**Procedure of organizing Team-Teaching**:

The team-teaching serves several purposes of teaching and it has different forms or types. Therefore, it is difficult to provide a general procedure for organizing team-teaching that it involves the following steps.

**Step 1: Planning for team-teaching**:

This step involves the following activities which are decided by the team members.

- Deciding the topic to be taught.
- Writing the terminal objectives in behavioral items.
- Identifying the entering or initial behavior of the learners of the group.
- Preparing a tentative schedule of teaching.
- Assigning duties to teachers, considering their interest and competencies during lead lecture, follow up work and supervision.
- Fixing up the level of instruction.

These activities are finalized by the team of teachers who are taking part in the team-teaching. In planning of team-teaching expertise of every teacher must be fully utilized. There should not be imposition of activities on them.

**Step 2: Organizing team teaching**:

The organization of team-teaching is decided by considering the purpose or needs of the learners of the group. The following are the general activities which are usually performed by team of teachers.

- Determining the level of instruction: Since questions are asked to explore the background of the learners.
- Presentation of lead lecture by a competent teacher of the team: Other teachers listen to the lecture and mark down the elements of the topic which are not easily understandable to the learners group or not appropriately presented.
- Follow up work, the other teacher have to supplement the clear lecture by explaining the elements of the topic in a more simple way so that learners can understand easily.
- Providing motivation or reinforcement by teachers to the learner in both the situation: Lead lecture of follow up work.

**Step 3: Evaluating team-teaching:**

The evaluation is an important aspect of any type of teaching. It is helpful to measure the performance of learners which determines the level of achievement of the objectives. It also provides the reinforcement to team members. Thus it involves the following activities.

- Asking oral questions, writing questions and practical work. Each question should measure a particular objective of team teaching.
- Taking decision about the level of performance and realization of the objectives.
- Diagnosing the difficulties of the learners and provide the required remediation.
- Revising the plan and organizing phases of team teaching on the basis of evaluation of the students.

**Advantages of Team-Teaching:**

The team-teaching is a perspective and economical device of teaching to cater to the needs of the students. It is highly flexible.

- The team teaching utilizes the competencies of the teachers.
- It creates the learning environment for better comprehension and mastery over the subject among the learners.
- It provides an opportunity for free discussion in a small group work.
- It develops the team spirit and the team members utilize the best use of multimedia. Time and energy are saved by team teaching. It maintains the discipline in the class and creates a comfortable environment of learning.
- It is highly flexible method of teaching while traditional methods of teaching are rigid.

**Delimitations of Team-Teaching:**

With all the advantages, the method has got some limitations.

- It is very difficult to seek co-operation among teachers to work jointly in teaching-learning situation. There is no mutual regard and respect among the teachers. Every teacher considers themselves as expert of the subject. Every teacher has their own style of teaching.
- The teachers do not like to deviate from the routine method of teaching and they do not prefer any change in the system of education. Generally they are of the opinion that this can be used is Western Countries not in Indian Schools. This type of attitude of teachers hampers the progress and improvement of educational system.

### 2.10.6 Lecture – Demonstration Method

Lecture-Demonstration method is considered to be a method superior to lecture method as it combines the advantages of both the lecture method and the demonstration method. In this method both the teacher and the taught are active participants, in the process of teaching. In this method, the teacher performs the experiment before the class and simultaneously explains what he is doing.

**Merits of Lecture – Demonstration Method:**

- It is a psychological method as active participation and interest of the students takes place in the learning process.
- Students of varying abilities can use this method of teaching
- It is economical method, when compared to purely student – centered methods.
- It leads the students from concrete experiences to abstract concepts.
- It encourages student's participation in learning.
- It trains mental abilities such as power of observation, reasoning and drawing inferences.

**Demerits of Lecture – Demonstration Method:**

- It does not provide first – hand experiences to the students.
- It does not provide for individual differences. It caters to the needs of average students.
- It does not develop manual and manipulative skills and cannot be a substitute for laboratory method.
- If not very attentive, the students may fail to observe minute details of the demonstration.

### 2.10.7 Discussion Method

It is a free and face to face exchange of ideas .Discussions are useful to stimulate group thinking in a class. Discussions are more effective than a lecture in clarifying and thinking. Discussions can be conducted with the teacher as the leader, and the pupils participating in it or pupils can be divided into small groups, each having its own leader.

**Following points should be kept in view which helps in making the discussion successful.**

- The topics for discussion should be of common interest to students.
- Teacher should notice that every one participates in the discussion. The whole essence of discussion is "Thinking together".
- Teacher should establish a favorable atmosphere in the class before starting the discussion.
- The teacher should talk bare (minimum) and also should not allow any one student to dominate, the whole discussion.

- It is the responsibility of teacher to see that the discussion remain a discussion and it does not change into a debate.
- Teacher should examine on answers of the students they provide and they should not allow a student to go beyond the scope of topic under discussion.
- Teacher has to maintain discipline among students, and allow speaking one at a time.

**Conditions Necessary for Effective Group Discussion**:

People think together effectively only when conditions are favorable. Every person in a group needs.

- A sense of belonging.
- A share in planning the goals
- A feeling of contributing to human welfare
- A clear picture of what is expected of the group
- Definite reigns of progress towards the goals set.
- Maximum discussion should come from the group members. The black board plays an important role in teaching as well as group discussion.
- Clear thinking helps all members to keep the points of discussion in view.

**Actual Process of Discussion:**

**The following points to be kept in mind, when the discussion is in progress.**

- At the time of discussion, effort be made, not to ask question to a particular group unless there is somebody trying hard and determined to put their ideas.
- Do not interfere when somebody speaks on a particular point
- The teacher should not impose her own views on others. The students must be guided by democratic principles.
- There should not be any deviation from discussion.
- All the discussions should be closed with accurate summaries.
- Discussion must not flow from a member to the leader and leader to another member.

**Evaluation:**

Each individual participating in a group discussion should evaluate whether the discussion has helped to improve their knowledge and information. Evaluation has brought about any changes in attitudes and ideas and has enhanced the range of her interest in the subject.

**Techniques of Discussion**

- Panel Discussion
- Symposium and study circle
- Debate
- Buzz Session
- Workshop technique
- Seminar
- Brain storming

**Panel Discussion**

Panel discussion is a discussion on specific topic among a selected group of persons under a leader and presents various views before an audience. No speeches are made by members, only conversation is carried out formally. The number of participants in a panel may be from 4 to 10 persons. Six or 8 in addition to the leader are ideal – large enough for variety, small enough for genuine conversation.

A variation of panel discussion is "Opposite Panel". In "Opposite panel the class is divided into two groups facing each other. One group asks question and other answers. The groups are then reversed. After the panel has finished its discussion, the group is free to put questions to the panel or make comments on observations made by panel members.

**Steps in Conducting Panel Discussions:**

- **Selection of the Topic:**

  The topic after selection is put in the form of questions.
- **Selection of the Members:**

  The members of a group for panel discussion should be selected with care. While selecting the members for a group, various qualities of the pupil such as Voice, Manner of Speech, Willingness to share ideas etc., be given due consideration.
- **Preparation:**

  To ensure clarity, members may elaborate on their ideas with meaningful discussion. The members should come with full preparation for discussion.

- **Time For Discussion:**

  Panel Discussion, minimum of one period should be allotted (i.e. 45 minutes of time)

- **Seating Arrangement:**

  Panel Discussion can be arranged periodically or particularly according to the need at the higher education stage. They are seated in semi – circular form. The audience should be enabled to clearly view and hear the panel discussion personal.

**2.10.8 Seminar:**

This is an effective method to increase the self study of students and to bring depth in subject knowledge. In this technique the students are given a topic, and then they are asked to prepare a detailed presentation after reading different type of books or carrying out experiments in the laboratory or through a survey. If paper reader is successful to answer all the questions and he / she are able to satisfy all the listeners, then his paper is considered good presentation.

In a seminar a group of pupils may investigate a problem and report their dictums for discussion and criticism. Each individual may either carry out a separate individual investigation or a part of a large project. Then reports are read and analyzed. Each report will be critically assessed by the seminar group. When the reports or papers are read out the participants are given opportunity to clarify the points. Thus the seminar technique imparts training in planning, organizing and collecting data and then discussing and evaluating the same. Besides promoting group sprit and an attitude of co-operation, the pupils get training in self-learning.

**2.10.9 Symposium:**

In a symposium each member of the group is expected to give his views to the audience through speeches or paper presentation.

At a Symposium number of persons who have sound knowledge of the subject and who hold different views on it are asked to present views in short speeches. In Symposium, the topic is known in advance and the participant presents their papers. It is presided over by one of the participants and another one from the participant act as stage secretary.

In symposium, the participants present their views before the audience about various aspects of a selected problem or topic through speeches or paper readings. The main purpose of the symposium is to clarify controversial questions or ideas. The audience listens to the discussions each person form their own conclusion concerning the validity of the points of view presented.

In a symposium a number of pupils present their views concerning different aspects of the same problem. It is not a form of debate but only presentation of views. The teacher or a student could be the chair person. When all speakers have given their views, the president summarizes it and gives them remarks. Symposium could also take the form of a study circle where the different speakers read their paper concerning various topics. The papers may be open to a discussion.

Symposium as a form of group discussion can be of much use.

1) The symposium can stimulate the breadth of understanding.
2) It will help to develop a much needed attitude of tolerance and open mindedness.

**2.10.10 Role Playing Method**

In this method, students are given chance to play the role of the teacher in the class. Thus it becomes a dramatic method.

**Steps played in role by teachers**

- Teacher, teaches the topic
- calls out the student 1 by 1
- to teach the same topic
- when student teaches, classmates answer her questions
- students take down notes
- suggestion and feed back is given

Reading of Home Science text book and listening to the class do not help the students, to have different experience; the student has to do a role – playing.

**In role – playing**

- The student gets an opportunity to play
- The student will really face a particular social situation
- The understanding level of student increases
- They are self – motivated by them.
- Confidence level of the student will be improved.
- They develop not only intellectual understanding but also experience emotions.

**In role-playing the following steps are followed:**

- In the first step, outline of the role playing programme is prepared.

- Secondly, the pupil teacher decides when and how to play the role of a teacher.
- Topic to be taught is selected in the third step. Teaching strategies, techniques and skills to be used are selected.
- Observation procedure and technique are selected in fourth step.
- The outline of the observation is prepared and observation is noted down in format, this is fifth step.
- Finally after role presentation criticism and suggestion will be taken for improvement.

**Suggestions:**

In order to make this method success, a teacher should keep the following points into account. Subject teacher should be present in the class at the time of role-play. Subject teacher should be in the class at the time of criticism and should give appropriate suggestions to the students. The topic must be same for all the students therefore comparison is possible.

**Advantages of Role Playing:**

- There is a chance for the development of the power of self creativeness and activity of the children.
- Pupil acquires knowledge in subject.
- Students can remove their own mistakes through imitations.
- Students learn methods of analysis, synthesis and evaluation.
- It develops critical power of students

**Disadvantages of Role Playing**:

- This method requires some technical knowledge in which most of our teacher lack, it is applied only for gifted teachers who have sufficient background and training.
- It is time-consuming device.
- All the topics of Home Science cannot be taught by the help of this method.

- Even if the method is not free from defects, it is unanimously agreed that is quite successful and effective method of teaching Home Science. In order to implement this method effectively and successfully the teacher should be careful about following facts.

  a) The actors should not be felt-conscious before the group while playing their respective roles

  b) They should try to project themselves fully, even when a situation is not real.

  c) They should be spontaneous

  d) The group set into the spirit of role – playing in order to discuss the problem.

  e) Role playing should not be either over used or frequently used (or) in appropriately used.

Education is a dynamic science more and more contributions to it are making it richer day by day. New method of teaching with definite procedures is coming into vogue with the changed modernized concepts. No other method can be recommended for use of teaching any particular lesson of Home Science. The success of this method depends upon the end product of teaching. It is suitable in different situations. It makes teaching interesting, functional continuous and easily acquired. A successful teacher of Home Science is one who is familiar with all methods of teaching, but who select the one which suits her best at a particular time and place, for directing the learning process towards the achievement of aims and objectives.

### 2.10.11 Overhead Projector

The overhead projector is so called because the projected image is behind and over the head of the speaker. Overhead projectors are used for direct or indirect projections.

A triacetate film of minimum thickness placed over the illuminated area. The written matter over the surface can be presented on the screen. Instead of presenting static pictures on the screen, the teacher can develop or frame diagrams. The teacher with the help of a pointer can focus the attention of the class on the screen. An effective way to teach with the help of OHP is using overlays. This is an effective technique for presentation of materials in a step-by-step fashion.

**Advantage of OHP**

- Large Image: A very large projected image is available within a short distance.
- Face the audience: Teacher can always face the class, and maintain an eye contact with the pupils and at the same time point out to the details in the picture.
- Lighted room: The equipment can be used in a well lighted room which enables the teacher to have control over the class and interest by turning a switch on or off.

- Identity with the user: The audience sees the visual from the point of view as the communicator. The feeling of oneness with the communicator is created.
- Light weight: The light weight of the equipment makes it portable. Hence it is easy to carry it to the class.
- Personalized presentation: A personal approach is possible. Effective visuals cab tailor made at low cost and in a short time by the person who wants to use it. Once a transparency is made it is permanent and need not be erased as in a chalkboard.

## 2.11 LEARNING STRATEGIES

### 2.11.1 Assignment Method

Assignment method is the embodiment of both lecture-demonstration method and the individual laboratory work by the students. So, it includes the merits of both the method and is best suited for students.

The whole of the prescribed course is divided into a number of well-connected portions to be covered in the week or so, and are called as assignment.

Types of Assignments:

i) Home assignment,

ii) School assignment.

**Home assignment:**

It includes writing of answers to questions assigned by the teacher. The teachers give references from different sources concerning the topic. The students go through the text books and other sources referred by the teacher and grasp the idea of the assignment given. They write down the answers to the questions set by the teacher and bring it to the school, hand over the note-books to the teacher. The teacher goes through their answers and finds out discrepancy if there is any.

**School assignment:**

It includes the performance of experiments in the laboratory and answering of a few questions put by the teacher.

**Aims of the assignment method**:

- To provide a synthesis of various methods of learning.
- To provide students a training in information processing.
- To develop a habit of self study among the students.
- To develop the habit of critical thinking among students.
- To expose students to various resources of learning.

**Features of a good assignment**:

- It should be related to subject matter under study.
- It should be concise and balanced which can be finished by student easily and quickly.
- Its purpose should be clear and its objective be made known to the students.
- It should be so worded that it fasters thinking and independent learning.
- It should be such so as to suit to the age, aptitudes and interest of the student.
- It should be able to combine various methods of teaching.

**Teacher's Role:**

- She/he should split up the prescribed course into successive and progressive assignments.
- She should list down the objectives for each assignment which students must achieve.
- She should prepare a progress chart for each student.
- She must prepare and provide a list of reference material required for each assignment.
- To cover up the learning gaps she should prepare remedial assignment.
- She should also prepare activity sheets for laboratory work if any.

**Merits:**

- It provides the students an opportunity for self study.
- It synthesis various methods of teaching of Home Science and makes the learning process very effective.
- It provides an opportunity to the students to learn on their own pace and thus progress of the brighter students is not hindered by weaker students.
- In this system teacher gets the central role of contingency manager and facilitator of learning. The teacher acts as a guide and interferes least in the students work.
- It places more emphasis on practical work and provides students training in skill of information processing.
- It provides a feel for the scientific methods to students.

- In this method the learning process can be individualized to a great event by having differential assignment.
- It provides for corrective feedback and remediation.
- The progress chart with the teacher shows the progress of each student at a glance which gives the teacher an idea of a gifted and weaker student.
- In this process the student learns to work by herself because in laboratory she is not provided with any laboratory attendant.
- Habit of extra study is developed because a number of books for extra study are recommended by the teacher; such study helps in widening the outlook of the pupil.
- Since the burden of work lies on pupil so she learns to take responsibility.
- Since the students perform experiments at their own speed, so owning to their different speed they do not perform the same experiment at the same time. Thus a large quantity of same kind of apparatus is not required.

**Demerits:**

- It burdens the teacher with a lot of planning and this increases her work load to a large extent. It requires the teacher to prepare a well thought out scheme for the year before starting the method.
- No source material is available in the market for assignments and preparation of assignments for different students it becomes an uphill task for the teacher.
- The success of method depends on the availability of rich library and laboratory facilities. It makes the method very expensive.
- Teacher should also be vigilant to see that weak students do not get a chance to copy the answers form the notebook of brighter students.
- This method is suitable only for a small group of students.

### 2.11.2 Problem Solving Method

**Nature of Problem Solving:**

It is a method in which a specific problem is given to the students and they are required to find out the solution through objective reasoning and thinking. Everybody at sometime is confronted with serious problems or minor problems in life needing immediate solution. Therefore the problem should be of educational relevance and should have educational value and must be selected from real life situation for meeting this challenge.

According to Yoakum and Simpson problems may be of physical or mental difficulty which involves the manipulation of data.

Not only is the adult, a child also confronted with problems. He tries to satisfy his curiosity about the working of the object in the environment around. The child asks,

"Why does the sun rise in the east everyday"?

"Why does not the sky fall?" why do the birds construct nests"? Etc.,

In this course of his play, he meets certain situations which need solutions.

The main purpose of our schools is to train pupils to be useful members of our society. This can be possible only when school life is inter-linked with the society. The problem should be chosen in such a way that it can be fitted well in present curriculum and the child acts as an active participant in the entire process.

**Steps in Problem Solving Method**

- Recognizing the Problem
- Defining and interpreting the problem
- collection of data related to the problem
- organizing and evaluating the data
- Arriving at final conclusion
- Verifying the result

Children like problems and feel interested in solving. Therefore it is a very useful activity if we train our children in problem solving. Success in problem solving depends on how the problem is presented and how well the child is prepared to face it.

**Characteristics of Good Problem Solving Method:**

- The problems must be according to the age, need, mental and physical capacity and resourcefulness of the pupils.
- The problems must be real and not fictitious.
- The problems provide the maximum of activity and useful knowledge to pupil.
- The problems are solved in congenial and co-operative atmosphere.
- The problems have educational values.
- The problems are co-related with physical and social environment of pupil.

- Thus the problem solving method is quite suitable for basic educational system which emphasizes all the above mentioned points. As distinguished from the project method, the problem solving method is characterized by mental activity by critical thinking and is therefore more directly applicable to the secondary school level instruction.

### General Principles of Problem Solving Method

The Pupils must feel the problem on their own.

- The problem must include interest and values to arouse the curiosity of the children towards finding solution.
- The children must feel it worthwhile to make efforts for finding solutions to the problem.
- The problem must be stated definitely :
- After the pupils, feel that problem as their own, the teacher must see that is stated in definite terms.
- If it is defined clearly, the pupil will be able to keep those problems in mind, while working on the references.

**Selecting material for problem solving:**

- The means of solving the problem must not be vague to the pupil.
- The teacher must suggest the available resources like books, journals, periodicals etc., with respect to the problem given to the students.
- The teacher must encourage the students in collecting data from different sources.

**Solutions must be definite and clear:**

- After analyzing all the important points with respect to the problem, a tentative solution may be discussed among the students and finally it will arrive at a conclusion collectively.
- The teacher should help the pupil to apply the newly learned principle or skills to immediate problem solution.
- The manner of application will depend upon the type of problem being solved.

Thus problems become useful and educational and the method pertaining to their solution also serves a useful purpose.

### Advantages of Problem Solving Method

- **It conforms to life:**

Everyone is confronted with problems once in their life. Problem solving training in the school will help the students to form certain attitudes and skills. Therefore it constitutes a realistic method for presenting the type of experience that the pupils follow throughout their corner.

- **Develops the power of critical judgment:**

Children become interested in their study programme and develop a power of critical thinking because of self activity (or) self learning.

It is only because of vital importance in a democracy where the success of a government depends upon the judgment of the people.

- **It Makes for pupils activity :**
  The pupil is stimulated to struggle for purposeful activity, connected with pupil's everyday life.
- **Knowledge is easily assimilated :**
  Knowledge is given as a result of purposeful activity, connected with pupils' everyday life. Therefore it is easily assimilated.
- **Develops the traits of open mindedness and tolerance :**
  The pupils find that there are many rides to a problem and they listen to different point of views therefore they become open-minded in their outlook.

The teacher can promote self-confidence among pupils.

The teacher can develop the facilities of learning by doing and real spirit.

- **Enable the pupil to become independent** :

The pupils should have an ability to analyze any problem thoroughly.

Increasing Divergent thinking among students i.e., avoid spoon feeding.

Develop increase of sufficient concepts.

Doubts and obstacles characterize a problem and we reason to clear the doubts and eliminate the obstacles. Therefore people become independent when there is a solved problem.

**Disadvantages of Problem Solving Method:**

- **Requires too much reference Material:**
  There are only certain books available in the School Library. All the materials may not be available to the students, which is required for the reference
- **Takes too much time:**
  Preparation and initiation of the problem solving procedure may take a considerable portion of a teacher time. Therefore it is not possible to make a continuous use of this method.

It is difficult for the teachers to organize the content of Home Science according to the need of the students and therefore, they cannot give real problems of actual life.

- **Tends to become monotonous**:

If this method is used too frequently then it may become dull and monotonous. The teacher may not be able to impart information from her own ride. Hence this method needs to be combined with other methods.

- **May not achieve satisfactory results always:**

This method is useful only for the students studying higher classes and for those who have higher level of thinking. Therefore this method will not be satisfied for other level of students.

All the lessons (or) topic cannot be taught by this method; therefore it is unsatisfied to the teachers.

**2.11.3 Programmed Instructional Materials:**

**Features of programmed instructions as a self instructional technique**

It is primarily a programme of learning by the pupils. It is based on Skinners theory of operant conditioning. It is the process of arranging material to be learnt in a series of small steps designed to lead a learner through self instruction. The student reads on frame at a time, responds to it and immediately knows whether his response is correct. This is the feedback. If the individual is mastering the frame can proceed to the next frame in order to help the learner to make the correct response, he has guided by means of primes, proms and cues.

**Prime:**

An operation in which the learner is shown precisely, what he should do by the way to make correct response?

**Prompt:**

It is a hint or a supplementary stimulus to give a correct response.

**Cues:**

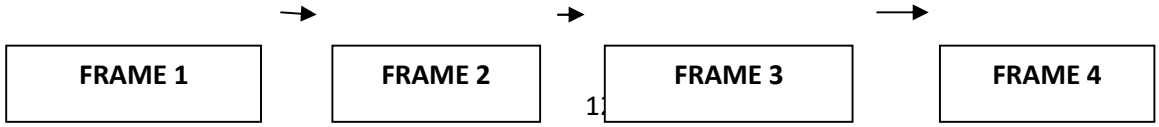
Is more or less like prompt but it is more mechanical aid such as underlining a word or writing it in Italics that helps the learner to make the desired response.

**Principles of programmed instruction**

- Principle of small steps: The content is split into the number of tiny bits. They are then arranged into logical sequencer. Programme is mainly organized sequence of carefully constituted steps.
- Principle of Immediate confirmation: The immediate knowledge or confirmation he gets that he has been right in his response acts as an agent of reinforcement in his learning behavior.
- Principe of active responding: The learner is an active participant in the learning process at every stage. He is required to respond correctly to some questions or problems in every frame before he proceeds to the next frame.
- Self pacing: The learner proceeds at his own pace when he works through a programme, the brighter students can take up a programme and finish the concern lesson quickly while the rest could do, little slower, if they want to complete it.
- Student testing: The student continually self educate his performance on the programme. The teacher can also regularly assess the progress of his students. He can revise the programme and rewrite those steps in which the pupils have gone wrong.

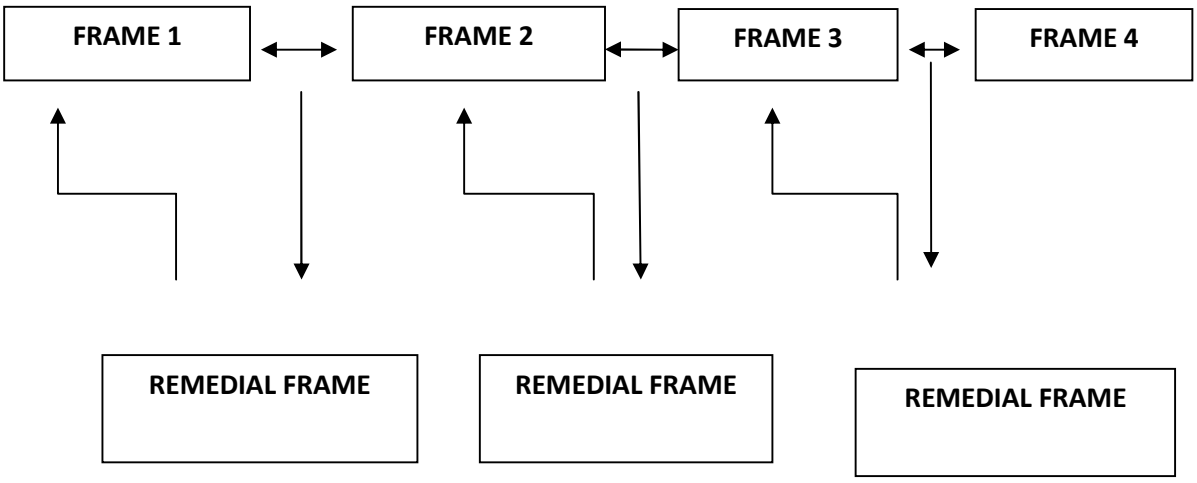
**Types of programmed instructions**

- Linear programming: Skinner and his associate invented this style of programming. This also known as Skinnerian type of programme



All the students read and respond to the same frames. The sequence is linear in that there is single line or path for all the students to follow. In this method of programming the pupil has to master before proceeding on to step two and slow on. These steps are decided by the teacher before hand and the pupils find it easier to learn than in other methods.

- Branched programming: N.A.Crowder and S.L.Pressy have given this process. In this programming there are branches and off shoots. The student is guided by the information sheet at every step. Sometimes the student has to retrace or comeback to an earlier step to ensure that he is proceeding on right times. The technique of intrinsic programming with multiple choice items was employed by N.A Crowder. In this process a mistake committed by the student is answering a question which is further utilized to build up an new knowledge and skill. Thus every mistake becomes a new avenue for learning.




This type of programming depends on two steps:

- There must be more than one way of answering question.
- The wrong answer should result in guiding a student to reference the correct mistakes and guide him back to the correct programming sequence

**Advantages of Programmed instructions**

- Programmed learning recognizes individual differences and learners are permitted to proceed at their own pace.

- Programmed learning helps that the learner to be active. Learning by doing is definitely better than learning by hearing or seeing.
- Programmed learning provides immediate knowledge of results. It favors' learning in the right time.
- Programmed learning emphasizes the organized nature of knowledge because it requires continuity between the easier concept and harder ones
- Programmed learning reduces anxiety, because the learner is not threatened by the task

**2.11.4 Computer Assisted Instruction (CAI)**

The concept of using computers to assist instructors in teaching students about a wide variety of topics is referred to as computer assisted instruction. In earlier days, educationalists used computer only for printing pre stored data or judging answers for correctness. The real attempt in CAI is made around in 1961. Under the leadership of Donald Blitzer, the engineers, physicists, psychologists and educators of the University of Illinois developed PLATO (Programmed Logic for Automatic Operations)

The PLATO system is able to teach 150 projects ranging from physics to zoology and delivers instructional materials in the form of texts, drawings and animated graphics.

PLATO is probably the best known CAI project in the world and has been shown to be effective and economical.

**CAI Processing**

CAI system typically involves instruction materials stored within the computer system in the form of programme, which are carefully structured to teach specific lessons.

**A typical CAI processing involves the following steps:**

A student "logs on" by indicating the specific subject or unit to be learned. The computer prints on the screen, the textual information which is usually segmented into frames. After a small segment text has been printed, the computer asks the student a series of questions about what he has read.

The student responds to the question. Depending on the accuracy of response the computer will

- Go on to the another more advanced topic, if the answers are correct, if not
- The computer display appropriate help messages to assist him respond correctly (or)
- Repeat the topic with a different text. So the student can better understand the topic when presented in different way.

**Major applications of CAI**

CAI covers almost the whole educational spectrum. Some of its major applications are discussed below:

- **Drill and practice:**

  The simplest and most used form of CAI is drill and practice approach that is designed to complement the instruction of the teacher. Students should answer the factual question presented by computer. Here immediate feedback is given by the computer. If he is wrong in his answer again he has to practice the remedial measure assisted by the computer. This approach has been found useful in learning areas such as mathematics, statistics, languages, reading, spelling etc. where substantial memory work is required.

- **Tutorial Instruction:**

  In this mode, CAI takes the responsibility of teaching new information and actually acts like a programmed text books. Some relatively small piece of information is presented, the student is asked to answer a question about the information and the computer provides feedback on the accuracy of student's response. Then the cycle is repeated for teaching more information. In this mode the computer approximates the actions of the individual and it acts like a patient tutor with the individual.

- **Information handling:**

Computers can store complete cumulative records of the students. It will be helpful in handling guidance and counseling in the schools.

- **Simulations:**

Simulations are condensed learning exercise specifically designed to represent vital real life activities by providing the learners, the essential elements of the real situation. Simulations are frequently planned in the form of competitive games to increase motivation and interest. Simulations are realistic imitations. For example CAI might create simulation of experience in Physics, which a student can use in discovering to different situations. Thus CAI provides an opportunity for experiments to be carried out which would not be feasible in real life because of danger and high cost.

- **Games:**

Organized social stimulation is called gaming. This game application is used to bring interest and motivation to the learning situation. In this mode CAI provides competitive play between a student and one or more opponents.

- **Problem solving:**

Students can use the methods and procedures as indicated by CAI to solve some of their course work problems. CAI has been successfully used to keep facts and figures and processing data for problem solving.

- **Administrative applications:**

CAI can relieve the teacher from some administrative duties and giving him more time to concentrate on teaching. For example CAI can be used to assist in constructing time tables, to monitor and schedule teaching resources, to build up and maintain comprehensive student records and to provide a complete student profile.

**Advantages of CAI**

- It is a more individualized instruction and it provides adjustable pace of learning.
- Immediate feedback is given by CAI which will be helpful to assess the performance of the learners.
- The large amount of information stored in the computer is made available to the learner more rapidly than any other medium.
- There is a chance for dynamic interaction between the student and computer in CAI
- Time and energy will be saved by using CAI in teaching- learning process.
- It improves the quality of teaching by providing integrated curriculum and standardization of teaching materials.

**Limitations**

- Expensive methods.
- CAI instructs the students in such a way that all will achieve the same competency.

Computer may also inject a non human quality into educational programme; this new technology may dehumanize man.

**2.11.5 Multimedia Approach**

Media are best used in combination with variety a of other instructional materials and techniques, multimedia means making use of more than one medium in teaching learning process. Each of these is chosen because of the particular contribution which can make to total learning experience may range from visual literacy activities to fairly complex individualized instruction sequences.

**Steps involved in multimedia in instruction development**

There are various steps in carrying out interrelated use of media materials and various teaching and learning strategies.

## 1. Defining desired Behaviors

It means kind of learning experience needed for the particular class pupils must be specified in the form of terminal objectives.

## 2. Planning materials and strategies

The instructional materials may be classified in to categories A] Material located by the class members B] Materials kept by the teacher and school media specialist. Sometimes the materials may keep in 'packages' in individual containers. The instructional manual for teachers should contain details on conceptual frame work, learning environment, various subject programme ,learners goals for each element, entry and exit behaviors ,learning procedure and record keeping .The teacher and pupils should select the variety of communicating media for conveying information suitable to each learners.

## 3. Teaching strategies and methods

The new information may present through terminal reports, demonstrations, and exhibits or widens. This is the stage at which we are concerned with media along with materials. By using this learning experience, the learners is helped to conceptualize, to understand, to become involved and response with performances.

## 4. Evaluating and Recycling

Pupils present report and the teacher evaluates them by reviewing the apparent and usefulness to pupils of the newly found materials. The best materials are incorporated.

**How to use Multimedia**

While using education media for teaching in a classroom the teacher has to follow some basic principles

**A. Selection of media**

With reference to the objectives framed the specific media must be selected. When we select appropriate materials for group study of individuals, the teacher must consider the learners, cultural environment, past experience, physical and emotional make up, needs, attitudes, and visual literacy.

**B. Readiness**

First of all the learners must be ready for participating in the experience. The minds of the pupils must be prepared.

**C. Setting the proper physical conditions**

Physical conditions such as proper seating arrangements, sufficient darkening facilities in the room and facilities for manipulating the different media must be ensured.

**D. Consolidation**

Suitable work sheets may be prepared in the light of the objectives and the experience gained by them through use of audio –visual presentation.

**E. Evaluation**

The effectiveness of the media and their techniques must be evaluated as regular intervals of time. For this the teachers may also prepare and evaluate schedule.

**Advantages**

Using multimedia approach is an important aspect in learning, in the case of exceptional children the following techniques will be adopted such as enrichment, acceleration, correspondence course, tutoring and conducting special classes.

**2.12 CHIEF MINISTER'S NUTRITIOUS MEAL PROGRAMME:**

This nutrition programme of the government of Tamil Nadu was introduced by the late Chief Minister Dr.M.G.Ramachandran on 1$^{st}$ July 1982. It was started for 20,747 child welfare centers and in the age group 2 to 10 years living below the poverty line but from September 1984 it was expanded to include 10-14 year old also. For children of age 2+to 4+ noon meal is given in the child welfare centers and for older children noon meal is given in primary and secondary schools.

**Objectives:**

i) To provide at least on third of the nutritional requirements recommended by the ICMR for the child and help to promote her health, growth and development;

ii) To enthuse children to go to school and remain in school and thereby improve school attendance;

iii) To ensure complete and full attendance at school;

iv) To improve the learning capacity, mental ability and performance of children;

v) To create an awareness in the community about the relationship between nutrition and good health;

vi) To foster sound social behavior among children and narrowing the feeling of differences between various castes;

vii) To inculcate good food habits in children and to create an awareness for hygiene and healthy habits;

viii) To improve the all round development of children;

ix) To reduce the dropout rate;

x) To provide employment opportunity to women and

xi) To impart nutrition education to children, mothers and to the community at large.

Programmes:

Under this programme nutritious meal is provided to children of age group 2+ to 14 years. While children up to 10 years are fed on all 365 days in a year, children of higher ages are fed only on 200 days in a year. The meal given consists of rice, dhal, oil, leafy and other vegetables.

For each child-welfare centre one child-welfare organizer and two child welfare assistants have been appointed. In each primary and high school there is one nutrition meal organizer, one part-time cook and helper have been appointed. In a high school when the number of children is more than 500, one more cook and one more helper are appointed.

**2.13 NUTRITION**

Nutrition has been defined as that condition which permits the development and maintenance of the highest state of fitness. Fitness implies good health, maximum capacity for work, the ability to undertake mental and physical tasks, and the power to withstand physical, physiological and psychological stresses.

Man can live in happiness without many earthly possessions, but not without good health. A healthy and well-maintained body becomes the instrument for the highest of human achievements. And in the promotion and maintenance of health, the food we eat, the way in which it is cooked and consumed, and the various factors which establish food habits and constitute the nutritional status have a vital part to play.

A well-fed individual grumbles less and normally does not fret over small things. Experiments with school children have shown that children taking good food are more alert and learn their lessons better than those getting insufficient or badly combined food.

There must be adequate food for all people-adequate both in quantity and quality. However, today, although a few fortunate countries do produce more than they consume, the world in general suffers from a shortage of food. In India, according to Sir John Boyd Orr, there is enough food for only two months out of every three. Malnutrition, arising out of deficiencies in both food and nutritional knowledge, is the cause of many diseases. While it is true that there is not enough food in our country to feed all the people, it is also true that the food being produced is not used in the most profitable manner.

A faculty diet decrease vitality, vigor, longevity and resistance to infection. It is the primary causes of many disease, mental depression or abnormal psychological state. Diet is an important factor in determining the position of a race in the scale of mankind. The race whose diet is mixed and well-balanced has tall, broad-shouldered, well-built and stalwart men. The application of the principles of dietetics in our daily food raises the standard of health, prevents disease and promotes psychological well-being.

Many of the evil consequences of malnutrition can be overcome if the existing diet is replaced by a properly planned one. An understanding of the fundamental principles of dietetics and the nutritional processes going on in the human body is necessary for the planning of diets.

Since good food is essential for building up healthy bodies, for keeping them healthy and for curing diseases, the Home Science Extension worker should understand what food is good for her and for the people with whom she works. Nutrition and dietetics are therefore of great significance to her. She should be able to interpret the meaning of good food habits to the families in the villages where she works and to educate them in food nutrition. She must know what constitutes an adequate diet, what the defects in present dietaries are, in what way these defects affect health and happiness, and how she can help in increasing the nutritional level of the rural people.

**What Food Does For Us?**

Food is defined as anything solid or liquid which, when swallowed, digested and assimilated, nourishes the body in one or more of the following ways:

- By furnishing fuel for energy to work
- By providing materials for building the tissues and repairing them, i.e., for growth

- By supplying substances for regulating body processes

Thus, foods can be classified into three main group according to their functions

- Energy-giving foods
- Body-building and repairing foods
- Protective and regulatory foods

**Energy-giving foods:**

The human body requires fuel for the production of energy. The body needs energy for its activities just as a railway engine needs coal to make it go. The human body is never at rest. It is always engaged in work. Even when we sleep, the heart beats, the chest walls move, the temperature of the body is kept constant and digestion goes on. The energy needed for doing all this work is provided by foods.

Cereals are the main energy-giving foods. They have been called 'the staff of life'. Cereals are the cheapest and one of the best foods in the world for supplying energy. They are stable, and can easily be stored, transported or prepared. Therefore, they predominate the poor man's diet. Energy-giving foods include rice, ragi, bajra, jowar (cholam), maize (makai). Sago, tapioca, starchy vegetables like the potato, sugars and fats. Energy is also supplied by foods like pulses or dal, meat, eggs and fish. But these are more expensive.

**Body-building and repairing foods:**

Just as a house is built of wood, brick, mortar, cement, nails, rods and other materials, so is the human body built of the many substances supplied by food. It is difficult to say which of the building materials is more important than the others since all are essential and since the absence of any one of them weakens the entire body structure. The soft tissues of the body like the muscles or blood are chiefly composed of proteins, water and minerals.

Protein is the element in food mainly responsible for building up the body and for repairing worn out parts. The foods which contain protein include milks, dals or pulses, grams, legumes, groundnut and other nuts, meat, fish and eggs. Milk, eggs and flesh foods are very expensive. The lower income groups depend on legumes, pulses, grams and groundnut for the supply of protein. Fortunately, groundnut which is available and widely used in all parts of our country is almost as good a source of protein as meat. Protein is also needed for the formation of blood and antibodies. The antibodies fight the disease-producing germs which invade the body.

**Protective and regulatory foods:**

Besides supplying energy-giving and body-building factors, food also provides the factors which regulate the functions of the body and protect it from injury and disease. These factors are water, minerals and vitamins.

The vitamins and minerals, although needed in small amounts, are very essential to the health and normal working of the body. The importance of a food material cannot be judged by the amount in which it is required by the body.

The bulk of nails used in building a house may be very small compared to the amount of bricks, but nails are nevertheless an indispensable part. In the same way, the amount of iron, for example, needed daily by the human body is smaller than a pin-head, but no other food substance can take its place.

Water is necessary in large amounts for regulating digestion, excretion, maintenance of temperature and other body processes.Calcium helps in strengthening bones, controlling muscular contractions and heart-beats, and the clotting of blood. Iodine is necessary for regulating, through the thyroid glands, the speed of body movements. Many other minerals determine are regulating the composition of body fluids.

Vitamins also play a great role in regulating growth, muscular coordination, eyesight, health of skin and teeth, digestion and other body processes. Several vitamins have been discovered during the last few years like vitamins A, vitamins of the B group, vitamin C, Vitamin D, vitamin E and vitamin K. The green leafy vegetables which one can easily get every day are the cheapest and richest store-house of vitamins for the poor man. They supply iron for blood and are also rich in minerals which build some of the tissues of the body. They contain carotene (vitamin A), vitamin B complex and vitamin C. Tomatoes are a good source of vitamin C. Other vegetables, such as green beans, cabbages or peas, also furnish vitamin C and carotene. Milk is rich in vitamin A and riboflavin, an important member of the B Group.There are some ‘internal’ glands in the human body which secrete minute quantities of juice called hormones which, when poured into the blood stream, control and regulate the speed of body processes. These glands are rightly designated as ‘glands of destiny’.

**2.14 EXTENSION AND ADULT EDUCATION PROGRAMME**

Adult education constitutes package of educational activities and programmes for out of school youth and adults outside the formal educational system.

This education aims at providing reliable and adequate information, better knowledge and skills with a view to improve the lifestyle and also the earning capacity of the individuals.

In fact adult education has been given a number of terms like adult literacy, functional literacy, social education etc.

Adult education centers round the three factors namely learning, working, and living. It takes place in work and life situations. It is functional and developmental process.

**Objectives of adult education**

- To make democracy successful
- To ensure economic progress and prosperity
- To eradicate illiteracy
- To give inner satisfaction than outward show and promote common sense and wisdom very essential for all round growth which is the fundamental aim of adult education.
- To improve the quality of life of our people by combating existing social, cultural, economic and other inequalities and help in building a self reliant and self sustaining economy.
- To help to become confident and self reliant by understanding the situation in which they live and in solving the problems faced by them.
- To help people to think for themselves, to make their own decisions and to achieve socio economic goals for securing a meaningful life
- To help them understand their basic or fundamental rights and duties and to become effective and contributing citizens of the country.
- To enable the local youth, to have vocational efficiency by developing different skills
- To give the adults functional literacy and this should be related to the occupation of the adults.
- To have educated parents who would appreciate education for their children.
- To bring about social change.
- To enable people to choose the right of government, in short adult education is to provide the people with lifelong education which will help them become aware of themselves, the existent situations and to make proper decisions and adjustment, to lead a happy and meaningful life

  The scope of adult education is very wide, especially in countries like India, as a large population is illiterate and lives in rural environment. Adult education should enable all citizens to acquire literacy, numeracy, computational skills, basic understanding of their surrounding and functional skills relevant to their day to day life.

**Adult education in independent India**

In 1947, when India became independent, the level of literacy was only 14%. The very concept of adult education underwent a significant change and the programme was renamed as social education by Maulana Abul Kalam Azad the first education minister of free India.

According to him, "By social education we mean an education for the complete man"

According to Gandhi "Social education is Education for life and not for the sake of literacy, it includes everything"

Social education is a very broad concept which includes five point programmes

- Promotion of adult literacy
- Improvement of economic conditions.
- Betterment of health and hygiene
- Education for democratic citizenship
- Arrangement for proper means of recreation and amusement.

**Kothari commission 1964-1966**

Recommended the following two fold strategy to eradicate literacy

- **Selected approach**: Under this approach, programmes are to be adopted for specified groups of adult who could easily be identified, controlled and motivated for intensive literacy work. It should be the responsibility of all employers in large forms and commercial, industrial, contracting and other concerns to make their employees functionally literate within the period of 3years of the employment. If necessary the law may be enacted for this purpose. Big industrial concerns in the public sector should take lead immediately and set the pace in important direction. Every development project should include as an integral part, a plan for the education of its employees, more especially of those who are illiterate
- **Mass approach**: Under the mass approach all available educated men and women in the country should be mobilized for raising a force to combat illiteracy and utilize it in a well planned literacy campaign. This will involve the teachers and students of all educational institutions as a part of compulsory national service programme, students in the primary, secondary, higher secondary, vocational schools and those in the under graduate classes

of the Universities and colleges should be requires to teach the adults. Every educational institution should be given responsibilities for liquidating illiteracy in a specified area.

**National adult educational programme (NAEP)**

The National adult educational programme was launched on 2nd October 1978 on Gandhi Jayanthi. The programme aims at eradicating illiteracy among adults of the age group 15-35.

The main objectives of NAEP are:

- Promotion of literacy skills
- Creation of awareness
- Raising functional capabilities

**The partners in the programme:**

Apart from the deep involvement of central and state governments and numerous voluntary agencies, the following categories of person could be assigned for instructional responsibility.

- School teachers
- Students
- Village youth
- Ex service men and retired person.
- Voluntary social workers
- Field level government and other functionaries.

**2.15 WEB-BASED LEARNING**

A **web**-**based** application is any program that is accessed over a network connection using HTTP, rather than existing within a device's memory. **Web**-**based** applications often run inside a **web** browser.

**Web**-**based** software is software you use over the internet with a **web** browser. You don't have to install any CDs, download any software, or worry about upgrades. If you use an online bank or **web**-**based** email program like Gmail, Hotmail, or Yahoo Mail then you've already used **web**-**based** software before.

**Principles of Web-Based Learning:**

Web-based learning environments may be designed for distance as well as face-to-face learners. The following principles are intended to serve as guidelines for identifying and evaluating web-based course in distance education programmes.

i) The learning experience must have a clear purpose with tightly focused outcomes and objectives. Web-based learning designs must consider the nature of content, specific context, desired learning outcomes and characteristics of the learner.

ii) The leaner is actively engaged. Active, hands-on and concrete experiences are highly effective. Learning by doing, analogy and assimilation are increasingly important for pedagogical forms. Where possible, learning outcomes should relate to real-life experiences through simulation and application.

iii) The learning environment creates appropriate use of a variety of media. Various learning styles are best engaged by using a variety of media to achieve learning outcomes. Selection of media may also depend on nature of content, learning goals, access to technology, and the local learning environment.

iv) Learning environments must include problem-based as well as knowledge-based learning. Problem-based learning involves higher order thinking skills such as analysis, synthesis, and evaluation while knowledge-based learning involves recall, comprehension and application.

v) Learning experiences should support interaction and the developments of communities of interest. Learning is social and sensitive to context. Learning experiences based on interaction and collaboration support learning communities while building a support network to enhance learning outcomes. Multiple interactions, group collaboration and cooperative learning may provide increased levels of interactions and simulation.

**vi)** The practice of distance learning contributes to the larger social mission of education and training in a democratic society. Changing mental models and constructing new knowledge empowers learners and encourages critical thinking. “Knowledge becomes a function of how the individual creates meaning from her experiences; it is not a function of what someone else says is true”. **(Jonassen, 1995)**

**Categories of Web-Based Learning:**

Web-base learning has the following formats within “learning context” i.e. how and when a learner encounters and undertakes the content (Robert.H.Jackson, 2004):

**Asynchronous Format (Directed Study Format):**

In asynchronous format learners rely on some structured plan that directs the learner through learning experiences without real-time interaction from an instructor. Self-study may be supplemented by asynchronous interaction with the instructor, for instance through email, voice email, comments from threaded discussions. The majority of today's 'on-line learning' is in the 'directed study' format. 'Self-study' requires the learner to have a highly developed internal self-motivation characteristic. Failure to have such internal drive leads to higher dropout rate of correspondence leaner compared to traditional residential learners on most campuses.

**Synchronous Format ('Live, Real-time' learning)**

Synchronous format learners rely on the instructor. Here, some commonly shared experience or event generally occurring in real-time with highly interactive and structurally dynamic is led by the instructor. Instructor-led events have the capability to dynamically react to real-time environments and change the plan of study or flow of learning to meet the needs of learners at the particular time. This engagement style helps sustain learner interest and probably contributes to reduction of dropout rate.

**Small Group Collaboration:**

Small group collaboration is an informal context defined as that informal education that goes on learner-to-learner gathering in hallways and libraries between classes and method depends on learner-learner interaction rather than leaner-content interaction. Small group collaborative activity may utilize asynchronous tools such as email, threaded discussion groups; list serves as well as use of synchronous tools such as telephone, text chat etc. Research indicates that successful incorporation of small group collaborative learning and activities both increase the learner's satisfaction with the learning process and can decrease the time required from an instructor in administering and structuring a course or programmes.

**Merits of Web-based Learning**

Web-based learning has the following advantages:

c) Fosters meaning-making, discourse.

**ci)** Moves from knowledge transmission to learner-controlled systems

**cii)** Provides for reciprocal teaching.

**ciii)** Is learner-centered. Self-pace learning is possible in this method.

**civ)** Encourages active participation and knowledge construction.

**cv)** Based on higher level thinking skills-analysis, synthesis, and evaluation.

**cvi)** Promotes active learning.

**cvii)** Allows group collaboration and cooperative learning.

**cviii)** Provides multiple levels of interaction.

**cix)** Focuses on real-world problem solving.

**cx)** More and recent information related to a topic can be accessed and delivered.

**cxi)** Updated information is available in the Web site.

**cxii)** More information will be gathered in short duration of time. So energy and time be saved.

**cxiii)** Abstract concept can be easily explained with the help of animation and graphics.

**cxiv)** It can be used for increasing course delivery for a large number of clients at a particular point of time.

**cxv)** Learners' on-job is facilitated for on-time access and interaction.

**cxvi)** Instructional materials are already instructionally designed for wider use.

**cxvii)** Web-based instruction will be more effective at higher education and research level.

**Limitations of Web-based Learning:**

i) Since course materials are instructionally pre-designed, it hardly provides for individual variation and further revision.

ii) If not properly designed and navigated, one may manually turn pages which are de-motivating to many.

iii) Information may not be available related to all topics.

iv) Information may not be available in all languages or regional languages.

v) There is no mechanism available to establish standards for Internet materials, instructional design, and quality of interaction.

vi) It is difficult to alter the varying teaching styles of teachers and varying learning styles of learners.

vii) It needs to be designed and developed implemented very carefully; otherwise its credibility would be at stake.

viii) It has always the possibility of being branded as having the status of a 'provider' rather than as 'creator' or 'manipulator' of knowledge or information.

**2.16 SUMMARY**

The above unit contains various types of instructional plans and learning strategies to be followed in the teaching-learning process. The techniques to adapt effective learning which includes microteaching and its components with the need for link lesson have been stated. The various methods of instructional strategies in teaching Home Science in addition to specific learning strategies of Home Science students has also been discussed.

**EXERCISES**

- Prepare a lesson plan of your choice in Home Science subject
- Make a discussion with your peer group and analyze the importance of microteaching skills in the teaching-learning process of Home Science subject.
- Create a linear program in the topic "Nutrition" using twenty frames.
- Analyze the various instructional strategies in teaching of Home Science.
- In this technological era how would you utilize multimedia approach in Home Science teaching?

## UNIT-III

## EQUIPMENTS, RESOURCES AND AUDIO VISUAL AIDS

**STRUCTURE**

## 3.1 INTRODUCTION

In the most general sense, exhibition is an organized presentation and display of a selection of items. It is the tool to promote creativity and encourage the habits of exploration so that the student can utilize their capabilities and skills in developing innovative ideas in order to strengthen their learning process. Home Science exhibition is a collection and representation of items for public namely garments with embroidery work, handicrafts, artificial food web and stages of human development. Home Science exhibition means to arouse interest, create the desire to learn and provide a change to take a decision which will enable the students to attain higher achievement.

There are many activities that can be done when organizing Home Science exhibition, club, lab and library in educational institutions. Having Home Science exhibition leads to improve the quality life and teaches the applications of modern Home Science equipments in domestic life. Further it develops the student's appropriate skills and techniques which are required for better home making and family living. The purpose of these activities is to create awareness about the structure of family, nutrition, child care, home decoration and community life among the learners. Hence the primary discussion about Home Science exhibition that have been cited here will be analyzed in detail. The part of audio-visual aids and its types need to be examined for Home Science teachers to provide effective teaching.

## 3.2 OBJECTIVES

This unit is sketched to give a general picture of Home Science exhibitions, club, textbooks and audio visual aids and their implications. After going through this unit the student will be able to

- Understand the meaning of Home Science exhibitions.
- Recognize Home Science club.
- Identify the activities of the club
- Enumerate the role of Home Science teachers
- List out the records and registers of Home Science
- State the importance of Home Science text books.
- Explain the various purposes of audio-visual aids

## 3.3 HOME SCIENCE EXHIBITIONS:

With the popularity of Home Science subjects in schools the idea of Home Science exhibitions and fairs came into lime light. This enabled the community to come closer to the school and hence for the better relationship of school and community Home Science fairs are organized in most of the schools. Occasionally such fairs are also organized on a local, district, state and national level.

In such fairs and exhibitions the exhibits of students are displayed. Students are also allowed to do demonstrations or present some puzzles. Both the students and teachers should collaborate towards the success of the fair, though it should be mainly an activity of students. The students who take part in organizing and arranging the fair get a better understanding of the purpose of the experiments, and the procedure adopted. Home Science exhibition help to focus attention on Home Science experiences in school. Interest in Home Science will be increased among students since it demands the innovative and creative ideas of students. Home Science exhibition stimulate great interest in scientific investigation and scientific hobbies. Students are given an opportunity to display through exhibition and demonstrations.

## 3.4 HOME SCIENCE CLUB:

### Home Science Club:

In India Home Science club movement was started with the support of NCERT. This autonomous body was willing to give Rs. 1200/- as non-recurring grant. But even with all this the Home Science club did not fully attain its objectives. We have to take more active part to see that Home Science clubs function to develop in students the skills, interests, attitude etc. that the formal class teaching cannot achieve.

Home Science clubs help youngsters to find expression for their scientific interests. In the regular classes students may not find time to enter into special areas. The Home Science clubs present formal atmosphere to work and this brings higher degree of cooperation between students and teachers. Students also get an opportunity to work independently. Since the members of the Home Science club discuss their activities in the class room with the non-members of the Home Science club and get an opportunity to learn more. Home Science clubs give the way to learn science in a happy way. They learn things without the conscious effort on their part and pursue Home Science as a hobby and not a burden on them. It will create students enthusiasm in learning Home Science and will develop mature attitude among adolescent students.

### 3.4.1 Objectives of Home Science Club

The club should have well defined objectives which may be enlisted as follows:

i) To inculcate scientific attitude and provide opportunities for training in scientific method.
ii) To develop habits of exploration and to develop creative and inventive faculties.
iii) To create interest in the scientific hobbies like the preparation of soaps, inks, cosmetics, photography etc.
iv) To widen the outlook of students and to enable them to utilize their knowledge in life situations.
v) To develop in children a sense of healthy competition for a better cause.
vi) To keep the students aware of the recent inventions of Home Science and their effect on home life.
vii) To contact other Home Science clubs in the neighborhood and exchange views and information.
viii) To make the student scientific minded.
ix) To encourage students to look together in a spirit of mutual understanding and to develop habits of neat and healthy living.

Home Science club should have its own rules and regulations and a constitution. All members should abide by it. The head of the institution should be the patron of the club and the Home Science teacher in-charge, the sponsor. The patron extends all types of facilities and co-operation for the successful work of the club. The teacher in-charge is the adviser and guides the

members but never dictates. The success of the club naturally depends on her and hence she should be an intellectually mature and well informed person.

The club should form an executive body elected from the students. This body will consist of a chairman, secretary, an assistant secretary, a treasurer, librarian, storekeeper, a publish officer, and class representatives.

The chairman presides over all the functions of the club while the secretary maintains the record of all the activities of the club. The assistant secretary assists the secretary and act as secretary in the absence of the latter. The treasurer maintains the accounts. The store keeper has the record of equipments of the club. The publicity officer publicizes the activities of the club through different means.

Any student of the school could become a member of the science club paying a nominal fee. The executive body will decide on matter regarding the name of the club, the membership fee, number, place and timings of the meetings, types of activities to be undertaken, the duties of the office-bearers etc.

**Activities of the Home Science club:**

i) Holding discussion, meeting, debates, declamation, paper reading etc.
ii) Arranging excursion and visits to places of scientific interest.
iii) Holding exhibitions and fairs annually.
iv) Improving and preparing handmade apparatus.
v) Collection of materials and arranging them in museum.
vi) Preparing soap, ink, boots polish etc.
vii) Drawing charts, preparing models, collection of pictures etc.
viii) Arranging lectures of persons of Home Science.
ix) Rendering service to the community.

Apart from these activities Home Science club also can hold other clubs working under it. They can be in the form of a photographic club, radio club, electronics club etc. Each should have its own sponsors who will be specialists in their particular field.

### 3.4.3 Role of Home Science teacher:

The success and failure of the Home Science club depend mainly if not entirely on the Home Science teacher. This position of the Home Science teacher demands a high degree of

enthusiasm and resource fullness on her part. But in the practical set up we find that now day's teachers of Home Science usually do not show much interest in Home Science club activities. This is mainly because of the additional workload on the person and the lack of facilities. Hence it is desirable on the parts of the institutions concerned to see that the time spent for the club activities may be treated as workload. Regarding facilities, it may not be possible in the near future to provide all the school with enough facilities. Therefore teachers should work with spotless service mind and they should make use of any waste materials and convert them into useful articles. The services of such teachers are need of the hour and those teachers can make any club activity a success by contributing their good will and erudition. If Home Science clubs function in this way it will make students more Home Science oriented. They will become more creative and promote a spirit of inquiry among them.

## 3.5 HOME SCIENCE LAB

**Location of Home Science Room**

Laboratory is a spacious room where in a group of students carries out their practical. The work of designing and building a Home Science room (laboratory and lecturer room) is that of the architect but Home Science teacher should collaborate with the architect in planning for what is best from the educational point of view.

The minimum requirement for such a room is as follows:

- It is generally two times the size of an ordinary class-room. It is so because for covering different areas of the curriculum adequate space and equipment have to be provided.
- It is planned in such a way as to have a flexible arrangement of equipment and materials.
- It should look attractive and should give a home like appearance.
- It should be provided with safe and sanitary conditions.
- Adequate storage facilities are provided in it.
- It should be equipped with equipment and furnishing that can be easily looked after with minimum effort.
- Adequate provision of lighting be provided and should also be provided with good ventilation
- Its walls should be painted with colors that give pleasant appearance.
- Sufficient water be supplied to the room by making good provisions for water supply.
- Some space be reserved for certain special purposes such as home management and clothing.

**Organizing:**

It is the duty of the Home Science teacher to plan different type of work centre so as to provide for all the activities include in the Home Science curriculum. If possible a work centre may be used to carry out more then one activity. Some of the activities for which work centre may be planned are listed below:

- Space for providing experiences in planning, arranging and caring for different rooms.
- Planning and discussion by small groups, tables, chairs, black-board for discussion.
- Cupboards for books and other articles prepared by the students.
- Preparing and serving meals-fire place, work spaces, home kitchen equipment, utensils, linen, cutlery and provision for care and disposal of garbage.
- Selecting and constructing clothing-sewing machines, tables and chairs, irons, and ironing boards space for fitting garments, mirror and sewing kits.
- For teaching child development, operating a nursery school.
- A sick-room.
- Teacher's place. It is a work centre provided with desks, files etc.
- Special activity such as flower arrangement, refinishing furniture and handicrafts.
- Home furnishing and house care living dinning centre for experience in hospitability, home decoration etc.

**Planning of Home Science Laboratories:**

For an effective and efficient teaching in Home Science a good laboratory with necessary equipment is essential. In recent years the purposes of teaching Home Science at the higher secondary stage have undergone drastic changes. We do not aim at stuffing the minds of the pupils with mere facts of Home Science but at developing in them the application ability; skills of experimentation, construction, improvising scientific attitudes; interests; appreciation etc. These can be achieved only if the students get the opportunities to work with their own hands in an atmosphere which pervades in Home Science teaching.

**Planning a Home Science laboratory:**

Before constructing the laboratory, the following factors should be taken into consideration at the planning stage:

i) The number of pupils working at a time.
ii) The minimum space necessary for each pupil for comfortable working.
iii) Limitation of number of Home Science teachers in higher secondary schools.

iv) Need for ancillary accommodation for storage.

v) Designing the Home Science classroom and laboratory in such a way that it could be used for Home Science teaching for middle as well as for high classes and

vi) Imperative need for economy.

**Storage Space:**

In the space meant for storage, the provision be made for the storage of the following items:

1. Foods, Nutrition and Cookery
    i) Shelves for dishes, utensils and equipment not in daily use
    ii) Meat-safe
    iii) Cupboards for kitchen line
    iv) Place for crockery, cutlery and other serving dishes.

2. Textiles, Clothing and Laundry
    i) Storage space for irons, pressing clothes, ironing boards.
    ii) Soaps and supplies for stain removal
    iii) Cup-board for storing materials replaced by the students
    iv) Space for hanging garments that have been switched by the students.
3. Space for Keeping Home Furnishing and First-aid Equipment
4. Child Development and Mother-Craft
    i) Storage space for toys, books and other material used for teaching child development.
    ii) Supplies and equipments used for house cleaning.
    iii) Storage and materials for taking care of babies, feeding and dressing.
5. Home Management and Care House
    i) Storage for supplies and equipment for house cleaning.
    ii) Space for articles to be used in making home attractive such as vase for flowers, mats etc.
    iii) Equipment and supplies and for repairing and renovating furniture and for making curtains, covers and draperies etc.
6. Additional Storage Facilities

    Provision should be made for the following:

i) Charts, old magazines and other teaching materials.

ii) Books and other personal belongings of the students.

iii) Books, bulletins and other reference materials.

iv) Miscellaneous supplies such as textiles, paper, pins, scissors, needles etc.

**Equipments and Furnishing for Home Science Laboratory**

While providing for equipments and furnishings the following points be taken into consideration.

- Promoting flexibility in use and arrangement.
- Represented good applications of art principles.
- Strength and durability of the articles.
- Variation in type and quality, which are needed in teaching.
- Standard of living of the community
- Equipments should provide meaningful experience

A Home Science room should be just like a home in the community. It is essential to take into considerations the income level of the community with the changing standards in the society

**Up-Keep and Managing House Keeping**

Maintenance of proper discipline in the Home Science department is a must for up-keeping and managing house-keeping. All the articles of the department be kept in an orderly manner at some convenient places. It helps the students to develop the essential habits and attitudes for the clean and well ordered home. All the work in the department is completed in a business-like manner. They should also be taught the business methods in handling the purchases of supplies, furniture and equipments. All out efforts are made to create a home-like atmosphere in the department. At all stages students should learn how to develop cooperation in living together.

## 3.6 RECORDS AND REGISTERS

A teacher has not only to teach in a class, but she is also to supervise the games, sports and the other co-curriculum activities of the pupils. Apart from that, there is one more area, in which a teacher has to be fully efficient and cooperative. The area is the maintenance of records and registers. In a school, there are so many activities that it is not possible for the office-staff to maintain all the records, without some help from the teachers. Therefore, teachers have to maintain some records and registers. Chief among them are the following:

- **Admission Record:**

When pupils are admitted, parents furnish date of birth papers, declaration of family-income, transfer certificates, progress reports or result cards of the earlier classes, application forms etc. All these papers are to be carefully preserved in a Guard File and entered in the Admission Register also. The entries in register are necessary and needed at the time of issuing a Transfer Certificate, later on.

- **Fee Registers:**

When pupils pay fee, it is entered in the registers, and a receipt issued to that effect. The fees are later handed over to the office or the bank authorities. Fee concessions and scholarships are also sometimes granted to pupils. Records for them also have to be maintained. Defense staff children and scheduled caste pupils are also given a concession in fees. Teachers' wards too get exemption from tuition fees. The details of all these categories are separately recoded in the proper registers are to be furnished to authorities when needed.

- **Attendance Registers:**

There are various types of attendance registers namely Class attendance, subject or lecture attendance, attendance for games and the various co-curricular activities. Some schools keep a medical check-up record or clinic attendance for pupils ailing, or suffering from physical defects.

- **Timetable Records:**

A teacher should learn the making of a class timetable. Teacher-wise, class-wise and subject-wise timetables are drawn in different schools. All subjects and classes should be kept in mind in drawing a timetable. Teachers' workload should also remain equal, as far as possible. Undue load or emphasis should not be put on any class or teacher, nor should any subject be either neglected or overemphasized.

- **Examination Registers:**

After a class or examination the marks and the progress of the pupils are noted in a register. Marks Registers or Examination Registers are also very important document. The Department of Education and the Board of Examinations depend on the entries made in these

records. The class teachers should exercise great care in entering the marks etc. They should take the help of their colleagues in comparing the marks, or in cross checking. The signature of the head of the institution should also be obtained after every examination, in this register. It is departmental rule also.

- **Correspondence Records:**

Whatever letters or applications are sent by parents or the guardians, or replies sent by the class teacher or the school authorities, or whatever complaints or reports about the pupils are sent to parents or the guardians should always be registered and recorded. Any order, circular, notice or notification from the authorities of the school should also be safely kept in a Guard File Receipt and dispatch register and circular' file can be maintained by the class teacher. The necessity of recording file is important for the easy tracing out of the information from the records.

- **Stock Register:**

In a school, various articles are purchased during the course of the year, or the session. Furniture, stationery, books, science-equipments, chalk-sticks, dusters, diaries, class-registers, games materials, medicines for First-Aid, bandages, cotton, cold and hot weather articles like heaters, stoves, oil, charcoals, pitchers, glass-tumblers, ice boxes, and coolers, etc. are some of the main items. It is very important to maintain stock register for these articles in order to keep a check on their use.

- **Purchase Records:**

When articles are bought, comparative rates should be scrutinize, tenders invited, quotations obtained and all audit and accounting procedures should be carefully observed. Receipts, vouchers, cash-memo etc. should be safely maintained for future references, and a timely check may be made by an auditor.

- **Parents Registers:**

At the time of a school function or annual day or sports day the authorities wish to invite all the parents and guardians of the pupils, studying in an institution. It is at that time that the teachers require these registers. It would be worthwhile, if such registers are prepared by the class or subject teachers, in advance. This can be very easily done at the time of the admission or

even with the help from the students in a class. The pupils would be too willing to supply this type of information to their teachers. Parents Register would thus prove to be an asset to the school authorities.

- **Progress Reports and Diaries:**

After every test or examination a detailed report about the progress of a student is sent to the parents. In some schools this is done through pupils diaries. Daily homework is also entered by the pupils in the same in some institutions. This arrangement serves as a link between the home and the school, and the child' progress is thus properly watched by all.

- **Activity and Game Records:**

As the examination registers, so also are these items of important information about the pupils day-to-day progress in the play-field and at the stage. Good students find time to take part in almost all the activities of the school. Their records should therefore, be carefully maintained.

- **Inspection Reports:**

During the course of a year, a number of visitor, inspectors, scholars and other guests pay visits to a school. Their opinion and reports should be very helpful for future improvements. The same should necessarily be asked for and obtained. A look into the Visitor's Books or Inspection Reports tells a great deal about an institution.

## 3.7. HOME SCIENCE TEXTBOOK

The text book is one of the important aids in the teaching-learning process and has occupied a pivotal role in educating the school children. The process of education in most of the schools in India, and even abroad, can be summed up in one phrase. "As the text-books, so the teaching and learning". But unfortunately, the text-books which are written at present are not up-to the standard and follow syllabi rather rigidly and units or lesson are seldom organized around pupils' interest and need. The Home Science text-book should aim at aiding the pupil in the development of personality, in developing open-mindedness, critical attitude in order to enable him to discover new knowledge, to appreciate and understand nature and to mould it to one's own ends and not merely stuffing of facts.

### 3.7.1 Meaning of Textbook:

i. Textbook is a record of thinking organized for instructional purposes.

ii. Textbook is designed for class-room use, carefully prepared by experts in the field and equipped with the usual teaching devices.
iii. A textbook is a standard book for any branch of study.
iv. In ordinary usage the textbook is printed, it is non-consumable, it is hard bound, it serves an avowed instructional purpose and it is placed in the hands of the teacher.

### 3.7.2 Importance of Textbook:

Textbook occupy a very important place in the teaching of Home Science. They form part of traditional teaching aids. In fact it would be wrong to call them teaching aids. They are the means of imparting knowledge. It is through textbook that knowledge is imparted to the students. They serve as a guide and means for the teacher as well as the students. It enables the teacher to acquire the needed information quickly. It inspires the students to invent, to discover and to inculcate scientific methods through the use of textbook. The teacher can impart knowledge to the students and can help them to revise the lesson learnt in the class-room. With the help of the textbook it is also possible to give home task to the students. If properly used textbook can go a long way in teaching of Home Science in a successful manner.

Sometime textbook is more important for the teacher because it will indicate what to teach, how much to teach and how to teach. A well chosen textbook can always be useful adjunct to the efforts of the teacher and a reassurance to the pupil. Textbook are indispensable for the students

- Self-teaching is possible with the help of textbook
- Textbook provide correct direction to the teacher and the students
- Textbook serves as a reference book for the teacher
- Textbook provides a laboratory to experiment and develop study skill
- Textbook help the students of those schools that have ill-equipped libraries
- Textbook is indispensable in the class-room with limitation

### 3.7.3 Function of Textbook

A good Home Science text-book should be in accordance with the aims and objectives of Home Science-teaching. Some of them are as follows:

- A good text-book should help to form correct understanding of basic concepts and principles of Home Science. Most of the books prescribed for primary, middle or even high classes simply narrate facts and if the teacher also reads such text-books word by

word without introducing any type of activity in the class-room and weaving the fact in the text-books into proper concepts and principles. It should inculcate scientific attitude in the pupils and develop an understanding about the scientific method. It should develop open-mindedness and a co-operative attitude. A child glancing through the book should be tempted to get into the shop of the "goods of scientific knowledge". Teacher should be tempted to investigate the world around them. It should open the gates of interest and develop proper attitude and love for Home Science. It should show the pupils the method of solving a problem. Every child faces a number of problems in his daily life. If the child, while in school, acquired the habit of attacking the problem in scientific way, he will face life problems with confidence. Thus the object of education to prepare the younger generation for life automatically served. This required previous planning on the part of the teacher to mould the subject matter to fit in with this technique.

The Home Science text-book should acquaint the child with the wide variety of the application of the scientific knowledge through proper exercises.

- It should provide for the development of certain skills. This can be achieved if the teacher provides opportunities for pupils to handle the instruments in the laboratory. There should also be adequate provision by way of exercises for the practice of the skills.
- The present Home Science curriculum is so heavy that the pupil cannot learn everything in the laboratory through direct experience. So it is a primary need of the day that the text-book should supplement some experimentation that can be done in the class-room.
- It should help to lead the class-room discussion to accurate conclusions. It should also give information about the past discoveries and some of the thrilling experiment and problem solving.
- It should help the pupils for systematic and speedy revision of the lesson they have finished.

### 3.7.4 Criteria of a Good Textbook

1. **The author-his qualification and experience:**

Only the author who has a certain amount of experience of teaching the subject should be allowed to publish a book because he can understand the actual learning situations and difficulties of pupils. Moreover, he is conversant with the changing concepts and techniques of teaching.

Certain minimum academic qualifications may also be prescribed for the author. The practice of writing a book in the name of established authors should be rooted out.

2. **Mechanical features of the text-book:**

i) The print and the paper used and the binding of the text-book should be attractive. The size of the print should suit the age of the students.

ii) The book should be well-illustrated with diagrams, sketches, pictures etc. Illustrations play a vital role in raising the standard of a text-book and making it more attractive and useful. As the Chinese saying goes "One picture is worth a thousand words" but this should not be taken as an absolute truth. It is essential that the illustration should find its proper place in the books so as to serve the purpose it stands for.

3. **The subject-matter-its nature and organization:**

i) The subject-matter should be developed as far as possible in psychological sequence. Care must be taken for the mental growth and interests of the pupils.

ii) There should be consistency of the subject-matter and the text-book should stand for the objectives of Home science teaching. It should lead to the inculcation of scientific attitudes, disciplinary and cultural values and should suggest project or activities for the pupils who may help to give a better understanding of the principles and concepts.

iii) Heading and sub-headings should be in bold type.

iv) Each text book should contain a detailed table of contents and an index.

v) It should suggest some good methods of learning.

- Textbook that are intended to the use should be useful for the students as well as teachers. They should be so designed that on the one hand they may be written according to the psychological requirements of the students and on the other they should serve the purpose of the teacher.

- The size of the book should be handy
- Printing and get-up of the book be interesting and attractive.
- The exterior of the picture should be attractive
- They should serve the purpose of the subject-matter as well as the aims and objects of teaching.
- The textbook should be accurately written. The subject-matter, presented there in should be up-to date.
- The style of the books should also serve the psychological requirements of the students of different stages.
- The textbooks should continue to keep the interests of the students alive in the subject-matter.
- The textbooks should contain all the necessary and relative material required for a particular stage of education.
- The textbook of different stages should be complimentary to each other. Textbook that are used in primary classes should have some bearing and connection with the textbook that shall be used by the students in the Junior Higher School classes.
- Textbook should be free from prejudice.
- The textbook should contain charts, maps, diagrams etc. as and where required.
- At the end of every chapter of the textbook there should be certain questions that may be used for the revision of the subject-matter.
- If required the textbook may give a substance of the chapter at the end of each lesson.
- A textbook should be written in simple and small sentences.
- A textbook must be selective
- The textbook should not be a condensed summary of too many facts.
- The author should have a considerable teaching experience in Home Science.
- The textbook should be attractive in appearance. It's cover should be artistic and appealing. It should be printed on a good white paper. It should be well bound and free of printing mistakes. It should be reasonably priced.

**Reference Books:**

Reference books are big standard books that are used by the teachers and grown-up children. Annual Reports, Government Reports, Dictionaries and Encyclopedia, Magazines etc. form this category of books. These books should be kept in the library for the use of the

teachers and grown up students. There should also be rich collection of reference books in the school.

**Analysis and Evaluation of Home Science Text-Book**

The teacher has to recommend the text-books to the students. Care should be taken that the recommendation is based on objective analysis of books and keeping in view the principles of text-book construction. For the evaluation of text-book the following check list can be used.

**Vogel's Spot Check Evaluation Scale**

Text-books

Author

Publisher

Copyright year

Price

Score (Total)

**1. Qualifications of author**

i) The author has taught the subject about which he is writing.
ii) The author holds advanced degrees in related fields.
iii) The author has received assistance from specialists in preparing his manuscript.
iv) The author's point of view, theory, or philosophy is in harmony with that of my school.

Partial Score...

**2. Organization**

i) There is a central theme which correlates the whole text-book.
ii) The text-book is organized into units which are based on student's interest and probability of use in everyday life.
iii) The organization makes use of topics already taught in my school.
iv) Questions and/ or problems at the end of Chapter are graded explicitly.

Partial Score...

**3. Content.**

i) The text-book contains all the topics necessary for my purpose.

ii) Material from one part of the text-book is cross referenced with similar material in other part of the book

iii) The historical development of Home Science is given in some places.

iv) Topics dealing with the latest advances of science such as atomic energy are included.

v) The social significance of Home Science is stressed.

Partial Score...

**4. Presentation of material**.

i) The inductive approach is used wherever possible in introducing a new topic

ii) The problem-solving aspect of Home Science method is stressed.

iii) The author's style is informal and interesting.

iv) Unfamiliar terms are set in italics or bold face

v) Importance principles are set in italics or bold face.

Partial Score...

**5. Accuracy**

i. All items are on the pages indicates in the index.

ii. The items I looked up are scientifically correct.

iii. Teleological expressions are avoided.

iv. Personification is avoided.

v. No ambiguity is apparent.

Partial Score...

**6. Readability**

i) The average number of words per sentence is below 21.

ii) 60% of the sentences are simple or compound as opposed to complex

iii) There are at least four personal references per 100 words.

iv) There is at least one application for each abstract principle.

v) There are not more than 42 affixes per 100 words.

Partial Score...

**7. Adaptability**

i) The text-book is satisfactory for low, average and brilliant students.

ii) Students with rural and city background will find the text useful.

iii) The text-book is arranged so that certain sections can be readily omitted.

iv) The authors treat controversial subjects impartially.

v) In general the text fits the community need.

Partial Score...

**8. Teaching aid**

i) Summaries, questions and problems at the ends of chapters are adequate

ii) Reference for teachers and students are annotates.

iii) Appendix material is pertinent and useful.

iv) The teacher's manual is more than answer-book.

v) An annotated up-to date film list is provided.

Partial Score...

**9. Illustration**

i) The illustrations are relatively modern.

ii) The photographic reproductions are large and clear.

iii) The line cuts are well-drawn and adequately labeled.

iv) The figures are tied into the textual material by direct reference.

v) The legends under the illustrations are useful learning devices.

Partial Score...

**10. Appearance**

i) The appearance of the cover is attractive.

ii) The size and shape of the text-book would not be a handicap to students.

iii) The placement of the illustration is pleasing.

iv) The design of most pages is open, rather than crowded.

v) The size of the type makes for easy reading.

Partial Score...

Final Score…

**Reviewer's Form:**

The reviewers are to submit a composite report on each book with reference to each sub-head of the questionnaire.

1. Syllabus:

a) Are all the instruction fully carried out in writing it?

b) Is there any omission of thing needed by the syllabus?

c) Dose the book conforms to the prescribed syllabus?

d) Is there any departure from the syllabus?

e) Is there anything outside the scope of prescribed syllabus?

2. Subject-matter:

a) Is equitable importance given to the different topics?

b) Is there any inaccuracy, mis-statement or mis-representation of facts?

c) Is there anything that would offend a community or any section thereof, or any individual or individuals?

d) Is there anything that may be morally and politically offensive?

e) Dose the book contain any material that would be too difficult

to understand for pupils for whom it is meant?

3. Treatment of Subject-matter:

a) Are the subject-matter divided into suitable units and such units properly organized?
b) Are the topics properly correlated where correlation is essential?
c) Dose the presentation of the subject-matter keep in view the aim and the object of the curriculum and other instructions given in its behalf?
d) Is the language simple, suitable and correct?
e) Are there any special features worthy of notice, in regard to presentation of the subject-matter?

4. Teaching Aids

a) Are there sufficient exercises in the book to test the attainment of pupils and stimulate them to independent thinking?
b) Are the exercises of the proper type, well-graded and intelligent?
c) Is the book properly illustrated?
d) Are the pictures, portraits etc. natural and exact representation of text, distinct in point and appealing to children?
e) Are the picture, portraits etc. useful and helpful in understanding the texts?
f) Are there any pictures, portraits etc., inside the book which has no definite purpose to serve?
g) Are there necessary maps, charts, diagrams etc. inside the book and are the incorporated ones correct, flawless and distinct in print?

5. Physical Aspects.

a) Is the quality of the paper good?
b) Is the printing clear and pleasing to the sight?
c) Is the type head used suitable?
d) Is there sufficient space between two printed lines.
e) Is there sufficient marginal space on all sides of a page?

f) Is the binding satisfactory?

The above points can be rated on a five-point scale. In case of rejection, the reason justifying rejection should be stated in brief. In case of selection he will certify in the following manner:

The book with the symbol No... (Here state the code no. of the book) is found suitable and stands… (Here state the position of the book) in order of merit according to my impartial and unprejudiced judgment. It may be approved as a textbook if the following defects are removed-(here mention the defects).

Signature of reviewer

With date

## 3.8 HOME SCIENCE LIBRARY

### Home Science Library:

A Home Science library should be an essential part of each school which undertakes Home Science teaching.

A well-equipped Home Science library should be the primary requisite of every school. It is a matter of controversy whether the Home Science library should be kept separate from the general school library under the change of the Home Science teacher or should form a part of the general school library. The former plan is better because the teacher will find it easier, more convenient and more effective to draw the attention of the pupils towards a certain book for a particular topic. She can observe to what extent pupils are attracted to additional reading, and note any particular field of interest. Moreover, the books are readily available for reference or for borrowing, without any loss of time or interest. However, Home Science books of general interest should also be kept in the general library.

Before setting up a separate science library the Home Science teacher should see the money and the accommodation available. Accordingly, she should plan to set up the library. A wise selection of books is needed for building up a really useful Home Science library.

The teacher should inculcate in the pupils the love for reading and ability to use reference books. The pupils may be asked to write a brief review of the books they have read. A small committee of students should be elected to help Home Science teacher in the library work. A cross-reference index should be maintained in which the teacher should briefly indicate the information contained in the books. This index should help as a guide to pupils in their reading.

### Need of a Library

In the school our aim is not merely to prepare pupils for the examinations. The objectives of school education are to widen the outlook of the students, to instill in them a love of extra reading. A textbook convey knowledge and information in some specific way. A growing and developing and craves for wider and extensive contacts with other, their writings and their saying. He does not like to remain confined to the length and breathe of a textbook knowledge, class room teaching and examination oriented teaching.

### Organization:

Though a well equipped subject library under the charge of subject teacher is desirable yet a Home Science library under the charge of Home Science teacher can serve the purpose of all Home Science subjects. Such a library is set up preferably in a small room of in a corner of the Home Science laboratory where some shelves or almirahs be reserved for storing the library books. The Home Science teacher can equip the library depending on the availability of funds and accommodation for the purpose. For setting up rich library with limited funds, it is necessary that Home Science teacher is very thoroughly acquainted with the latest and good books available as the subject. For building up a good Home Science library teacher should select for the library only such books which cover wide range of topics. These should be the books that deal with topics in cooking laundering, nature study, environment, ecology, pollution etc. Books of Home Science, engineering, scientific discoveries and inventions, quiz, projects, fun in Home Science etc. must also find a place in Home Science library. Home Science library should also have some books on the lives and achievements of some great scientist and some books dealing with hobbies like photography, fashion designs etc. Some standard reference books and books on methods of teaching of Home Science are also purchased for school library.

The selection of books is a difficult task and Home Science teachers can solve it by making use of fairly exhaustive list of books available from various publishers. For list of such books she can also seek guidance and help from N.B.T (National Book Trust) of India, NCERT and other such organization as SCERT of their state. Home Science teacher should also read reviews of books published in some good journals for schools.

**Storage:**

i) Each school should have a separate Home science library.

ii) Home Science books of general interest are stored in the school library.

iii) A separate section is allocated in Home science library for reference books. Reference books are for use by teacher as also by students but these should not be ordinarily issued for home use.

iv) Books on methods of teaching Home Science are stored in a separate section in library and these are meant for use of Home science teacher.

v) Home Science teacher be asked to become in charge of Home science library. She may be assisted in her library work by a small committee of students.

vi) Teachers should take some measures to encourage love for library books amongst her students. Teacher can ask the students to prepare a brief review of the books

read by them and some of these reviews considered good be published in Home science magazine and Home science bulletins.

vii) A cross reference index is prepared in which teacher and students indicate briefly the information contained in the book ready by them. Such an information may be provided under the relevant heads and a proper use be made of this index for guiding the students in their reading.

viii) Complete sets of various text books should be available in school library.

ix) A few laboratory manuals must also be available in school library.

**Aim to be achieved by setting up a Library**

By the proper use of library it is expected to achieve the following aims.

i) Encourage reading habit in pupils.

ii) To develop the ability to learn, from books, in the students, if left to themselves.

iii) Break the rigidity of time-table that isolates one subject from the other.

iv) To provide better opportunities to the students for social training.

**Advantage of Library**

We have of number of advantages that occur from an efficient library service. The library proves to be instrumental in putting progressive methods of teaching into practice. It supplements the knowledge learnt in the class-room. No single book can be comprehensive in all its details. Extra reading is needed to make it complete. The library may develop the student's habits of supplementary reading. It incidentally educates them for leisure. The library, if properly equipped and intelligently used and service well organized, can do a lot of benefit to the school population. A library is not merely a collection of books and their advantage goes far beyond of exerting some cultural influence on the child through the reading material.

**Equipment for Library**

The library should be housed in an attractive place that is well ventilated and well furnished, homely comfortable and workman like. The furniture, tables, chairs, catalogue stands, stacks and book shelves should be designed to provide an artistic effect and functional efficiency. There should be proper selection of books, journals, periodicals and newspapers. A small library committee may be constituted to recommend the purchase of books on different subjects' teachers on the committee must be genuinely interested in the selection of the books. They may consult reviews catalogues from standard publishers as Oxford University Press. Macmillan, Megraw Hills, Longman, Indian Press Ltd. Allahabad University publisher Jallandur

and Atma Ram and Sons Delhi etc. or may write to training college for guidance. The teachers may visit book shops for selection of books. Books selected should be according to the interests and tastes of the students. There must be a separate library room. If the space in a school does not allow this it may be turned into library-cum-reading room and may be housed in the hall. The practice of placing book shelves here and there in the class-rooms should be discouraged. The area of the library may vary from 600 sq ft to 960 sq.ft with attached reading rooms. The library should have only one door for entrance as well as for exit. That leads to proper control on the readers.

**Usage:**

Every school should have a fulltime librarian. The teacher in charge of library should possess training in library science. In the library there should be different sections. But in each section the need of the peoples of different intellectual capacity and attainments must be kept in mind. There is also the felt need to have a teacher's section in the library. Teacher's also needed to replenish their knowledge once learnt in training colleges. Books on various aspects of Home Science should also find a proper representation in teacher's section. Textbooks, reference books, magazines, newspapers, supplementary reading etc. should be kept in the library.

**Cataloguing:**

The catalogue interprets the classification system of a library to the teacher. All the books may be listed three times according to the author, the title or the subject. It is through the catalogue that one can easily locate any book. It can also tell one the number of volumes the library contains on a particular subject. The catalogue may be according to the alphabetical order of the subjects or it may be a classified catalogue following Dewey's system card index may be maintained.

## 3.9 TEACHING AIDS

In the present technological age, the full potential of audio-visual aids need to be explored by the Home Science teacher for more effective teaching. This chapter highlights the importance of audio-visual aids in general and educational technology in particular. As most of the learning takes place through the senses, audio-visual aids can help to ensure effective learning and breaking the monotony of the classroom scene. If these teaching aids are properly, well-planned and then the purpose for which they are made would be defeated. In this chapter a

few tips on, use of audio-visual aids in general are given, and practical hints on effective utilization of several audio, visual and audio-visual aids are also included.

**Definition:**

Audio Visual aids refer to training or educational materials directed at both the sense of hearing and the sense of sight; films, recordings, photographs, etc., used in classroom instruction, library collections or the like.

**Principles of selection**:

In choosing the best device for use in a particular presentation, the following factors must be considered:

**Circumstances:**

The aid should be chosen according to the age, intelligence and experience of the students. Besides this basic consideration the teacher will have to consider the following points.

- For what purpose is the aid being made?
- Is it to be used once or many times?
- Where is the class to be held? Whether you have to transport any of the display equipment and do you need people's help in this? Will electric power be available in the room chosen?
- With what type of aid is the teacher already familiar? Making due allowance for experimentation, a teacher is likely to do a better job when using aids with which she feels comfortable.

- **Subject :**

The teacher**,** while choosing an audio-visual aid, will have to consider the following questions.

- Is any particular effect required in the presentation, such as realism, surprise, and shock?
- Does the information demand a gradually built up display? Does it have segments to be manipulated? The flannel board and magnetic boards offer more possibility of movement than the chalk boards. It is easier, for instance, to build up a display on the overhead projector than on the flip chart.

- **Cost :**

- Most of these devices cost considerable sums of money. The over head projector and its screen are highly expensive, charts are the least expensive but procuring of suitable boards to hang on the charts may pose a problem. The chalkboard,

ofcourse requires no additional expenditure. Would the same topic be taught as effectively using less expensive audio-visual devices?

- **Availability :**

➢ Unless the aid is available where and when required one cannot use it.

- **Appropriateness :**

➢ Is the audio-visual aid used suitable to convey the message it seeks to communicate? For example, if the topic is essentially one that requires portrayal of motion, does the medium depict motion? Or if color distinction is essential to the message, is the aid in color?

- **Technical Quality :**

➢ Is the audio-visual aid used to, is technically satisfactory, in photography (color, exposure, angles, focal lengths of lenses used) editing (cuts, continuity) and sound?

**Principle of use:**

1. The teacher should be skilled enough in the usage of the aid, it requires thorough planning.
2. Active participation of students should be sought while using the aid.
3. The aid should be easily accessible in case of need.
4. The utility of the aid should be gauged at regular intervals.
5. In general, audio visual materials can be used for:

- Introduction of a unit.
- Development of a unit.
- Interpretation of a unit.
- Follow up of a unit.
- Co-relations of bit of information.
- Transfer to real life situation.
- Motivation aid and arousing of interest

### 3.9.1 Classification of Audio-Visual Aids:

**Dale's Cone of Experience**:

Edgar Dale (Educational Media, 1960) often cited as the father of modern media in education, developed from his experience in teaching and his observations of learners, the “Cone of Experience” . The cone’s utility in selecting instructional resources and activities is as practical today as when Dale created it. Dale’s cone of experience is a model that incorporates several theories related to instructional design and learning process. During the1960s, Edgar Dale theorized that learners retain more information by what they “do” as opposed to what is “head”, “read” or “observed”. His research led to the development of the cone of experience. Today, this, “learning by doing” has become known as “experiential learning” or “action learning”.

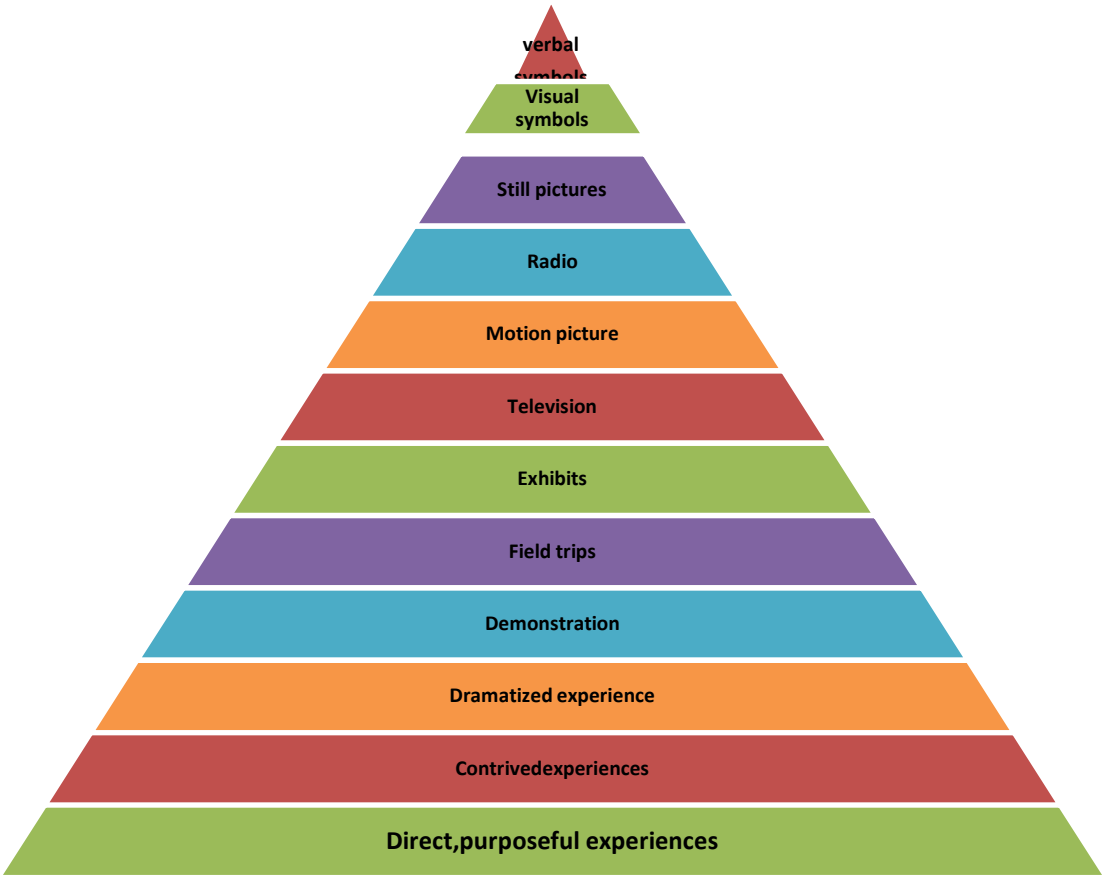
The experience included in the cone is given below:

1. Direct, purposeful experience.
2. Contrived experience.
3. Dramatic participation.
4. Demonstration experiments.
5. Field trips.
6. Exhibitions and Museums.
7. Television motion pictures.
8. Radio and recordings still pictures, pictures illustrations, stereographs, slides, filmstrips and micro projections.
9. Designed materials.
10. Verbal symbols.

1) **Direct purposeful experiences:** By this we mean the experiences which we get by actually getting into contact with the reality. For examples while studying about oxygen, if the students themselves prepare oxygen in the laboratory using the necessary ingredients and apparatus and then analyze its properties using physical and chemical tests, we say that they are getting direct experiences. By touching, handling or doing something personally the students get first hand experiences which are very vivid in nature. These experiences form the basis of our knowledge.
2) **Contrived Experience:** The experiences which the pupils get by handling or operating a model are called contrived experience. For examples the anatomical models like the models of heart, lungs, eyes, ears, intestines etc. and the working

models of micro-oven, mixer etc can provide the students with contrived experiences.

3) **Dramatized Experiences:** The experiences which the students get by actually taking part in dramatization of historical events, episodes, literary masterpieces, etc. are called the dramatized experiences.




4) **Demonstrations:** Edgar Dale defines it as a visualized explanation of an important fact, idea or process. The demonstrator shows, how certain things are done. A Home Science teacher demonstrates the different preparation of dishes and an arithmetic teacher demonstrates the use of an abacus. In demonstration the students are merely asked to observe.

5) **Field-trips:** Field trips are arranged to take the pupils out of the school to visit places and projects or to interview eminent persons, officials and leaders. In field-trips very often students may gain direct and firsthand experience.

**6) Exhibits:** An exhibit is something which one sees as a spectator or visitor. There are two types of exhibits - commercially mode exhibits and improvised exhibits. The improvised exhibits may be prepared by the students themselves under the guidance of the teacher. This improvisation is a rich learning experience for the student.

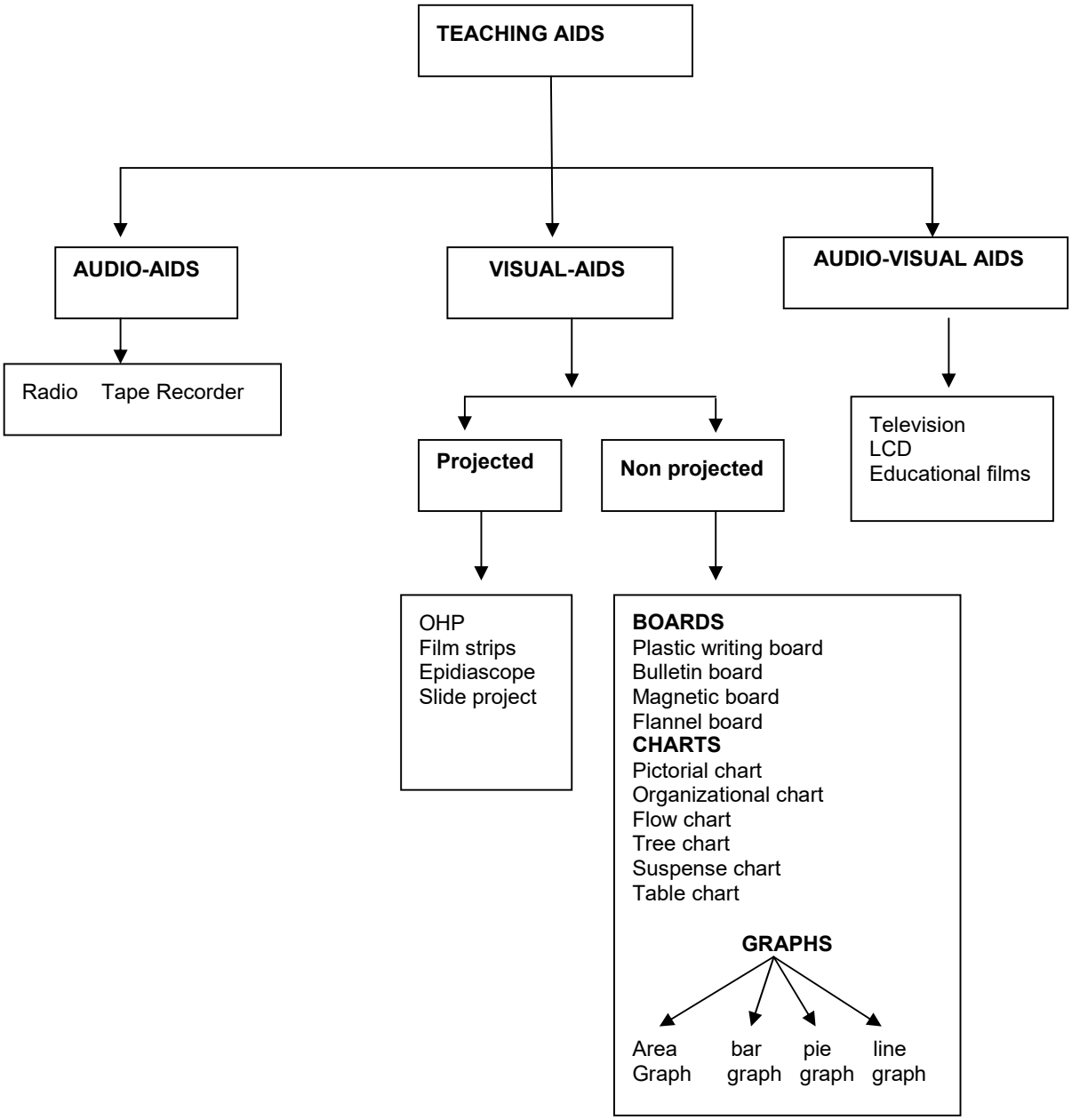
7) **Television and Motion Pictures:** The experience provided by the television or the motion pictures resembles the real life situation very closely, because of the combination of sound, motion and color. But while watching the television or the motion picture we become silent spectators and we don't actually take part in the action depicted on the screen.

8) **Still pictures, Radio, Recordings:** The next division on the cone includes still pictures (photography and other visual reconstructions of reality), radio and recording. These materials provide experiences which are less direct than TV or motion pictures experience. The TV or motion pictures are audio-visual in nature, still pictures provide visual experience only, and the radio and recording provide merely auditory experiences.

9) **Visual Symbols:** Chalkboards, Flat Maps, Diagrams, Charts, etc.:- These are abstract representations. The teacher can communicate through these visual symbols also. Edgar Dale says, "Even elementary school children, when they have been properly prepared, can manage a great deal of conceptualized experience through the abstract language of visual symbols."

10) **Verbal Symbols:** Verbal symbols are the most abstract in nature. Words do not have any resemblance to the objects or ideas they represent. "The word horse does not look like a horse or sound like a horse or feel like a horse". Though the words are abstract, very often they simplify communication.

Since sensory experience form the foundation for any intellectual activity, these experiences could be affected by means of a number of teaching aids. They provide for a great variety of methods. They bring the outside world into the classroom and make us teach effectively. In order to deceive the advantages of using teaching aids, a teacher needs the knowledge of different types of teaching aids available.




### 3.9.2 Audio-Aids:

Audio aids are defined as, any device used to facilitate in the communication of an idea through the sense of hearing. The audio communication aids are like radio, tape recorder etc., which will be helpful for the students to hear the educational and entertainment activity.

It will sustain the interest of the students in the content part. Most of the teaching-learning process held inside the classroom atmosphere provides aural experience. According to the individual differences the understanding and retaining capacity may differ. It is very much useful for the visually challenged students. But again it is a one way communication, where it will not be able to clarify any doubts.

**Radio:**

By definition, a radio is the transmission and reception of signals by means of electromagnetic waves. Radio listening contributes immensely to the student's fund of information. It exerts an influence on his attitudes and appreciations, social behaviour and power to develop critical thinking.

**Advantage of Educational (Radio) Broadcasts (EB):**

- It has potentially a great coverage to spread information.
- It is usually not that expensive in unit costs.
- It can be received anywhere - either in the home or in the school or even while travelling.
- It does not require electrification.
- It has the capacity of obtaining imaginative involvement of listeners.
- It has the capacity to bring a dramatic feeling in the classroom.
- It has the warmth of a drama, the personal feeling of the actor's presence.
- It is very much suitable for supportive type learning.
- It sometimes easily serves as an inspirational material.

**Disadvantages:**

- Timing of the school radio programme often clashes with the school time table.
- It is a one-way communication, as the class cannot ask questions and clarify their doubts, when the programme in on.
- There is a shortage of radio sets in Indian schools.
- Listening requires concentration because the listener's attention is held primarily by the sound.
- Radio needs to be kept in excellent functional condition; be properly tuned in on time, and be available when needed.

**Tape recorder:**

Tape-recorder is used to record sounds on magnetic tape which can be reproduced at will as many times as required. When a new recording is made, the recording already contained in the tape is automatically erased.

Tape recorder is a boon of science. Even those voices, which we couldn't listen now, are preserved by a tape-recorder. Important speeches, discussions and the sounds and voices even from nature can be reproduced before the pupils. Thunder of cloud, hissing of a snake, roar of a lion and the song of a cuckoo are within our easy reach with the help of this scientific teaching aid.

The following seven points are the main criteria that should be looked into when choosing a cassette recorder.

**1. Portability:** The recording equipment should be light weight and easy to carry if it is to be moved from one room to another.

**2. Versatility:** Does the school need only a tape recorder or would a two-in-one with stereo system be a good to buy?

**3. Performance:** It should record and reproduce good sound and operate at constant speeds.

**4. Simplicity:** It should be easy to operate so that any layman can operate it.

**5. Construction:** The construction and design should be such that it can stand the wear and tear of daily life.

**6. Price:** Select equipment on the merits of performance relative to its price level and how well it meets the needs of the school.

**7. Company and dealer:**

It is wiser to choose equipment from a well known authentic firm. A dealer in the same locality would be convenient, both for regular maintenance and service.

**Educational use of Tape Recorder:**

- Tape recorder can be used to record educational broadcasts and for reply at suitable and convenient times.
- Tape recorder can be used to record music, the talk of an important visitor to the institution and other cultural programs in schools.
- Tape recorders are used in language laboratories for giving speech training and for correction of pronunciation defects.

- Instructions for doing experiments or any activity can be recorded on cassettes and the individual can listen to it through the earphone and do the necessary operations without disturbing others.
- Commentary to filmstrips can be suitably recorded on tape recorder and the tape may be played back while the students view the filmstrip pictures on the screen.
- It helps in preservation of sounds for future use.
- It can be used for duplication of sounds.
- It helps the students for the practice of public speaking.
- It is used for rectifying defective speech.
- It is of immense help in drama rehearsals.
- In teacher-training institutions a tape recorder can be very effectively used in micro teaching sessions. The tape recorder will provide the necessary feedback for discussions to improve the lesson.
- It helps in synchronization of sounds.
- It is of great help in the teaching and learning of foreign language

### 3.9.3 Visual Aids

Words are not enough for communicating an idea. The same word may even mean different things, to different people. We speak different languages and so many times communication becomes difficult. We use audio-visual aids to provide our audience with a situation near to reality. So, that they get the ideas readily. For this purpose we use demonstration, pictures, photographs, slides, graphs, and charts, display material on bulletin boards, black boards, models, specimens, filmstrips, flannel graphs, puppet shows, drama, motion pictures and television.

Visual aids can broadly be divided into projected and non-projected aids. The projected aids are again divided into two types they are projected still aids and projected motion pictures. The non-projected aids can be divided into two. They are teaching aids and display visuals.

#### 3.9.3.1 Non-Projected Teaching Aids:

The teaching aids, which are non-projected visuals and can be prepared and used by teachers, are:

**Graph:**

Graphs are quite effective in conveying complicated facts and showing comparisons and contrasts. These may be area graphs, bar graphs, pie graphs, line graphs and picto graph.

**Area Graph:**

When we want to show figures, line yield from one acre of land in control and treated plots, this is a very good aid for representing the figures.

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Treated
(Local Seed + LMP Method)

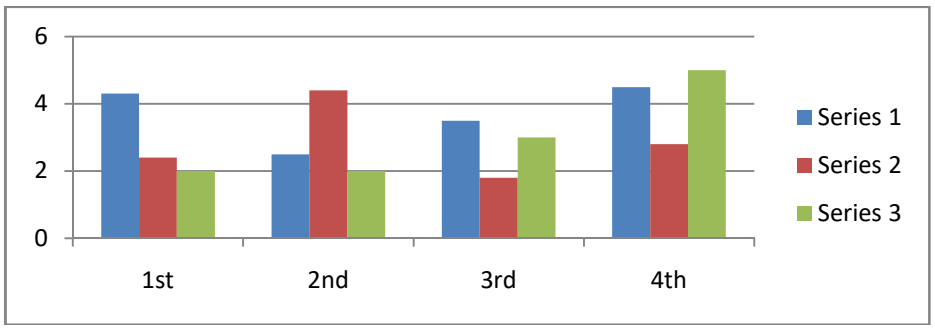
**Bar Graph:**

These can be

a) Multiple graphs

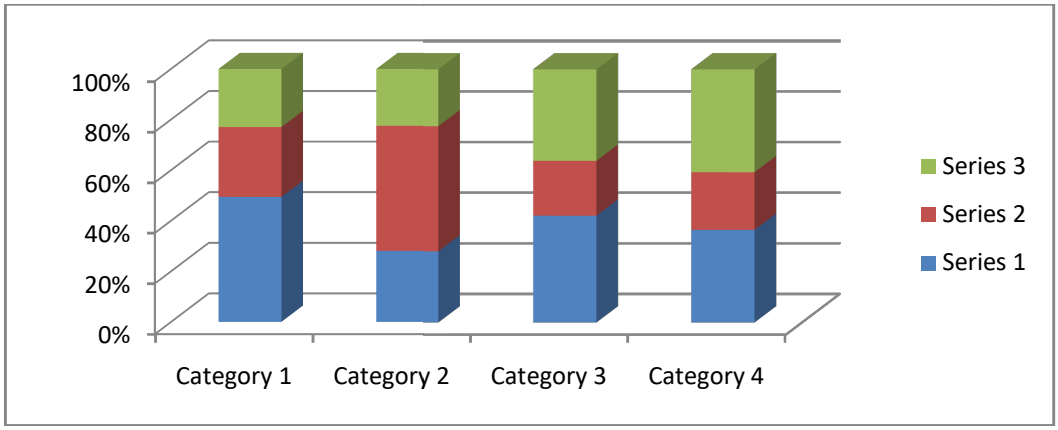
b) Divided graph

**Multiple Graphs:** It compares two are more bars with a numbered scale to show desired information. The bars can either be vertical, horizontal depending upon the size of the graph paper and contents of the data to be graphed.



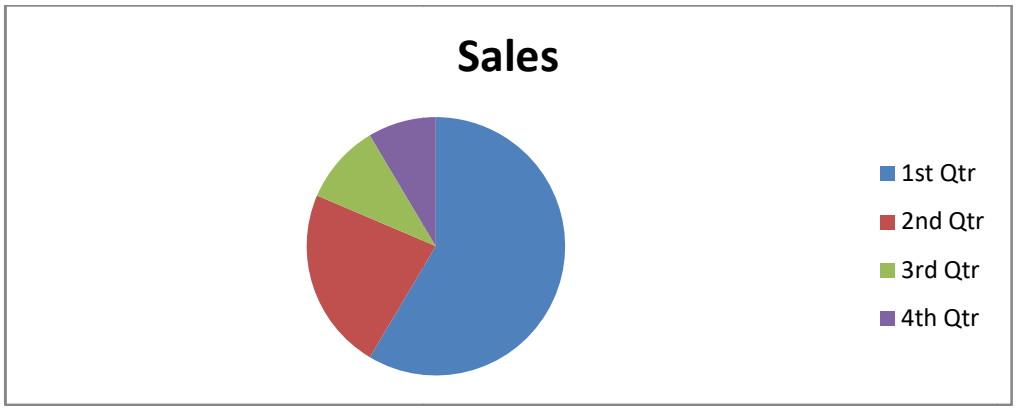

**Divided Bar Graph:**

Each bar graph has sub-divisions to indicate the respective divisions. These sub-divisions may be represented with different colors of different types of lines as signs.



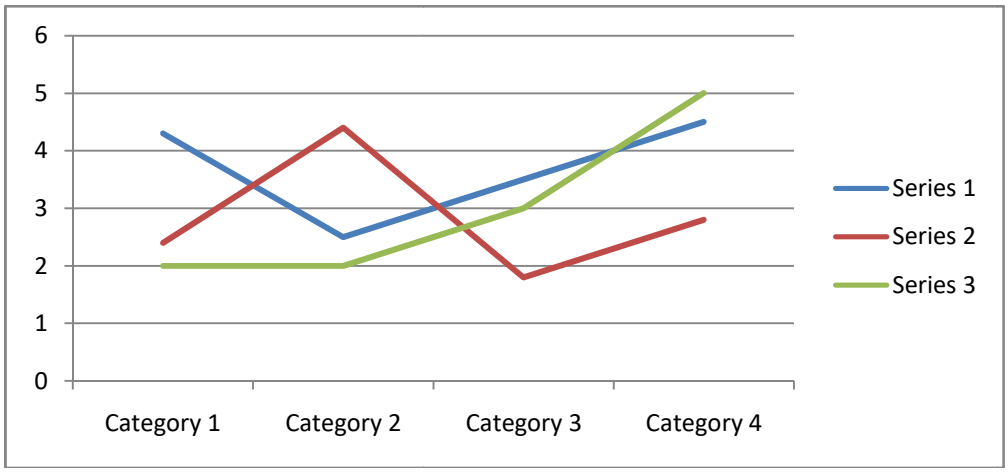

**Pie Graph:**

In making such a graph of circle, a circle is divided into segments to indicate different parts of whole.




**Line graphs:**

It can show the growth trends frequency of a factor. This is graphic transaction of the numerical or statistical data. Many things can be shown by lines as dotted lines or lines of different colors of types.



**Charts:**

Charts are one of the important media of teaching. Formerly, chart usually referred to a type of map used for navigation, an outline map exhibiting temperature variations or perhaps a sheet giving tabular information. At present the usage of the term chart include a wide variety of graphic and pictorial material. A chart is a systematic arrangement of key facts or ideas in a graphic or pictorial form.

A chart contains series of ideas. It is used in the testing stage either alone or in combination with other ideas. Charts can be:

1. Pictorial
2. Organizational
3. Flow chart
4. Suspense chart and
5. Tree chart

**1. Pictorial Chart:**

A chart may contain pictures suitably colored and written matter. It may contain a graph or may be a combination of pictures and graphs. Pictorial charts depicting the important steps of package of practices of any crop or how-to-do type of things, with brief captions are very effective in communicating technical information to a lowly literate audience.

**2. Organizational Chart:**

This shows the structure of an organization; say State department, Agriculture University, and Development department etc.

**3. Flow Chart:**

When we try to tell a story of how a product is obtained as a result of series of processes, we can depict it in the form of a flow chart.

**4. Suspense Chart:**

The full story is depicted in writing or in a picture and is kept covered with strip of paper. As we talk we remove the strips of paper as we proceed in our talk. These are fixed with taps so that they can be removed easily.

**5. Tree Chart:**

In this the divisions or sub-divisions are represented by a trunk of a tree with branches and sub-branches, or a stream with its tributaries or sub-tributaries.

**6. Table Chart:**

Anything that is recorded or presented in a tabular form is a table chart.

**Posters:**

A poster helps the extension workers to get across an idea to the audience. It is a visual aid which helps to catch the attention of the audience and pass on to them a simple message at a glance. The audience should become aware of the event, practice or idea you want to communicate.

A poster has to be hold in design, simple to understand and attractive in color. Its components may be:

a) Picture of illustration,
b) The words,
c) Color and
d) Space

Picture should bring out the message clearly at a glance. Avoid unnecessary details so that the viewer's attention is not confused. If it is photograph, avoid unwanted surroundings and bring out the point prominently. While preparing illustration, the experience of the audience and use of subjects familiar to them should be kept in mind.

Caption should be as small as possible. A five-word caption is the best. The caption should not be written vertically as it creates difficulty in reading. Do not break the caption.

Color should be bright and attractive. The centre core can be highlighted with a more prominent color. Even in the caption some prominent word can be given a different color. Do not use more than three colors. Do not use odd combination of colors.

Space should be provided adequately. If the poster is loaded with pictures and words the viewer gets lost.

Layout should be well balanced so that the viewer's eyes can travel smoothly and quickly through the caption and illustration.

Check the rough lay out. Show to some people of the level your audience. If there is any misconception or ambiguity, remove it.

The poster should recommend action. It should be placed where people pass or gather. It should give only one idea and details should be given through other media.

**Chalk board:**

The chalk board is a basic, most widely used and versatile tool of instruction. Even in this modern era of television and computers, it remains as the most trusted and powerful companion of a teacher. When used wisely, it can make a lesson interesting and thought - provoking for the

teaching of languages, science, mathematics, and technology and to a smaller extent in teaching other subjects.

**Types of Chalk Board:**

The modern chalk board is made up of the following different types of writing surfaces:

**1. Paint coated pressed wood:**

Hard board or any plywood surface finished with dull paint. Special paint is available for coating any surface for use as chalk board.

**2. Dull finished plastic surface:**

Any suitable colored plastic sheet - P.V.C. or laminated plastic sheet - may find special use.

**3. Vitreous coated steel surface:**

A vitreous coated sheet board may be used as a magnetic board.

**4. Ground Glass Board:**

Ground Glass Board is the ideal board for the modern classroom. Ground glass board with a very large area can easily be prepared and fixed to a wall. It can be made in a variety of colors. The most important aspect to be considered is that there is no coating of any material on the writing surface to wear out. The writing surface is ground glass.

**Uses of Chalk Board (Advantages):**

- Generally it is easily available and inexpensive.
- It does not require any advance preparation of visuals.
- It provides a very convenient surface where the teacher can develop subject - matter visually in a manner and at pace to suit the subject and the pupils.
- It is especially helpful for demonstrations of the construction and use of mathematical and chemical equations.
- It breaks the monotony of narration and gives variety to the classroom scene.
- It connects the audio and visual sensations which are helpful in learning.
- This aid is economical both in terms of time and money.

**Disadvantages:**

- It requires the speaker to turn away from the audience.
- It encourages the speaker to talk to the board and forget his audience.

- The chalk board can prove to be dusty and messy to hands and clothing.
- Dramatic, unusual effects are not possible.
- Visibility can pose a problem, as students could be troubled by glare etc.

**Tips to use chalk board effectively:**

- Keep the chalk board clean. Before starting the class, check that you have everything you may need - chalk (various colours) duster, ruler, any template necessary etc.
- Chalk board glare should be avoided, check adequate lighting conditions.
- The writing on the chalk board should be neat and bold so that it can be understood easily by all the students.
- Make the matter simple, brief and precise.
- Highlight key concepts with colored chalk either by underlining or by using boxes.
- Erase all unrelated material. A cluttered blackboard can prove distracting.
- Complicated diagrams could be drawn before hand in a roller chart board and displayed.
- While developing or drawing a diagram, the teacher should keep talking to hold the interest of the class.

**Plastic Writing Board**:

This is a modern, modification of the chalk board. It is available in pleasant colors and in assorted sizes.

**Advantages:**

1. The plastic writing board is less messy than the chalk board.
2. Writing on it is noiseless, without the irritating 'screech' sound.
3. It is bright and pleasant to look at.
4. Electrostatic quality permits adhesion of thin papers and plastics for displays.
5. The light surface can also be used as a projection screen.

**Disadvantages:**

1. It is expensive; not all schools can afford it.
2. Special pens have to be used and they are not easily available.
3. Some boards scratch easily.

**Bulletin Board:**

The bulletin board is one of the oldest methods of visualizing organized instruction. It is a place for displaying bulletins, new items, announcements, multifarious items and visual displays

that are interesting to the students. The bulletin board and the chalkboard are two of the minimum visual needs in every classroom.

**The purpose of a bulletin board is:**

- To motivate and arouse the curiosity of the pupils;
- To display graphic and pictorial materials linked up with the curriculum in an attractive manner.
- To introduce or summarize a unit of work or to analyze a topic graphically.
- To display work done by students.
- To provide basic means of general communication.

Effective bulletin boards must be planned to meet specific instructional problems. The following outline will be helpful in planning and preparing a bulletin board.

- Select a specific topic and plan the theme of the bulletin board.
- Select the right materials that will contribute to the lesson.
- The planned arrangements may be formal or informal.
- Colorful backgrounds, mountings and accessories catch the attention.
- Use of neat and clear lettering makes the board more attractive.
- The proper pedagogical atmosphere can be created in different ways by using different color combinations and styles of lettering.
- The arrangements should be such that well planned labels and illustrations depict the entire story.
- Adding color or an interesting design makes the display more impressive.
- Avoid crowding the exhibit and space the matter displayed on the board to avoid a crowded appearance.
- The bulletin board with original ideas will be more interesting and a challenge to the students.
- Interesting and important Home Science relevant activities and news should be displayed or exhibited.

**Magnetic board:**

Magnetic writing board is a modification over the flannel board where in special magnetic pins are used for mounting the visuals.

**Advantages:**

1. A magnetic board permits combination use as prepared visuals and as a black-board.

2. It can be used as a pin-up board with magnetic serving as drawing pins.

**Disadvantages:**

1. The board being heavy is not portable.
2. It is expensive and a flannel board might be a better choice for most schools.
3. Small magnets to hold the visuals in place are not easily available.

**Flannel board:**

The flannel board consists of a piece of flannel or felt made from wool, stretched tightly over a strong backing of plywood. Pictures, cards and similar material can be made to stick on the flannel board if small pieces of sand paper, blotting paper, felt or flannel are glued to their backs. Foam rubber sponge and nylon hook and loop material like Velcro, will also adhere.

The flannel board is an extremely, versatile instructional device. Processes and procedures can be developed step by step while materials are added, taken off or moved as the presentations unfold.

**Advantages:**

- It can be prepared beforehand and reused.
- The flannel board permits quickly back and forth adjustment of bits of material and helps in dealing with all categories of students.
- It permits logical build up of a sequential process.
- Being colorful, it is a good attention gatherer

**Disadvantages:**

- It cannot be used as a chalk board.
- Visuals must be prepared ahead of time.

**Handling tips:**

- Plan in advance the exact appearance of the board at any one time, so as to determine where to place each visual on the board. Positions can be marked in light chalk.
- Arrange the cut out materials in order before you begin.
- Place the visuals at appropriate place and orientation. Most of the visual should be set on a horizontal plane. This takes some rehearsing.
- Place the pieces on the board with a gentle down movement so that the fibers engage. Brush the flannel occasionally to clean the surface and roughen it.

**Maps:**

Map is an accurate representation in a diagrammatic form of the surface of the earth, or of some part of it, showing the physical and political features. Maps are meant to show precision in relationship with space, which in actual life enables us to tell exactly where, in a given direction a place is located, how far away it is and what other things are on the way. Maps vary widely in type and content according to their purposes. There are varieties of maps like physical map, political map, navigation map, picture map, historical map, weather map etc.

**Advantages:**

1. To motivate the class..
2. To present an idea forcefully.
3. To add an atmosphere and compel attention.
4. Help us to see the complete world at one time.
5. Map reading skills develop reading readiness.

**Models:**

Models should tell a story without the need of an attendant. While planning a model, limit it to one idea and make it simple and large. It should be timely, durable and attractive having bold letters of few items. All parts, which need explanation, should be labeled. An object is a real thing, but model is just a three dimensional representation.

Models simplify reality. As they are three dimensional they evoke greater interest. Models concretize abstract concepts. They simplify complex objects and highlight important features with color and texture. Models of compact dimension can be used in the classroom for teaching. They provide an interior view of objects and machines. A working model can draw immediate attention and will serve as a motivation.

Models offer a kind of short cut or substitute for the real things and can be more effective than reality. A working model will secure immediate interest and attention and serve as motivation. Hence pupils / teachers using good working models can achieve results as much as pupils sharing direct experience.

Models should be used only when real objects are not available in the classroom or when it is helpful to give a better explanation. Cardboard and Thermo Cole can be used as materials for making models.

**3.9.3.2 Projected aids:**

Projected aids are more effective and attention compelling than the non-projected aids. Projected aids involve film strips, slides and transparent materials. They are suitable for large groups as well as small groups.

**Epidiascope:**

There is a combination of episcope and diascope. It is used for projecting flat pictures, book diagrams, thin opaque objects and also slides. In epidiascope one 100 watts lamp or one 500 watts lamp are used. There is a powerful blower cooling the lamps and directing air on the opaque object to be projected. In spite of the cooling if the object is placed for a longer time it will become dehydrated and crumbled to pieces.

The projection lenses should be kept covered when not in use to prevent dirt and dust on the exposed front surface. During epi projection room should be totally darkened.

**Filmstrip:**

A film strip is a piece of non-inflammable safety film. It is related in sequence of transparent still pictures or frames. These pictures may consist of a story, a connected series of drawings, to illustrate a single topic, theme or story. The film can be advanced frame by frame at definite intervals and focusing can be done by adjusting the projection lens.

**Advantages of film strips:**

1. Light and easy to transport.
2. Non-fragile and non-inflammable.
3. Moderate cost.
4. Availability of filmstrips can deal with the variety of subjects.
5. Comparatively at low cost of the projector.

The Home Science teacher can select suitable filmstrips that have specific relation to the topic. She can then become thoroughly familiar with the content so that she could explain the difficult concept. The filmstrip lacks motion and sound. Hence the Home Science teacher using her skill can tape her comments and play the tape synchronizing it with the frames of the filmstrip.

**The overhead projector:**

The overhead projector is so called because the projected image is behind and over the head of the speaker. Overhead projectors are used for direct or indirect projections.

This device comes in models of various sizes and projects large size transparent images onto a screen under normal daylight conditions. Transparencies may be conveniently produced by drawing or writing directly onto transparent acetate sheets (up to 25 cm. square) with felt tip pens or special O.H.P. pens. They may be also prepared using a photocopy process in which case

the illustration is prepared on an ordinary sheet of white paper. The Home Science teacher with the help of a pointer can focus the attention of the class on the screen.

**Advantages of OHP:**

- **Large image:** A very large projected image is available within a short distance.
- **Face the audience**: Home Science teacher can always face the class and maintain an eye contact with the pupils and at the same time point out to the details in the picture.
- **Lighted room:** The equipment can be used in a well lighted room which enables the teacher belongs to Home Science to have control over the class and interest by turning a switch on or off.
- **Identify with the user:** The audience sees the visual from the point of view as the communicator. The feeling of oneness with the communicator is created.
- **Light weight:** The light weight of the equipment makes it portable. Hence it is easy to carry to the class.
- **Personalized presentation**: A personal approach is possible. Made at low cost and in a short time. Once a transparency is made it is permanent and need not be erased as in a chalk board.

**Slides:**

Slides are used in teaching to draw the attention, increase class interest and motivation. They can be projected in a partially darkened room thus facilitating further class discussions and note-making. They can be enlarged to the desired size, repeatedly shown and held on the screen for any period of time. A variety of typed or drawn material can be presented in different colors and combinations on slides.

**Methods of preparing slides:**

On the perfectly clean and dry glass plate picture can be drawn with good quality Indian ink using a crow quill pen. The glass plate can be coated with egg albumin. When the coating dries, pictures can be drawn with Indian ink. Gelatin can be dissolved in hot water and coated over the glass. Then diagrams can be drawn on the glass surface. Another glass plate is fastened to this glass plate by means of a tape.

**Types of Slides:**

There are different types of glass slides. The common varieties which are easy to prepare and easy to use are:

i) Indian ink slides.
ii) Smoke slides.
iii) Ground glass slides.
iv) Silhouette slides and
v) Cellophane slides.

**Indian ink slides:**

This is prepared with the glass of the standard size. The glass slides are prepared with two glass plates of 1/8" thickness each. The clean plane glass is coated on one side with the white of an egg and allowed to dry. On this side the matter to be projected is written or drawn using the drawing pen with Indian ink (or) other opaque ink. The written side is protected from scratches by placing over it another plane glass piece of the same size. This is called the cover glass. The two plates are firmly bound at the edges with gum paper or gum tape. Sometimes gelatin can be used instead of white of an egg.

**Ground glass slides:**

Ground glass slides are prepared by grinding one face of the glass plate into a translucent surface. The glass plate is ground of placing it over another thick glass plate on which fine carbourndum powder (or) emery powder of very fine sand is placed along with water on the ground surface the picture is reproduced with Indian ink (or) even with black lead pencils colorings can be done with transparent colors ground glass slides can be used only when the projector lamp is very powerful.

**Smoke Slides:**

In the preparation of these slides one side of the plane glass of standard size is coated with soot or smoke. On this coated surface the writing or drawing is made using sharp pointed object like a pointer or nail. These slides may be spoiled by even the light scratches and hence the surface with soot is covered with another piece of a glass. These slides can be black and white only and in preparing them caution must be taken to have uniform coating of soot (or) smoke.

**Silhouette Slides:**

To prepare this slide the figure to be projected is cut out of black paper and sandwiched between two plane glass pieces. In preparing these slides, projection may be effected in two different ways. If the cutout is placed between the glass plates the figure on the screen will be

dark and the silhouette will be bits. Instead, if the remaining piece of the paper is placed between the glass plates, the silhouette will be dark. Coloring these slides cannot be done as with other slides. Instead of transparent color papers, the cellophane paper have to be used at the place where the color is needed.

**Cellophane Slides:**

These have advantages over the other types of glass slides that typed letters can be projected on the screen. Cellophane paper with a light lamer color or without any color is cut to standard size. A carbon paper double this size is taken and folded so that the impression sides (or) the car-boned sides face each other. The cellophane paper is kept between the car-boned sides and letters are typed on it (or) diagrams are drawn. This will help to have figure on both sides of the cellophane paper directly. This cellophane paper is kept between two plane glass pieces and bound. If different sections of the slide are to be colored, color cellophane paper can be used.

**3.9.4 AUDIO VISUAL AIDS:**

Audio-Visual Aids are defined as any device used to aid in the communication of an idea. From this definition, virtually anything can be used as an aid to successfully communicate the idea or information for which it is designed.

An audio-visual product is any audio-visual (AV) item such as still photography, motion picture, audio or video tape, slide or filmstrip that is prepared singly or in communication to communicate information or to elicit a desired audience response.

Even though early aids, such as maps and drawings are still in use, advances in the audio visual field have opened up new methods of presenting these aids, such as video tapes and multimedia equipment which allow more professional and entertaining presentation. All together audio visual aids are devices that appeal to the eyes and ears of the learners.

**Television:**

The importance of television in the communication of information, ideas, skills and attitudes in a country like India cannot be undermined. It has an immediacy that spans time and space and brings to the viewing audience thousands of miles away, interesting and informative events in the making.

**Major educational values of TV:**

- Communication using the television can be effective because it can transmit a wide range of audio-visual materials like films, objectives, pictures, etc.

- Television gives the student access to excellence. One can see and hear gifted artists, great scientists etc. The programmes on television provide rich content to students and excellent instructional practices to the classroom teachers.
- Television is a great equalizer of educational opportunity.
- It can bring the world of reality to the classroom.
- Television can save the time of both the teacher and the students.
- It can heighten the interest in the topic as by using zoom shots, magnification and split screen such that the students get a good view of whatever is being demonstrated or shown on TV.

**Possible Limitations:**

- Television, like film and radio, could lead to a class of passive students.
- Television moves ahead at a constant speed. Thus the students cannot pace their learning.
- The programmes schedules of television (UGC or other school programmes) could raise administrative problems in some schools.
- As larger and larger numbers of students are taught by television, they will no longer have personal contact with the Home Science teacher.

**Major characteristics of instructional television:**

**Instructor Guide:**

A Home Science teacher on camera leads to the course of student through learning experiences.

**Systematic broadcasts:**

There are related to the course of study with objectives and planned learning experiences.

**Ordered and sequential:**

The broadcasts are presented at regular intervals in sequence - one builds upon another.

**Integrated:**

The broadcasts are related to other learning experiences such as laboratory experimentation and problem-solving.

**LCD Projection:**

Every Home Science teacher should be able to make a power point presentation with. Several website gives excellent tips on making power point presentations.

**How to make a good power point presentation:**

A power point presentation is a learning resource, so instructional design goals must be clear to the Home Science teacher from the start.

- Be clear about the objectives of your presentation.
- Provide a framework for learning. Remember that the outline of almost every lecture is exactly the same. Present an overview so that the class is clear on what is going on.
- Allow active engagement in the learning. If possible, keep some lights on so that students can take notes. Have a copy of the printout available in the library for reference.
- Stay within the limitations of short-term memory. Keep the number of points on each slide to five or less.
- Keep it simple. Avoid gimmickry.
- Retain eye contact with the students. Do not read from the slides blindly.
- Select a clear, fairly large font size so that all students can read slide easily. Avoid flowery and designer fonts.
- Keep in touch with the pulse of your class. Pose questions frequently so that the class does not get into a stupor!
- Remove as many distractions as possible. Do not fiddle around with knobs and other gadgetry. This can be very irritating for the students.
- Allow slides to support your talk, not to be your talk. Do not hide behind your slides. Remember that slides are only teaching aids, not the teacher.
- Set and keep the right tone. Too many slides can clutter and confuse the students.
- Check that the objectives have been met. A few questions every now and then can break the monotony of a power point presentation.

Every Home Science teacher needs to keep in mind that no teaching aid, no matter how sophisticated it may be, can replace a Home Science teacher. A Home Science teacher with subject mastery, excellent communication skills and the ability to develop rapport with the class is undoubtedly an irreplaceable asset to any school.

**Educational films:**

Educational films and television provide variety and stimulate in a way that the Home Science teacher cannot. In thirty minutes of filmed documentary, the student may learn more about the history of Home Science than she could in three hours of reading - and she many remember it for longer time. The films expand the reach of the ordinary classroom. It exposes the student to places which are either inaccessible or too dangerous for the ordinary human to go.

**Films can be classified into the following types:**

- Process films, review films, or films on general information.
- Industrial films - giving the details of plants, machines and their operations etc.
- School made films depicting the activities of the school Home Science club, science fair etc.
- Documentary films produced by the government on variety of subjects. e.g.: wild life, environmental awareness and so on.
- Newsreel - giving details of current events.

**Advantages:**

The following points indicate the specific ways in which films contribute to teaching.

- Certain meanings involving motion can be best presented by films. The complete process e.g. child growth
- The films compel sustained attention.
- Films heighten reality.
- Films can enlarge or reduce the actual size of objects while controlling the time factor, eg. : The blossoming of a flower can be filmed using slow motion technique.
- Films can provide an easily reproduced record of an event or an operation using close-ups, a demonstration can be made more meaningful, with a performance that every student can see adequately.
- Films can influence and even change attitudes.

**Guidelines for selection of films / video cassettes:**

Considerations of length, content and overall quality will figure in the selection of any film for teaching a particular topic when using foreign - made films. Following points should be considered while deciding upon the selection of films, video cassettes etc.

**Length:**

Is it appropriate to the subject treated and to the time available in the programme? Can it be used in parts?

**Conditions:**

Is the film copy in good condition how old is it? Is it relevant to the prescribed lesson or would it give a distorted impression?

**Content:**

Is the objective of the film in tune with the objective of the class? If not, can it adapt to the teaching? Is the technical information is up to data? Is it appropriate to the class level and applicable to the local situation or sufficiently similar to it? Is the narration clear and unaccented? Is the choice of vocabulary understandable and appropriate to the audience?

**Style:**

Will honour (if any) be understood and appreciated? Is it appropriate to the subject?

Besides these main points, a teacher should follow the following steps for teaching effectively with film.

- Be aware of the best films available in her field.
- Be familiar with film catalogues and other film guides.
- Observe effective classroom use of films.
- Learn how to make proper physical arrangements in the classroom.
- Learn how to operate a projector.
- Specify the learning objectives.
- Preview and use lesson plan.
- Organize a class discussion before screening the film.
- Carry out discussion and follow through activities.
- Evaluate the film for later use.

## 3.10 NEED FOR IMPROVISED AIDS

Improvised aids are the teaching aids which are prepared with the help of locally available low cost materials. Making aids with indigenous material goes a long way in developing thinking and attitude. Use should be made, wherever possible of locally available rather than imported equipment. By careful selection and development of low cost equipment many ill equipped schools can adopt better methods of teaching.

### Characteristics of Improvised aids

- The raw materials should be easily available.
- Indigenous apparatus such as grinders, fridge, wall hangers, microwave oven can be developed by the teachers themselves. Teacher can repair this low cost equipment

themselves as these do not require specialized skills. Thus the equipment can be built and maintained by the teacher.

- The use of low cost improvised aids fires the imagination and stimulates excitement among both the teacher and the students.
- The pupils have easy access to the materials unlike the expensive readymade laboratory equipments under lock and key.
- Students can use equipment which is simple, accurate and appropriate to their age group.
- Students can learn by doing and due to better accessibility give them a better opportunity to attain the set objectives.

**Different types of improvised materials**

- Waste papers
- Gasket
- Used ice-cream sticks
- Seeds
- Egg shell
- Matchstick
- Match box
- Leaves
- Medicine bottles
- Paper cups
- Cool drink tins
- Biscuit covers
- Bottle lids
- Saw dust
- Waste bangles etc

**Merits of Improvised aids**

**Economic value**

The use of simple teaching materials has economic advantages.

- The use of such materials can serve as an effective emergency solution in the event of a mass shortage of teaching material.

- The use does not lead to a set of technological stagnation but rather serves as a preparatory phase for the later utilization of sophisticated and expensive, imported or locally manufactured materials.
- Previous basic knowledge can promote the proper, efficient use of sophisticated material and limit the misuse of the equipment and chemicals so costly in foreign exchange.
- Maintenance of teacher-made equipment should pose no problem to the teacher.

**Demerits of Improvised aids**

- Sometimes the time and money spent in improvising may not be worth it. It may even work out to be cheaper in the long run to buy the marketed models.
- Improvised apparatus are not durable.
- As improvised apparatus are crude they may not give accurate results however at the school level high precision is not needed.

## 3.11 SUMMARY

In this unit we have acquired knowledge about the significance of Home Science exhibitions, club, lab in addition to Home Science textbooks and criteria to select the textbook. We also discussed the need of Home Science library and its equipment used to gain intellectual capacity among the students. We also talked about the different types of audio-visual aids, classification through projected and non projected aids and its pros and cons. From this specified domains we can obtain knowledge on Home Science and its implications in teaching-learning process.

## EXERCISES

- List out the activities which are considered necessary to enhance Home Science exhibitions and club.
- Critically analyze Home Science textbook and write down its importance in the contemporary world.

- Make a discussion with the Head of the Institution and write down the essential factors to create Home Science library in school environment.
- Explain the significance of Audio -visual aids in teaching, learning communities and how will you differentiate projected aids from non-projected aids.
- Suggest the reasons to organize Home Science lab.

## UNIT IV

## CURRICULUM DESIGNING AND RECENT TRENDS

**STRUCTURE**

## 4.1 INTRODUCTION

The design of a curriculum is to promote holistic development among the learners. The objective of Home Science is to create aware of the health, nutrition, home structure, relationship and extension. The needs of a Home Science curriculum are to reduce the social disparities among the learners and enhance social mobility with a high standard of living. The opportunity has been developed when using recent and innovative ideas and technology in teaching of Home Science.

## 4.2 OBJECTIVES

This unit has discussed the various designs of curriculum followed by recent trends in teaching of Home Science. After going through the unit the student will be able to :

- Know the appropriate selection, organization and gradation subject content
- Recognize the principle to be followed in different type of content selection
- Understand the assessment of different school curriculum
- Get awareness about the recent trends in teaching of Home Science
- Find the relationship between Home Science towards community science
- Identify the problem and issue in Home Science Education
- Acquire knowledge about agencies of Home Science

**4.3 MEANING OF CURRICULUM:**

Curriculum means all that goes into the lives of the pupils through school, home and society. It is the totality of influences and experiences, selected and unselected, conscious, subconscious and even unconscious and planned and unplanned which the pupil receives through the manifold activities of the school, in the classroom, library, laboratory, workshop, playgrounds and in the numerous informal contacts between teachers and pupils. Curriculum is much more than the boundary set by the academic subjects which are taught traditionally.

The term ‘curriculum’ originates from the Latin Word ‘currere’ which means,’ to run. It now denotes courses ‘run’ by the school for reaching its goals. Historically ‘curriculum has come to mean the classified selections of accumulated knowledge of academic subjects or disciplines. In educational terminology curriculum means a course of study, an organized whole of activities provided by educational institutions in order to realize set goals.

All the activities planned and provided in the educational institutions to achieve the goals are called as curricular activities. The Home Science Curriculum includes the subject matter and all learning experiences provided. The Society is a source of change. The objectives are to be altered based on the needs of the human society. Therefore Home Science Curriculum need to be revised based on the needs of the society which Vice Versa affect families and individuals.

Home Science Education needs to consider the implications of the changes in the Home Science curriculum. The curricula need to be taking into consideration the problems of the family in the context of national issues in an effective way. Home Science education needs to

change its focus in time with rapid industrialization and technological advancements which have created imbalances in the social systems and our Society is undergoing changes due to

(i) Demographic increase

(ii) Technological advancement

(iii) Shift in cultural values

(iv) Ecological threats

(v) Unemployment

(vi) Environmental degradation

(vii) Migration

(viii) Poverty

In order to cope with the rapidly changing society, Home Science Education needs to drop its fragmented approach and adopt a holistic approach to its curriculum in order to cater to the current and future needs of students. Home Science curriculum designers and decision makers must consider the above changes and their influence on the needs of the society to evolve new aims and objectives and in turn to evolve a new and enriched curriculum to achieve the aims. The above changes and social demands for the changes may influence the direction of our schools and our society. Our future challenges generate the development of new and changing aims and objectives of education. These new aims and objectives are becoming basis for the curriculum planning.

**4.4 DEFINITION OF CURRICULUM:**

Cunningham (1988) defines, 'curriculum as the tool in the hands of the artists, (teacher) to mould his material (pupil) according to his ideals (aims and objectives) in his studio (in the classroom)

Saylor (1981) states "curriculum as a plan for providing sets of learning opportunities for persons to be educated".

The Encyclopedia of Educational Research defines curriculum as programmed activities rendered to extend the school's responsibilities which at present is limited to its so called formal

syllabus or courses of study in such a way as to embrace the individual, social and psychological development of its pupils.Different writers defined the term curriculum in different ways. All the definitions can be classified as follows:

- **Curriculum as a plan**
- **Curriculum as experiences**
- **Curriculum as a field of study / subject matter**

## 4.5 OBJECTIVES OF CURRICULUM

- Prepare pupils for their future role in life
- Create right attitudes and values in pupils
- Impart useful knowledge
- Stimulate applications of the knowledge of life situations
- Develop good personal habits and
- Inculcate a sense of social awareness and service to society.

## 4.6 CHARACTERISTICS OF A DYNAMIC CURRICULUM

A sound curriculum does not exist in isolation. It comes about as a result of the interaction of many variables; pupils and teacher's instruction and examination; and home and community. Curriculum should cater to the individual differences. It has built in mechanisms for continuous and critical evaluation of learning.

- It is a systematic approach to the content of the studies to the child.
- It includes all the activities of the school organized for the child
- It plans for the total socialization of the child.
- Provisions of certain learning situations for the child by the teacher.
- It implies total experiences in a learning situation.
- It is intellectual in structure and conceptual in themes.
- It is based on experiences in all aspects of living and characterized by realism, novelty, Challenges stimulation and creativity.
- It is conducive for the cultivation of scientific skills, interests, attitudes and appreciations.
- It is psychologically sound, taking into account the theories of learning and children's abilities.

- It is capable of helping pupils to bring about intelligent and effective adjustment with the environment.
- It is helpful to pupils in developing the attitudes and skills required for maintaining democracy.
- It is imaginative, forward looking and never static

## 4.7 IMPORTANCE OF CURRICULUM

Curriculum can be viewed as a separate field of study consists of concepts, theories and principles. Curriculum is not confined to certain subjects taught by the teacher and least by the pupils during the years in a school. It is the sum total of all the means employed in the school to develop the personality of the pupils. It is a guideline to the teacher. The teacher chooses different methods according to the curriculum. By knowing the curriculum the teacher tries to achieve the objectives of education.

| | | |
|---|---|---|
| What shall I teach? | - | Different Subjects |
| Why should I teach? | - | To fulfill the aims and objectives |
| How shall I teach? | - | With the help of different methods, teaching aids etc. |
| What resource do I have? | - | Various resources like lab, library etc., |
| How do I know I have succeeded? | - | Test and Assignment |

**The main importances are:-**

- **Achievement of educational aims**: There should be well planned efforts to achieve the aims of education. We must think of knowledge, activities, experiences and other influences which help in the achievement of education.
- **Criteria of suitable teachers:** It is the curriculum which shows, what type of teachers are required in the schools. We should know what type of work they are required to do according to the requirements of curriculum
- **Selection of suitable methods**: The curriculum enables the teacher to select suitable methods of teaching. 'How to teach' will be determined by 'what to teach'.
- **Providing suitable knowledge**: The curriculum should include suitable knowledge which will help in the achievement of aims of education.
- **Reflects trends in education:** The curriculum is a means to achieve the aims of education, which are dynamic and go on changing with the changing social requirements. Example: - Modern technological advancement of interior decoration.
- **Providing suitable activities and experiences**: The curriculum includes well selected activities and experiences needed for the development of pupils according to social requirements.
- **Providing wholesome influences**: The curriculum should provide wholesome school programmed to develop the desirable behavior patterns in the pupils.

Thus we see that curriculum is an important means to achieve the ends of education.

## 4.8 FACTORS INFLUENCING CURRICULUM

Curriculum is a conceptual scheme for joint implementation by teachers and learners in core, observed and appreciated by parents and users of the learners in effect and they are valued and admired by other stakeholders as a result. A Curriculum is a programme of studies or activities (curricular, co-curricular and extracurricular) and guidance. It can function as a scale of values providing a set of criteria arising from the basic needs and moving on to social, cultural, individual and traditional needs , the curriculum very often attempts to fulfill the ideas, needs also such as intellectual, moral, aesthetic and religious needs.

The main factors are:

- The duration of the course

- Availability of resources such as library, equipments, transport facilities and teaching aids.
- The interpretation of the objectives and patterning the courses to fulfill the objectives.
- Interest of the pupils, their needs and abilities
- Quality of class room instruction in the particular subject and its correlations with other school subjects.
- Activities such as school clubs, athletics and pupil government.
- Guidance and Counseling
- Interest of the community and services it offers
- Utility – Vocational bias
- Variety and flexibility
- Policy of state Government
- Human relationship

## 4.9 PRINCIPLES OF CURRICULUM CONSTRUCTION

While constructing the curriculum many factors have to be born in mind. The process of curriculum construction includes the selection of objectives, selection of learning experiences, and selection of knowledge and activities which will provide the learning experiences and evaluation of the curriculum.

**1. Principle of Child – Centeredness:**

Curriculum should be based on the child's needs, interests, abilities, aptitudes, age level and circumstances. It should faster the overall development of the students. It should bring about the development of the child in the desired direction so that he could be able to adjust well in life. "The best preparation for life that we can give a child is to help him to live fully and richly on the stage at which he is".

**2. Principle of Community Centeredness:**

Our society is not static, it is dynamic. Its needs and requirements are changing with the rapid development taking place in all fields. So the values, attitudes and skills that are prevailing in the community must be reflected in the curriculum. It should be developed in order to value the community and to give place for its development.

**3. Principle of Conservation**:

Preservation and transition of our cultural heritage is the main functions of education. Traditions, customs, attitudes, skills, conduct, values and knowledge are the elements of culture. Keeping in view the values and the developmental state of people the curriculum framers must make a suitable selection. Curriculum should focus on the conservation of our culture and heritage if our curriculum. The present day curriculum should ensure that these values and morals are maintained so as to transform the same to the generation to come.

**4. Principle of Forward Looking:**

Education is to enable the child to lead a successful social life. So the curriculum should not cater to the present needs of the child alone but gives importance for the needs of his future life. The curriculum should also include knowledge, skills, experiences, influences etc., which will develop in the child abilities and power to make effective adjustments in the later life. In the fast changing society, it becomes very difficult for the child to decide which path to adopt. The child must be prepared for the dubious future otherwise he would feel lost in the world. If one stage of life is well- lived, the foundation for the next stage is laid. Thus to prepare child for the future his present potentialities should be well explored. Education should provide strong foundation so that the child can face the realities of life and is enable to change the environment where change is needed.

**5. Principle of Utility:**

The curriculum must have practical ability for students. So there should be some provision for technical and vocational education in the curriculum.

**6. Principle of Balance:**

Curriculum should have some balance between subjects and activities, between formal and informal education, between individual and social aims of education, between academic and vocational education etc.

**7. Principle of Creativity**

Education should explore the hidden powers and potentialities to make an intelligent creator and modifies the environment and values to use in the later life to create new things in

future according to the needs of the time. The conservation of culture helps to sustain the society. The culture should not be simply transmitted but also enriched. There should be provision in the curriculum to develop the creative powers of the children so that they becomes a contributory members of the society

**8. Principle of Variety:**

According to the varied categories the needs may vary. The curriculum should be broad based so as to accommodate the needs of varied categories of pupils, so that they are able to take up subjects and participate in activities according to their capacities and interests. The needs of pupils also change from place to place. For example the pupils in various areas will have different needs. The needs of boys and girls are also different, so curriculum should provide varieties to fulfill their needs

**9. Principle of Flexibility:**

Rapid developments are taking place in various fields. The content of curriculum cannot be same for all times because the needs of society are changing. So the curriculum should reflect the latest trends in the field of education and psychology.

**10. Principle of Coordination and Integration:**

Pupils are to be provided with selective experiences through various subjects and activities but these must be well integrated. The activities and subjects should not be put in water-tight compartments but these should be interrelated and well integrated so as to develop the whole world.

**11. Principle of Activity Centeredness:-**

The curriculum should centre round the multifarious activities of pupils. It should provide well selected activities according to the general interests and developmental stage of children. It should provide constructive, creative and projective activities. Play activities and purposeful activities should be processed so as to produce desirable behavioral changes.

**12. Principle of Framing for Leisure:**

Curriculum should contain activities like social, aesthetic, sports etc., which should cultivate varied interest and hobbies in the students. These will train them to use their leisure time properly.

## 4.10 COMPONENTS OF CURRICULUM DESIGN

The persons involved in the curriculum design should be capable of planning and organizing the following:

(i) Goals and objectives

(ii) Subject matter

(iii) Methods, materials and media

(iv) Evaluation

Objectives are nothing but, all planned learning outcomes for which the school is responsible. They are stated in more specific terms than goals. It can communicate the needs for every action of the students, teachers and everyone involved in educational process.

Forming objectives is the very important task. All curriculums will be based on the objectives and all the experiences the students get may be to attain the objectives. A true education must develop all round personality of the individual. Therefore, curricular activities must provide all types of experiences for the development of one's physical, emotional, intellectual, social, moral and aesthetic aspects of life.

## 4.11 TYPES OF CURRICULUM DESIGNS

Curriculum design is a statement denoting the relationship that exists among the components of a curriculum. It describes the creation of curriculum and the actual arrangement of the parts of curriculum plan.

The three types of curriculum designs are:

**(i) Subject- centered designs**

**(ii) Learner – centered designs**

**(iii) Problem – centered designs**

### 4.11.1 Subject centered designs:

It is the oldest best known, most popular and widely used design. Knowledge and content are well accepted as integral parts of curriculum. The subject centered curriculum comprises three aspects, subject-matter, correlated subjects and broad fields.

a) Subject matter curriculum:

Here the emphasis is on the facts, skills and knowledge. The subjects are presented as separate tasks during the class periods at pre-determined rates following rigid schedules in which a specific number of periods per day or week are allotted to a particular subject or skill such as reading.

b) Correlated subject curriculum:

Here curriculum attempts to relate all the school subjects to each other. For example: Home Science is correlated with general science, health education, geography, food production and economics.

c) Broad – field's curriculum:

It is the one in which the languages, arts and sciences are considered as a whole and the separate phases of communication such as listening, speaking, reading and writing are treated as part of the whole.

### Learner Centered designs:

It contains a series of developmental activities. It places emphasis on the learner, interests, abilities, personal, social and intellectual growth and interaction. How to use the physical and social environment of the school and to provide experiences appropriate to the developmental level is its chief concern. Here students get more opportunities for learning and creating curriculum that are valuable for them.

### 4.11.3 Problem centered designs:

It identifies the central and peripheral learning. The content selection is based on problems. In analysis of the general types of curriculum in the context of the conditions which promote transfer of training would indicate that however, well an individual subject may be taught and needs to be judged in terms of the abilities of children to discriminate between right and wrong cues and responses. Focus on the problems of life in institutional and group life both for individual and group.

## 4.12 SELECTION, ORGANIZATION AND GRADATION OF SUBJECT CONTENT:

Learning takes place through experiences. The experience which are gained through learning activities are called learning experiences. The term learning activities may be explained as the activities like arrangement of teaching aids, questioning, observation visits, handling of apparatus, models, charts, specimens, reading, writing, drawing etc. can be ultimately lead the students to learn.

Learning experiences result from the interactions of learning activities. In order to produce a particular type of learning experience, a variety of learning activities may have to be provided to the students. Planned and well organized sequence of learning activities is termed as a method of teaching. The teacher will be totally responsible for conducting the learning activities to the students.

- The learning activity should be directly related to the behavioral objectives so our aim is to achieve the behavioral objective through learning experiences.
- The learning activity should be meaningful.
- They should satisfy the psychological needs of the learner.
- The learning activity should be appropriate to the maturity level of the students. For example, in essay writing ‘The Cow’, ‘My School’ can be given to primary students. “If I were a headmaster” etc. can be given to secondary students.
- The learning activities which are selected should be related to life situations, so that it may be more effective and meaningful.
- Learning activities should be reinforced. For example, the experience of the function of a motor may be reinforced to the experience of the function of dynamo.
- Learning activities should be intensive. How to produce an intensive experience is an art. Again how to change the intensity of an experience is also an art. The use of Audio-Visual aids in this connection would be very useful.
- Learning activities should be related to the availability of material and of time.

- Learning activities must have utilitarian value.
- Learning activities used should be very rich in content and novelty.

Content denotes the subject matter and it forms as a mediator. The contents of a curriculum act as the central point in the learning experiences. These are mainly divided into five.

- Content of Knowledge Aspects
- Content of Feeling Aspects
- Content of Motor Skills
- Content of Development of values
- Content of work (SUPW)

### 4.12.1 Selection and organization of content

Up to 19$^{th}$ century, the education process remained content-centered. Therefore the curriculum was also content-centered and main emphasis given to content in preparing curriculum. This step is considered most important in curriculum construction. The content and organization of curriculum and interpretation are done in terms of knowledge, skills, attitude, and values development.

**a) Selection of Content:**

Content (subject matter) is described as the knowledge (includes concepts, facts, definitions) skills, attitudes and values. In practice, the selection of subject matter is not easy to achieve. It required a high level of cooperation and planning within and between schools.

Pring (1976) suggested the following principles for selection of content.

- **Social Utility:**

Certain subject matter such as technology, the physical science, mathematics should be taught because they provide the necessary basis for surviving in a complex technological society. In Home Science different areas or concepts like nutritive values, diet planning, child rearing etc has the surviving usage.

- **Social Responsibility:**

Certain subject matter such as politics, sociology, social psychology might be included because of the importance of social and political awareness in any democratic society. . In Home Science women rights, child rearing practices etc has the social responsibility.

- **Common Culture:**

History might be used to provide a common heritage that would save to promote some kind of social unity. In joint family system children learn common cultural heritage aspects.

- **Personal satisfaction:**

Some subjects, especially aesthetic and sporting ones might be selected because they introduce pupils to activities that give considerable personal satisfaction and in that sense increase quality of life. (E.g.) Interior decoration and Home Management.

- **Cognitive Concern:**

Subjects such as philosophy, archaeology might be included for cognitive reasons though they may not bring too much pleasure or may not be too socially relevant. (e.g.) In Home Science the dietary requirements of different age groups.

- **Parental Social Pressure:**

At present the schools are forced to be more accountable to outside groups- especially parents. Therefore subjects, who reflect parental wishes, should also find a place in the curriculum. In Home Science we give adequate information about parental care and techniques.

- **Mental Power:**

People believed in the past that certain subjects such as Latin were good at increasing general power of the mind-analytic or logical thinking in particular. It would be advantageous to include subjects of this type to provide students with a wide range of intellectual activities.

**b) Organization of Content:**

Carter V. Good (1945) defines that organization is “the process of arranging independent elements into a functional or logical whole”. The organized curriculum helps the teacher to understand the usability, the logical order, and functional relationship among various aspects of content. The organization and selection of content, activities and experience are not entirely different ones; they are the two sides of the same coin. The following are the principles of organization.

- **Articulation:**

Articulation means correlation. It exists in two form- Horizontal and Vertical. In the mode of organization, curriculum includes a variety of subjects with related experiences and activities. The planner should organize in such a way that each unit or topic of a subject leads to parallel ones in the same grade and it is called horizontal articulation. When each subject leads to parallel ones in the successive grade it is called vertical articulation. There should be correlation between one stage and another stage of education.

- **Balance:**

It is an important factor in the curriculum provided by the school subjects to be offered and programmes of studies to be recommended, time allotments for various subjects and activities, the use of textbooks and aids.

- **Continuity:**

It means that there is a smooth movement from one stage to another stage. The school should plan the programme so that the transition of the child from home environment will be smooth and pleasant.

- **Integration:**

It means the integration of child's activities and her needs and the needs of modern society. Subjects should have inter and content should as far as possible be envisaged as 'broad field' units. There should be a harmony between intellectual activities and life activities.

- **Needs, interest and capacities:**

When organizing the content the planner should take into account the needs, interest and capacities of the child. True education can only be acquired through activity and experience.

- **Variety and flexibility:**

There should be enough variety and flexibility to allow for individual differences and adaptation to individual needs and interests. According to Pragmatism we have to change activities and new subjects then and there.

- **Differentiation:**

Students differ in their method of learning, capacities, rate of learning, self-concept, level of aspiration and socioeconomic status. On the basis of the differentiation the planner should organize diversification.

A new more principle such as readiness, learn ability, utility, training for leisure and relevancy are also involved in organization of subject matter. Hence the content organization should be based on the needs of the students, consisting of purposeful activity and experience has to be substituted in the place of traditional subject-centered curriculum.

The facts in the content should be related to the main ideas and concepts. Based on the selection of the content, the learning outcomes will be decided. Hence, to frame a curriculum, we should follow certain criteria for selection and organization of the content.

1. **Need and interest of the students:**

It is easy to identify the casual interest but difficult to identify the everlasting interest of the student. Hence, selection of content should be based on needs and interests of the students. For this purpose, experienced teachers are needed to do the selection of content.

2. **Skill development:**

The content should develop the skill of an individual to compete with others.

3. **Emphasis on the durability of the element of content:**

While selecting the content of a curriculum, we should emphasis on the durability of the elements of contents. But it is difficult to find the durability of a subject. The rapid changing fields like Physics, Chemistry, Computer Science, needed the criteria of durability of the content.

4. **Selection of content from other field of knowledge:**

It is necessary to select the content from other field in order to develop the integrated knowledge among students about a particular concept.

5. **Understanding level of the students:**

Understanding the level of the students will not be the same. It may vary from person to person. Hence while selecting a content one must always take into account the capacity (or) ability of an individual.

6. **Utilitarian value:**

The content selected for a particular course should have utilitarian value which means that it should be useful both for an individual and for the society. To satisfy this, some practical aspects must be included in the content.

7. **The validity and the significance of the content:**

The content is valid when it is true and authentic. The content should be valid in scientific knowledge and in social and cultural realities of the times.

**8. Linking of knowledge:**

The different contents must be inter-linked so as to give a holistic view the total course. This means that the content has to be arranged according to the previous knowledge of an individual. The content should be arranged according to the 'Maxims of Learning'.

**9. Psychological factors:**

Selection of content should also consider the psychology of the learners. In the learning process, the learner is the important factor and hence selection and organization of content must be done according to the psychological needs of a learner.

## 4.13 PRINCIPLES TO BE FOLLOWED IN LINEAR, SPIRAL AND CONCENTRIC TYPES OF CONTENT SELECTION:

### a) Linear Organization:

Linear organization is one of the types of the formal organizational structure. It is one of the basic organizational arrangements. The position and relations of superiority and inferiority are arranged and oriented vertically.

### b) Spiral organization:

The spiral curriculum organization is way of arranging complex subject matter for learning and instruction. For e.g. In the elementary school, the students learn a simple content but in the subsequent years they learn the contents in more complex form. During the course of study, the student goes deeper into the subject-matter or studies different aspects of it. A year's work in a subject may be spread over several years in terms of increasing maturity of the students.

### Advantages of spiral curriculum:

- Contents learnt in the previous year and in the subsequent years are interrelated.
- The student can go deeper into the subject when her age increases.
- A year's work in a subject can be spread over several years.
- Newer ideas or contents are built upon the basic ideas or contents.

**c) Concentric organization:**

The concentric organization is also a way of arranging complex subject-matter for learning and instruction. It is similar to the spiral curriculum in the fact that simple concepts are arranged in the higher grades. It is different from the spiral curriculum in the fact that there is no continuity in the concepts learnt in the lower grades and in higher grades.

## 4.14 LOGICAL AND PSYCHOLOGICAL ORGANIZATION:

In the process of organization of curriculum it should preserve both logic of the subject matter and psychological sequence of learning experiences. Each subject/ discipline is organized with a particular logical sequence as discussed already in sequence.

The contrast seen between logical and psychological organization of curricular relationships, as a basis for organization in the place of another set. We need to decide its logical sequence depending on the curricular. If it is psychological it depends on the child's reaction, interests and ways of looking at the subject. For more effective organization both need to be considered.

## 4.15 CURRICULUM IMPROVEMENT:

Curriculum improvement focuses on 2 approaches; one in grass roots and the other is top-down approach. In the first one the personnel i.e., teacher and students are included in the process and with their experience and the feedback they get from interaction they try to improve upon the curriculum. In the top-down approach it may be developed at the top. The personnel involved in implementation may not be involved in curriculum making.

The major ingredients are:

1) Personality.
2) Materials.
3) Physical environment and facilities.
4) Defensible ideas.
5) Support and resistance.

**Personality:**

Mostly curriculum improvement depends on the teachers' personality. In other words the curriculum improvement and professional development of teachers are interdependent. If the

curriculum improvement has to be brought in, the teacher has to accept the aspect and change her personality. They have to be educated, and trained. They should have the ability or potential. There are also arguments that it is basically their inborn personality and some feel it is basically due to the environment .To improve the quality of education there is a need for attracting teachers who are good and not to struggle with the same teacher who are in the system.

**Materials:**

The curriculum improvement also depends on the quality of instructional materials. Material is a means for curriculum improvement. When improvement adopts grassroots' approach the teacher would get a chance to form study groups, contact the resource groups and different resources and then plan curriculum and get involved in the process of improvement whereas in top down approach the curriculum is mostly teacher-proof i.e., in the post-sputnik reform movement teacher were not trusted to develop curriculum. Thus the elaborate packages of curriculum along with instructional manuals were prepared and sent to teachers to implement the same. But such experiments inspite monitoring was not very successful.

**Physical environment and facilities:**

It is very important to think about facilities to improve the physical environment to have an impact on curriculum improvement. Here we follow grass root method and top-down method

In the first case teachers are consulted and made a part of decision making. On the other hand without any knowledge of the teacher the things are changes by the time they come back from the vacation and are made as members of committee to sign on the decisions, which are already taken.

**Defensible ideas:**

Basically curriculum improvement is dependent on the various changes or ideas that are supplemented with the existing curriculum to improve further. Here the concept of defense indicates the amount of better justification available for a particular idea in curriculum. Thus, whichever idea has a better justification can be considered for improvement of the curriculum. Apart from the justification it is also important to debate on the issue related to top-down/ grassroots' level approach i.e., whatever the ideas from inside the system or outside the system should be considered.

**Support and resistance:**

Whenever we raise the issues of improvement, it is very essential that those ideas need a support from various levels-right from the authority, which is called by *Kurt Lewin* as 'gate-keepers', whose decisions are important and they support them the proposal to come into implementation level. So it needs their approval and support them at various levels, the personnel involved in the system would support the implementation. It is also necessary to check for the other aspects related to the time, facilities, money, resources and personnel for the proposal to become a reality, once all the things are taken care of by resolving the conflict or setting the balance between the resistance and support forces to make the program a success.

## 4.16 ASSESSMENT OF DIFFERENT SCHOOL CURRICULA

Basic for all curriculum development is an assessment of present conditions. The major intent of assessment of needs is to determine the degree to which a school is implementing stated philosophy of education and the degree to which goals are being met by existing programmes.

Curriculum development should be viewed as a process by which meeting student needs leads to improvement of the student learning. Curriculum developers should gather as much information as possible. This information should include the desired outcomes or expectations of a high quality programme, the role of assessment, the current status of the student achievement and actual programme content. The information should also consider the concerns and attitudes of teachers, administrators, parents, and students so that selection of goals can be for public utility and also for a rational and orderly programme development in the future.

With a common set of understandings that arise from the identification of issues and trends, a curriculum development committee should conduct a need assessment to best ascertain the perceptions, concerns and desires of each of the stakeholders in the process.

The curriculum development committee approaches the assessment of learners who experience school programme in a number of ways. Of the comprehensive review of school programmes, the need assessment approach seems to provide the broadest profile to the committee.

The needs assessment approach uses general categories such as general information, population characteristics, school population characteristics, programmes and course offering, instructional pattern and strategies, students' data, professional staff, and facilities. By examining this data carefully, it may reveal key issues that should influence the curriculum design. For example:

- Teachers may be dissatisfied with older content and techniques in light of recent research.
- Test scores may be declining or lower than expected in some or all areas.
- Teachers may not have materials or may not know how to use materials to enhance understandings.
- Teachers may want to make far greater use of technology to enhance learning.
- Teachers and others may wish to relate the content of the programme more closely to contemporary problem and issues.
- Teachers may be looking for ways to increase the amount of interdisciplinary work in which students are engaged.
- Students may express a need for different and enriched curricular opportunities.
- Parents and others may have concerns about implementation.

Such analyses provide curriculum development committee with a comprehensive set of data for future school development and also it leads the public to involve in curriculum developing. Whatever the particular circumstances, an effective curriculum development process usually includes a structured needs assessment to gather information and guide the curriculum development process.

The information, commonly gathered through surveys, structured discussions and test data, most frequently includes:

- Teacher analysis of the present curriculum to identify strengths, weaknesses, omissions and/or problems.
- Sample lessons that illustrate curriculum implementation.
- Sample assessments that illustrate the implementation of the curriculum.
- Identification of what teachers at each grade level perceive to be the most serious issues within the curriculum.
- A detailed analysis of state and local test data, including scores, grade-level criterion-referenced test data and course final examination results.
- Suggestions for change and improvement generated by meetings with teachers, guidance counselors and administrators; and
- Parent and other community members concerns and expectations for the programme obtained through surveys and invitational meetings

The data collected from the needs assessment in conjunction with information obtained from research and various resources become the basis upon which the entire written curriculum from philosophy, goals and assessment is then built.

## 4.17 RECENT TRENDS IN TEACHING HOME SCIENCE

It is an encouraging sign that Home Science has made the tremendous progress during the last decade. Since it meets an important need in education, there is a great demand for Home Science teachers and extension workers. The vast expansion of Home Science brings with it various problems and shortcomings that have to be overcome to enable Home Science to fulfill its roles. We have first to evolve a philosophy for Home Science based on the India's great cultural heritage. This philosophy should indicate the ultimate goal of Home Science is abandoned and simple living aimed towards high thinking, robust health and fullest spiritual expressions. This philosophy should be understood by all persons if the popular misconceptions about Home Science are to be dispelled.

On the basis of philosophy evolved, suitable curricula and courses should be developed in education institutions. Production of literature, equipment, teaching aid and other facilities should be promoted for effective teaching. Since Home Science was first developed into a science and thought in west, we have to depend on the textbooks and research findings of western countries. We shouldn't adapt them suitable for the use in country and make all possible efforts to bring relevant Indian publications.

Through the universities of Tennessee-Technical corporation miss on contract, the various Indo American contract and the ford foundation, professors are working in different colleges to develop Home Science programs. Their guidance in the interpretation of the syllabus, the method of teaching, techniques of research and the development of scientific approach to the problems will be most valuable to us. We should adopt techniques in Home Science which are capable of country wide application. We should design the courses according to our needs, conditions and cultural background to assimilate the best from our spiritual traditions and from the scientific outlook of other advanced countries.

Practical and applied research in Home Science is the crying need of the day. Investigation on housing, clothing, the most suitable methods of cooking and preserving food, child care, cottage industries etc. are greatly needed. How to live happily within the needs available and strive to increase the amenities of life, how to conserve food values and eliminate malnutrition and how to make the most of our human and natural resources, how to appreciate and express art and how to adjust to a fast changing world without losing the best in our ancient culture are some of the problems which need to be studied.

With the advance of science, village communities are undergoing a great transformation. Greater facilities for education, health, communication and recreation call for a certain adjustments in home living. The increased privileges and opportunities which the Indian women enjoy today have created the need for the right type of education, an education which will strengthen her position as a citizen, a transmitter of culture and a home maker. Home Science education should attempt to meet these needs.

In the area of Nutrition, presently we come across different technical and technological modern equipments. The learners of Home Science should be thorough enough to utilize these needs. In the area of textiles advancement in stitching, selection process and much advancement should be experimented. Technical advancement in the areas should be utilized by the Home Scientists effectively.

## 4.18 HOME SCIENCE TOWARDS COMMUNITY SCIENCE

"Community", refers to a group of people living together in a natural geographical region with its own physical location and setting, institutions, customs, traditions and cultural problems. Common interests, ways of thinking and acting make the residents of a locality feel bound together as a community. The school is a formal educational agency. The school programme to be meaningful should stem from the needs of the community. It should be made by, and for those whom it serves. It is a social institution set up by the society for the purpose of education children, so that they may be able to participate intelligently and effectively in the community. This implies that the school must be connected with the life of the community to which it belongs.

Community and the school are two intimately related pillars of society. They can supplement and complement each other in many ways. The school can serve the community through its educational, recreational and cultural programmes. The community, in its turn, can help to enhance the status of the school and provide pupils real, dynamic and interesting opportunities for learning. This two-way traffic between the school and the community is essential for imparting meaningful education.

**The school as a community centre:**

Education is a process of growth-growth not merely along the intellectual lines, but also in terms of civic, social, vocational and recreational bases. It is a never-ceasing process. The scope of education is wider than what is ordinarily included in the school curriculum. The

content and activities of school should be deep and broad, extending beyond the school to the community so that school may ultimately become a “People’s centre”.

In the early years of childhood, the family is the primary educational source. The next influence on learning comes from immediate community which is as complex as that of adults. As the pupil develops concepts, beliefs and ideas are directed by community influences. If they are positive, their effects will be favorable upon youth. The many secondary groups in which boys and girls receive their education may be different in emphasis, scope and purpose, but their influence is decisive.

The communication facilities in the community today are the radio, movies, drama, newspapers, magazines, comic books and television in some instances. These provide opportunities for the community to communicate to youth, the way they feel, think and act and to have a feedback from them as to the nature of their reactions and responses. These facilities serve as important educational and recreational influences. As the voice of the community, they not only influence, but also, direct, channel and divert the ways in which young people move. Other forces, such as political organizations and social and religious groups, also have some influence on molding the developing behavior patterns. In this background, the school performs a significant educational role.Formal schooling is only a part of the much more inclusive educative process in which the community plays a definite role. The functions of the school are thus broader than that what is understood at present. They bring the school into close relations with the surrounding community.

A Home Science teacher whose major goal is to help families live more effectively, needs to be aware of the various community forces which determine the quality of family living, and the influences which shape the personality of the young adolescents. Only when the teacher knows her community, she can adapt the Home Science programme to meet community needs. Furthermore, knowing the resource available in the community will help the teacher to enrich the learning experiences offered to her pupils.

The teacher of Home Science has to play a vital role in the fast changing modern community, when India is passing through an era of national reconstruction. The teacher needs to be a living model in the community, for what she teaches and preaches in the school. Her ideals should be in harmony with, and permeate through society.

The school can become a centre for community services and be related to the life of the community effectively in the following specific ways:

- Making the school a spiritual centre
- Formation of Parent-Teacher Association (PTA)
- Developing curricula related to life
- Organizing the school as a social, recreational and cultural centre
- School as a centre of adult literacy
- Celebration of local and national festivals
- Involving the public in the school programme
- School as a promoter of official and voluntary community activities campaigns and rural programme
- School library and reading room
- Organization of Balwadies
- Nutrition Education
- Undertake fact finding survey and evaluation studies in the community

**The Home Science Teacher's in The Community:**

The role of the Home Science teacher in making the school a community centre for promoting healthy and happy homes is tremendous. The teacher's functions in the community are:

- Making the school a community centre and serving the community through the school, securing the cooperation of the parents and giving parents opportunities to assist the school.
- Interesting the members of the community to take an effective part in the school activities.
- Providing opportunities to the members of the community to make their contribution to the school.
- Representing the school and its ideals in the community.
- Promoting hygienic conditions in the locality and civic consciousness in the community.
- Helping the parents to realize the talents of their children.
- Being a source of information to the members of the community.

**The teacher can fulfill the above functions through:**

- Reaching the community with the assistance of pupils.
- Visiting homes of pupils and observing their home conditions.

- Inviting parents for functions in the school and making them feel at home.
- Enlisting parent co-operation and participation in school activities.
- Taking suggestion from parents for the improvement of the school.
- Inviting leaders in the community to preside over important school functions.
- Organizing social service activities in the community particularly in the area of sanitation, nutrition and child care.
- Arranging film shows, exhibitions, lectures and other educational activities for the community.
- Organizing benefit sales.
- Participating in meetings of the Parent-Teachers' Associations.
- Getting parents representation on school boards and management.
- Allowing the use of the school building by the community for educational purposes.
- Having a special event for parents on the Annual Day, Sports Day and other special days of the school.
- Providing occasions for the parents to contribute in cash and kind, time and talents to the school.

The teacher should associate herself consciously with the pupils' parents, and help them understand the school situations and provide their children the necessary supplementary experiences in their homes. She should maintain close relationships between the school and community, with her pupils taking part in desirable community activities. She must strive constantly to find out the best combinations of school and community experiences for educating her pupils.

## 4.19 PROBLEMS AND ISSUES IN HOME SCIENCE EDUCATION

The existing curriculum in schools has been criticized on the following grounds:

1. It is bookish and theoretical: Abstract and theoretical things are emphasized. Concrete and practical things are neglected. No training for tackling practical problems of life is given.
2. Narrowly conceived: The aim of prevailing curriculum is narrow. Its aim is to pass certain examination.
3. It is overcrowded: Besides multiplicity of subjects, the contents are neither rich nor significant. No attempt is made to form the content with the needs and interests of the students.

4. It is not adapted to the individual tastes: Differences that takes place during the adolescent period of pupils are not taken into consideration. The traditional curriculum does not make provision for diverse tastes and talents.
5. It is dominated by examinations: Undoubtedly, the present curriculum is dominated by examinations, which again are neither reliable nor valid nor useful serving to appraise completely the end-products of education.
6. It does not provide technical or vocational training: There is no technical or vocational training in schools in the existing curriculum.
7. The present curriculum leads to rote memorization and does not provide opportunity for understanding independent learning.
8. The present school curriculum is more or less based on cognitive development and only less importance is given for affective and psychomotor domain.
9. Subject burden is increased when the students going from secondary to higher secondary.
10. There is no updating of knowledge in the subjects and the syllabus is not molded.
11. There is no provision for equalization of educational opportunities.
12. The existing curriculum is not giving weightage to the co-curricular activities. The evaluative system followed at the secondary school level is:

Abstract and theoretical things are only emphasized for testing. No proper weightage is given to concrete and practical things. No proper importance is given to test the affective and psycho-motor domains. The only testing is for cognitive aspects. The purpose of evaluation is not fulfilled due to the irregularity in the content and objectives. The present evaluation system is appraising the end-products alone and with the specific items. The present evaluation system does not test the diverse tastes and talents of the students. Rote memorization is tested and there are no provisions for testing independent capacities. Due to the burden of the subjects, the evaluative system is not fulfilled. Evaluation systems are updated for suiting the present situation. Monotonous way of testing leads the students for frustration. No attempt is given for understanding the individual capacity of the children.

## 4.20 DIAGNOSIS AND REMEDIAL TEACHING

### Diagnosis Teaching:

The diagnostic teaching is purely meant for diagnosing the weakness, deficiency and difficulties of the students related to the specific areas and aspects of the formal and informal learning of a subject. These are constructed not to assess the level of achievements or gains in

the learning experiences of the pupils but to reveal the weaknesses and learning difficulties. Hence diagnostic teaching should never be confused with achievement teaching.

### 4.20.1 Educational diagnosis:-

As it is obvious, the term diagnosis has been borrowed from the medical profession where it implies "identification of disease by means of patients' symptoms". The word diagnosis is used more or less in the same sense in education. We may say that the educational diagnosis is "the determination of the nature of learning difficulties and deficiencies".

### 4.20.2 Levels of diagnosis:-

Ross and Stanley have identified five levels of diagnosis which are

1. Who are the pupils having trouble?
2. Where are the errors located?
3. Why did the errors occur?
4. What remedies are suggested?
5. How can the errors be prevented?

### 4.20.3 Characteristics of diagnostic test:-

- It is not the speed test. It allows the pupils to complete all items they are able to do or perform.
- It is quite intensive and thorough as well as deep and penetrating in probing into the weaknesses and difficulties.

### 4.20.4 Preparation of diagnostic test:-

- Diagnostic test needs careful planning by their designers. Usually, the following steps are needed to be followed in the construction of a diagnostic test.
- Analysis of the concepts in terms of the specific learning outcomes and behavioral changes.
- To prepare properly graded objective type of test items suiting to the concept and expected level of performance and the anticipated weaknesses, deficiencies and difficulties of the students.

- To become definite about the minimum expected level of performance with regard to the behavioral changes in the acquisition of knowledge, understanding, skills, application, interests, appreciations etc.

**Steps involved in the construction of the Diagnostic Test:-**

- Identification of the problem areas
- Listing all the learning points
- Arranging the learning points in the logical sequence
- Writing test items
- Clubbing the items
- Providing clear instructions.
- Preparing a scoring key and a marking scheme.
- Providing the time limit as required by individual students.
- Administration of the test.

After administering the test, the following procedure may be followed for analyzing the performance and identifying the weaknesses

- Item wise analysis of the performance of each student
- Qualitative and quantitative analysis
- Identification of the causes
- Planning and implementing highly individualized remedial programmes

**4.20.5 Uses of Diagnostic Test:**

- Point out inadequacies in specific skills
- locate areas in which individual instruction is required
- Serve as a basis for improving instructional methods, instructional materials and learning procedures.

**4.20.6 Remedial Teaching**

Remedial measures or education involving corrective steps that are to be taken for removing weaknesses, deficiencies and difficulties of the learner in order to obtain desired mastery level or optimum educational growth in terms of the specified learning objectives.

### 4.20.7 Aim of Remedial Teaching

Its aim is not confined to remove the learning difficulties and overcoming the deficiencies but to provide such congenial environment, facilities and opportunities to the learners so as to develop their potentialities to the maximum.

### 4.20.8 Remedial Teaching Techniques:-

Some of the remedial teaching techniques are

- Class teaching
- Group tutorial teaching
- Individual tutorial teaching
- Supervised tutorial teaching
- Auto – Instructional teaching
- Informal teaching

**(1) Class Teaching:-**

In this system or schedule of remedial teaching, the usual composition and structure of the class is not disturbed. The teacher here teaches a particular lesson / unit, emphasizes a point again and again, or uses some specific teaching aid in order to remove the difficulties and deficiencies of the learners in terms of the acquistion of the desired learning experiences.

The class as a whole is benefited through such type of remedial teaching. It proves particularly useful in the removal of the weaknesses and learning difficulties of the general nature.

**(2) Group tutorial teaching:-**

Here the students of the class are divided into some homogeneous groups called tutorial groups on the basis of their common learning difficulties and identical weaknesses or deficiencies in the acquisition of the learning experiences. These groups are then taught separately by the same teacher or different teachers. The tutor incharge of a tutorial group then tries to solve the difficulties of the learners.

**Advantages:**

- In the group tutorial teaching, the students who have common problems and difficulties in their learning are helped in overcoming their difficulties and deficiencies.
- The number of students in group tutorial teaching is comparatively reduced. It provides effective means for better coaching and practice in terms of the needed remedial education.

**3. Individual tutorial teaching:-**

In this schedule, every learner who feels learning difficulty is attended individually. It is one to one coaching, help and guidance that is rendered by the teacher to the learner as and when needed by him in order to actualize his potentials to the maximum.

**Advantages:-**

Students may progress according to his own pace, abilities and capacities and get adequate help, individual attention and reinforcement.

**4. Supervised tutorial teaching**:-

The responsibility of overcoming the learning difficulties in some learning areas is handed over to the learners themselves. They have to work on their own for removing their difficulties and deficiencies. The role of the teacher is confined to observe and supervise the learning activities and provide as much help as necessary to carry on their path of self learning and self correction. The students may opt to work in the group or individually for solving their difficulties and overcoming their learning deficiencies.

**5. Auto – Instructional teaching:-**

This type of remedial teaching consists of auto – instructional programmes and activities. Here the learner is provided with basic auto – instructional and self – learning materials like programmed learning, text books and packages, auto – learning modules, teaching machines and computer assisted programmed instruction (CAI).

**6. Informal teaching:-**

The activities connected with such informal education are in the form of excursions or field – trips, collecting material for projects and participating in the club activities.

**Advantages:-**

This method promotes first hand learning experience and hence the problems may be easily overcome through the organization of useful non-formal activities in the schools.

## 4.21 AGENCIES OF HOME SCIENCE

### 4.21.1 The Food and Agricultural Organization (FAO):

The Food and Agricultural Organization (FAO) was formed in 1945 with headquarters in Rome. It was the first UNO'S specialized agency to look after several areas of world cooperation.

**Objectives:**

- To help nation raise living standards;
- To improve nutrition of the people of all countries;
- To increase the efficiency of framing, forestry and fisheries;
- To better the condition of rural population and
- To contribute to an expanding world economy and ensuring humanity's freedom from hunger.

**Programme.** FAO sponsors the World Food Programme and its prime concern is the increased production of food to keep pace with the ever-growing world population. The most important aspect of FAO's work is towards ensuring the food consumed by the people who need it in sufficient quantities and in right proportion to develop and maintain a better state of nutrition throughout world. In this context, the FAO has organized a world freedom from hunger campaign in 1960. The main objective of the campaign was to combat malnutrition and disseminate information on nutrition. In our country FAO is collaborating with other international agencies through Applied Nutrition Programme. The WHO and FAO expert committee have provided the basis for many cooperative activities. National surveys, technical training courses, seminars and coordination of research programme are some of the other important activities of FAO.

### 4.21.2 Child Welfare Programme in Five-Year Plans:

Child welfare started receiving greater attention from 1951. In the first five year plan (1951-56) the government come forward to assist voluntary organizations with necessary finance

and technical assistance through the Central Social Welfare Extension Project. The main activities promoted were the organization of balwadies, crèches, maternity and child health centers, medical and midday meals, recreational and cultural programme.

During the second Five Year Plan (1956-61) these activities were continued. In addition, urban welfare extension projects and holiday homes were started. Programmes for education, training and rehabilitation of physically handicapped children like the blind, deaf, and dumb were also started.

During the third Five Year Plan (1961-66) a new scheme of pre-vocational training was introduced and attached to multi-purpose higher secondary school in rural and semi-urban areas. In 1967 a new composite scheme of family and child welfare project was introduced.

In the fourth Five Year Plan (1969-74) child welfare programme were given a high priority. The scheme of family and child welfare was continued. The special nutrition programme was started in 1970-71. A nutrition feeding programme was implemented through balwadies run by voluntary organizations.

In the fifth Five Year Plan 1974-79 the major thrust was given for children welfare. New schemes were introduced. Integrated Child Development Services programme originated and was included in this plan. This programme was started only in 33 Block in the country. But in 1980-80 there were 300 projects. In addition to this scheme, financial assistance was offered for providing institutional and non-institutional services to children. Day care services and crèches were also started in more numbers.

During the sixth Five Year Plan (1980-85) child welfare was given a high priority. The scheme of Integrated Child Development Services was expanded so as to cover additional 400 blocks raising the total to 600 blocks by the end of the plan period. Measures were taken to improve the working of the Anganwardies. Wherever possible the existing child welfare programmes were integrated with ICDS programme.

In the seventh Five Year Plan (1985-90) it was aimed to expand ICDS in more blocks so as to make it 1000 by the end of the plan.

### 4.21.3 Central Social Welfare Board (CSWB):

- To study the needs and requirements of social welfare organizations through surveys, research and evaluation.

- To evaluate the programmes and projects of aided agencies.
- To coordinate assistance extended by various ministries of central and state government.
- To promote setting of social welfare organization on voluntary basis in places where no such organization exists.
- To render technical and financial aid to deserving organizations.
- To promote social welfare and assistance to cases of unemployment, underemployment, old age, sickness, disability etc
- To organize and promote programmes of training in social work and to organize pilot project.

The CSWB gives grants-in-aid to women's organizations to raise the economic and social status of women. It provides assistance to disabled and deserted women. A number of crèches and balwadies are run by the **CSWB**. It has initiated a number of socio-economic programmes with the object of assisting voluntary institutions to set up small production units or training cum-production units where groups of women and handicapped persons could work for full time or part time. These socio-economic programmes are income generating projects.

### 4.21.4 Applied Nutrition Programme (ANP):

The Applied nutrition programme has been defined as coordinated educational activities among health, agricultural and educational departments and other interested agencies, with the active participation of the people to help them. This programme was launched during the third Five Year Plan in selected community development blocks as a major effort towards creating awareness among the rural families about the importance of nutrition through education, training, demonstration and production and consumption of foods locally. Expectant and nursing mothers form an important beneficiary group under the programme.

### Objectives:

The main objectives of the Applied Nutrition Programme are as follows:

- To develop progressively a coordinated and comprehensive national programme of education and training in applied nutrition and related subjects with the object of establishing an effective field service to improve local diets through production, preservation and use of protective foods;
- To ensure effective utilization of these protective foods by pregnant and nursing women, pre-school children and school aged children;

- To provide progressively facilities for the training and orientation of tutorial staff required for the educational institutions and training of managerial and supervisory personnel to be engaged in the various fields of this programme;
- To expand facilities for training in nutrition for selective groups of personnel engage in the national community development programme;
- To assist in the extension of applied nutrition programme in Community Development Blocks in the vicinity of training institutions for demonstration and training purposes and
- To impart education through demonstration among village communities about sound and hygienic practices for production, preservation and use of protective foods.

**Programmes:**

In each block a number of Mahila Mandals and youth clubs are established under the programme. These women's organizations have an important role to play and they are being entrusted with the responsibility of feeding pre-school and school children. These organizations are being supplied utensils for cooking and serving balanced menus. Training programmes and cooking demonstration are organized for the members of women's organizations so that they are able to discharge their duties satisfactorily under the overall supervision of Mukhya Sevika or Gram Sevika. Mahila mandals are being encouraged to undertake poultry farming. Under this programme a certain number of balwadies are organized in each block where pre-school children can gather for recreation and lunch. Very often balwadies are housed in the same building of the Mahila mandals.

### 4.21.5 Integrated Child Development Service (ICDS):

**Programme:**

Before 1972 all efforts in maternal and child health were fragmentary and sectoral. So in 1972 eight inter-ministerial teams were constituted by the Planning Commission to study the problems of fragmentary approach to child welfare and the non-availability of benefits to the target groups. The outcome of the scheme is for integrated child development services. At first this programme was started in 33 Blocks only on an experimental basis in 1975. During the sixth and seventh Five Year Plans these projects have been expanded which include 1000 projects.

**Objectives:**

- To improve the nutritional and health status of children in the age group 0-6 years.

- To provide environmental conditions necessary for proper psychological, physical and social development of the child.
- To reduce the incidence of morbidity, malnutrition and school dropout.
- To achieve effective coordination at the policy and implementation levels among the various government departments to promote child development and
- To enhance the capability of mothers to look after the normal health and nutritional needs of the child through proper nutrition and health education.

**Programmes:**

In order to achieve these objectives a package of services offered. The package of services include supplementary nutrition to mal-nourished children and those at risk, immunization, health check-up referral services, non-formal pre-school education and nutrition and health education. The package of services made available to various age groups is as follows:

| **Beneficiary** | **Services** |
|---|---|
| Expectant and nursing mothers | Health check-up<br>Immunization of expectant mothers against Tetanus |
| Supplementary nutrition | Nutrition and health education<br>Population education |
| Other women (15-44 years) | Nutrition and health education |
| Children from birth to 2 years | Supplementary nutrition<br>Immunization<br>Health check-up<br>Referral services |
| Children of 3-5 years | Supplementary nutrition<br>Immunization<br>Health check-up<br>Referral services<br>Non-formal pre-school education |

An Anganwadi is the focal point for the delivery of the ICDS package of services. At the block level there is a project coordinator called Child Development Project Officer. The Anganwadi is managed by an Anganwadi worker with two helpers. Anganwadi workers are supervised by the Mukhya Sevikas. Financial support for this programme is acquired from the international agencies like UNICEF, CARE, All India Institute of Medical Science, The National Institute of Public cooperation and Child Development etc.

## 4.22 SUMMARY

The unit has been described by selection of subject content and its types which includes logical and psychological organization of the content. We also discussed revision, improvement and assessment of curriculum in different school climate. The recent trends in teaching of Home Science and its status in developed countries have also been stated by diagnosis, remedial and agencies of Home Science.

## EXERCISES

- Enumerate the ways to reduce problems and issues in Home Science Education
- Discuss the recent trends in teaching of Home Science and how will you apply it in the class room
- List out the agencies that support Home Science Education
- Critically analyze the subject content of XI standard Home Science text book.

## UNIT V

## EVALUATION IN HOME SCIENCE

**STRUCTURE**

## 5.1. INTRODUCTION

In this unit, we are going to study the meaning and definition of evaluation, purpose of evaluation, functions of evaluation, types of evaluation, norm referenced and criterion referenced tests, blue print, construction of achievement test, characteristics of good test, interpretation of test results- mean, median, standard deviation and correlation.

## 5.2. OBJECTIVES

After reading this lesson pupil will be able to understand:

- Meaning of Evaluation
- Definition of Evaluation
- Functions of Evaluation
- Purpose of Evaluation
- Types of Evaluation
- Blue print
- Construction of Achievement Test
- Interpretation of test results

## 5.3 MEANING OF EVALUATION

Evaluation refers to the process of determining the values of something. Evaluation has more comprehensive qualities that relates to the total learning situation. It takes into account the growth of the child as a whole individual and in his total environment. Thus evaluation is the process of assessing the attainment of the pre-determined objectives of the teaching – learning process. It is the appraisal of outcomes of a course of action.

Hence, educational evaluation can be considered as the process of determining

i) The extent and how well the educational objectives are being attained and
ii) The effectiveness of the teaching – learning experiences provided in the classroom.

Evaluation refers to the whole process of making judgments and taking decisions on the basis of measurement. It provides qualitative information. The modern or the new concept of evaluation is put forward by Dr. Benjamin Bloom. His concept is based upon a triangular model showing the relationship between educational objectives, learning experiences and evaluation procedure. Evaluation refers to both quantitative and qualitative process of determining the value of something. It is a dynamic and continuous process which attempts to measure the objectives of school curriculum. It uses a great variety of techniques like achievement tests, attitude scales, rating scales, inventories etc.

## 5.4 DEFINITION OF EVALUATION

**Stufflebeam (1971)** defined Evaluation as the process of delineating, obtaining and providing useful information for judging decision alternatives.

**Rummel and Gage (1960)** defined Evaluation is not just a testing programme. Tests are one of many different techniques such as observation, Checklists, questionnaire, interviews etc. that may contribute to the total evaluation programme.

## 5.5 FUNCTIONS OF EVALUATION

Evaluation process is helpful in the following ways.

- It makes provision for guiding the growth of pupil.
- It diagnoses the strengths and weakness of the pupil.
- It pinpoints areas where remedial measures may be desirable.
- It provides a basis for the modification of the curriculum, syllabus or courses.

- It provides a basis for the introduction of experiences to meet the needs of individuals and groups of pupil.
- It motivates pupil towards better attainment and growth.
- It tests the efficiency of teacher in providing learning experiences and effectiveness of instruction and classroom activities.

## 5.6 PURPOSE OF EVALUATION

- Evaluation helps to formulate and clarify objectives.
- Evaluation can be used to determine the effectiveness of instructional programme.
- It can be useful for determining the effectiveness of teachers.
- Evaluation ensures better learning and development of various abilities of the students.
- It helps the teacher to classify the students based on their capacities and abilities.
- It can provide accurate and reliable report to the parents and administrators about the performance of the students.
- It helps to provide feedback to the students.
- It helps in the identification of specific weakness and difficulties of the students.
- It helps to select proper guidance and counseling techniques based on the need of the students.
- Evaluation provides quality in education.

## 5.7 TYPES OF EVALUATION

In the teaching-learning process teachers generally use two major kinds of evaluation namely:

1) Formative evaluation

2) Summative evaluation

### 5.7.1 Formative Evaluation

It is used to monitor learning progress during instruction. It gives feedback for reinforcement of learning. It determines the process of learning and its progress. It identifies the learning error and its corrections. It is highly useful for teachers to make achievement tests. It involves much of observational techniques. Formative evaluation helps by providing useful

information to both teacher and students about the strengths and weaknesses of their teaching and learning.

In the teaching process the whole content is presented in small units. Therefore at the end of each unit students should be given test and weaknesses should be diagnosed. After diagnosis, remedial teaching should be followed. Formative tests are used to make teaching -learning more effective and to give opportunity to students to get mastery on the content. Here more emphasis is on the achievement of objectives.

### 5.7.2 Summative Evaluation

This is the evaluation of pupils' achievement at the end of instruction. Its purposes are to grade or certify pupil's mastery, judge the appropriateness of the course objectives, and know the effectiveness of the instruction. Example: annual examination, Public examination etc.

It represents a final test or measure of the students' progress or knowledge gained by them as a result of the course of learning. The results of this evaluation may be safely used for making comparison among students, placing them in order of merit or taking decisions about their promotion and awarding degree or diploma.

It is given to the students after they have passed successfully all the formative tests given separately at the end of each unit of the content. From summative test, the general level of student is judged on the basis of students' performance, the effectiveness of teaching and instruction is evaluated. Thus it provides reinforcement to the teacher and helps in planning and organizing of further teaching. On the basis of students performance it can be judged to what extent objectives could be realized.

## 5.8 CRITERION – REFERENCED TEST (CRT)

This test interprets achievement in terms of predetermined standard of performance. Without referring the level of performance of other members of the class, in the criterion referenced test, the student does not compete against others but compete against essential instructional objectives. The student is evaluated in terms of mastery or non-mastery. Criterion – referenced testing aims at mastery learning.

In CRT the reports are in terms of percentage and individual scores alone can be interpreted. It measures the specific performance of the individual. It is not concerned with the maximization of variability of test scores. It evaluates the effectiveness of instruction. Tests are constructed to evaluate an individual's performance in relation to a set of predetermined criteria. Tests are constructed on the basis of behavioural objectives.

Test scores are interpreted in terms of grades (A, B, C, D, E and F) denoting mastery or non–mastery levels. The test item that represents essential competencies and abilities are selected for testing.

## 5.9 NORM – REFERENCED TEST

Norm – referenced test interprets achievements in terms of an individual's position relative to other members of the class. In other words it compares an individual's score to the group score. An individual's performance is compared to the performance of his peer group. It is constructed specifically to make comparisons among students in the content area measured by the test. Grade – norms and age – norms are used for interpretation.

The reports are in terms of group averages, grade, ranks etc. The interpretation of scores is in relation to other individuals. It makes a comparative decision. This test is concerned with the maximization of variability of the test scores. It evaluates the individual differences in students' performance. Tests are constructed on the basis of detailed content specification. Test scores are interpreted in terms of norms such as grade norms, age norms, percentile scores and standard scores.

## 5.10 BLUE PRINT

The blue print is a plan for the preparation of the question paper. The types of questions, the content area to be tested in the questions, and the objective to be tested in the questions are all divided and accordingly the questions have to be framed and arranged in the form of a question paper.

1. **Weightage to Questions:**

| **Type of question** | **Marks allotted** | **Percentage** |
|---|---|---|
| Essay | (2x5) 10 | 40 |
| Short answer | (5x2) 10 | 40 |
| Objective test | (5x1) 5 | 20 |
| Total | 25 | 100 |

2. **Weightage to Content :**

| **Content** | **Marks allotted** | **Percentage** |
|---|---|---|
| Carbohydrate | 14 | 56 |
| Protein | 11 | 44 |
| Total | 25 | 100 |

3. **Weightage to objectives :**

| **Objectives** | **Allocation** | **Percentage** |
|---|---|---|
| Knowledge | 8 | 32 |
| Understanding | 9 | 36 |
| Application | 3 | 12 |
| Skill | 5 | 20 |
| Total | 25 | 100 |

**Blue Print- Model**

| Objectives / Content | Knowledge | | | Understanding | | | Application | | | Skill | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | E | SA | O | E | SA | O | E | SA | O | E | SA | O | |
| Carbohydrate | - | (1)2 | (1)1 | - | (1)2 | (1)1 | | (1)2 | (1)1 | (1)5 | - | - | 14 |
| Protein | - | (2)2 | (1)1 | (1)5 - | | (1)1 | - | - - | | - - - | | | 11 |
| Total | 8 | | | 9 | | | 3 | | | 5 | | | 25 |

**Note:** Numbers with in the bracket indicates number of question, Number outside the bracket indicates the marks allotted for the questions.

## 5.11 ACHIEVEMENT TEST

The term achievement is often understood in terms of pupil's scores on a certain school subject. Achievement tests are conducted to test the achievements of the students after going through a piece of instruction or gaining the desired experiences in the course of formal or informal instruction.

According to Denis Baron and Harold W. Bonard the concept of achievements involves the interaction of three factors namely,

- Aptitude for learning
- Readiness for learning
- Opportunity for learning

When the teacher teaches the lesson or a unit of the curriculum, he may resort to such achievement tests. Such tests may be held after a fixed period in the form of weekly, monthly, quarterly and half yearly or yearly tests. Achievement tests constitute an important tool of evaluation.

### 5.11.1 Definition of Achievement Test

The International Dictionary of Education defines achievement test as "a test designed to measure the effects of specific teaching or training in an area of the curriculum".

It can also be stated as an instrument designed to measure the accomplishment of the students in a specified area of learning, after a period of instruction".

### 5.11.2 Aims of Achievement test

Achievement tests are mainly concerned with the following:

- To determine what pupil have actually learnt
- To evaluate teachers effectiveness
- To make survey of pupils' performance.
- To help in clarification and placement of pupil in a relatively homogeneous group.
- To form a part of total case history of a pupil.
- To help to know the strength and weaknesses of pupil and to provide remedial measures.

"A general achievement test is one designed to express in terms of a single score of a pupil's relative achievement in a given field of achievement" – Hawkes, Lindquist & Mann.

### 5.11.3 Functions of Achievement test

The major functions of achievement tests are to:

- Motivate the students before a new assignment is taken up.
- Provide basis of promotion to the next grade.
- Help the teacher in identifying pupils' difficulties and arranging for remedial measures.
- Help in determining the relative position of a student in a particular subject or area of learning.
- Helps the teacher to see for himself, what effectively he is doing, what is getting across to pupils and what is not.

### 5.11.4 Types of Achievement test

- Teacher made
- Standardized

**Teacher made test**

Teacher made test are prepared by the teachers for using in their classrooms to meet their specific objectives. They are often used to compare individuals within the group. The test is administrated as per the convenience of the teachers. They are not standardized tests. The test is scored by the teachers.

**Standardized test**

Standardized tests are constructed by experts and teachers working for the curriculum. They are standardized based on the comparative results from different classes and different schools. The test can be administrated to a large population of students in a state or a distinct as per the instructions provided in the manual. They are standardized on a sample of concerned population. These are scored as per the instructions given in the manual.

### 5.11.5 Steps in the construction of an Achievement test

Once a set of lesson plans are taught by a teacher for a group of students in a given time, the teacher is expected to conduct an achievement test. The following steps can be followed by the teacher to make the test more objective, reliable, valid and practical.

1. Preparation of three weightage tables based on
    - Objectives
    - Content covered and
    - Types of questions to be included.
2. Preparation of a blue print based on the “planned weightage tables.”
3. Constructing the questions based on the “blue print”.
4. Preparation of a question wise analysis based on questions constructed enables the teacher to ensure the characteristics of a good test.
5. Preparation of scoring key and marking scheme enable the teacher to know and spell out the expected answers and marking procedures.
6. Printing of the question papers.

7. Conducting the test.

After the administration of the test, scoring the answer sheets, awarding marks, statistical analysis of marks and interpretation of calculated values and prediction for guidance purpose can be done.

### 5.11.6 Construction of an achievement test

For evaluating students achievement in a subject an achievement test has to be prepared based on the criteria listed as validity, reliability, scorability, objectivity etc.,

- **Weightage to objectives:-**

The main task is to decide the weightage to be given to the different objectives formulated while teaching the unit. Out of the total marks for which the question paper is set, what is the weightage given to various objectives like knowledge, understanding, application and skill must be divided.

- **Weightage to content:-**

Having decided the number of topics to be tested the teacher has to distribute the total marks to every topic giving due weightage to the topics based on the importance.

- **Weightage to different forms of questions:-**

Although different forms of tests are available, every type of test has got its advantages and limitations. Hence in testing the learning outcomes, essay type, short – answer type and objective type questions may be judiciously used. Out of the total marks set for the question paper, how much weightage to be given for different types of questions should be decided.

### 5.11.7 Blue Print for the question paper

The blue print is a three dimensional chart showing the weightages given for objectives, content and form of questions. Blue Print is a document which gives a complete functional picture of the test. To prepare a blue print the weightages in terms of marks to objectives, content areas and forms of questions are first put down in the total column and the cells are then subsequently filled to indicate the position of questions. The total of the marks is indicated in the cells. Both column – wise and row-wise total must tally with the final total.

### 5.11.8 Preparation of question paper

Once the blue print is prepared, the actual preparation of the test starts. Test items must be prepared based on the particular objective. Some sample items based on the objectives are indicated below.

**A model design of the question paper**

**XXXXXXXXXXXXXXXXXXXXXXXX**

**CHENNAI**

**HOME SCIENCE**

**ACHIEVEMENT TEST**

**Class: XI**

**Time: 1 hour**

**Marks: 25**

**PART - A**

**I. FILL IN THE BLANKS: 5x1=5**

1. Formation of glycogen from non carbohydrate sources is called ----------
2. The starch splitting enzyme is ----------
3. Saliva contains the enzyme ----------which acts upon starch.
4. Histidine is a ---------- amino acid.
5. Deficiency of protein is manifested as……

**PART – B**

**II. WRITE SHORT ANSWERS: 5x2=10**

6. What are amylases?
7. Give example of two disaccharides and their source in diet
8. List the functions of carbohydrates
9. What are polypeptides

10. Define reference protein

**PART – C**

**III. WRITE DETAILED ANSWERS: 2x5=10**

11. Describe the digestion of carbohydrate
12. List the functions of protein

**ANSWER KEY:**

**I . FILL IN THE BLANKS:**

1. Gluconeogenesis
2. Intestinal amylase
3. Salivary enzyme
4. Essential amino acid
5. Kwashiorkor

**II. WRITE SHORT ANSWERS:**

6. Amylase are enzymes, in the small intestine, pancreatic amylase and intestinal amylase digest starch up to the stage of maltose.
7. Two examples of disaccharides:
   i. Lactose - food source → milk
   ii. Sucrose- food source → sugarcane

8. Functions of carbohydrate:
   i. It serves as a major source of energy for the body.
   ii. Carbohydrate exerts a protein sparing action.

9. Proteins consist of hundreds of amino acid linkages called polypeptides.

10. A good quality protein is digested and utilized well. Egg protein is a complete protein and is considered as a reference protein with high biological value.

**III. WRITE DETAILED ANSWERS:**

11. **Digestion:**

The first stage of digestion of carbohydrate takes place in the mouth. Chewing breaks up food, exposes starch and sugars to the action of enzymes.

Saliva contains salivary amylase (ptyalin). It converts starch to maltose. But, time limits the action of salivary amylase, because as food enters the stomach, the acid present in the stomach blocks the action of salivary amylase.

In the stomach the acid causes hydrolysis of sucrose. In the small intestine pancreatic amylase and intestinal amylase digest starch up to the stage of maltose.

$$\text{Starch} \xrightarrow[\text{pancreatic}]{\text{Salivary}} \text{maltose} + \text{Iso maltose and intestinal amylase}$$

Glycogen is also broken by these enzymes to disaccharides. Enzymes maltase, sucrase and lactase present in the brush borders of the columnar cells of small intestine convert disaccharides to monosaccharide.

$$\text{Maltose} \xrightarrow{\text{Maltase}} \text{glucose} + \text{glucose}$$

$$\text{Lactose} \xrightarrow{\text{Lactase}} \text{glucose} + \text{galactose}$$

$$\text{Sucrose} \xrightarrow{\text{Sucrase}} \text{glucose} + \text{fructose}$$

Cellulose and other polysaccharides are not digested by enzymes, so undigested material passes to large intestine forming bulk which contributes to feaces. The end products of carbohydrate digestion are monosaccharide- glucose, galactose and fructose. They are absorbed by process of active absorption by the mucosa of the small intestine.

**12. List the functions of protein**

**Functions of protein:**

Proteins form a major part of total body structures and they participate in many activities in our body. The major functions of protein in our body are shown in the table.

**Functions of protein:**

| | | |
|---|---|---|
| 1. | Build and repair body tissues | Proteins form integral parts of most body structure such as skin. Tendon membranes, muscles, organs and bones. They support the growth and repair of body tissues. |
| 2. | Enzymes | e.g. Lipase helps to breakdown fat and sucrose breaks down sugar. |
| 3. | Hormones | Regulate body process |
| 4. | Antibodies | Inactivate foreign invaders thus protecting the body against disease. |
| 5. | Fluid and electrolyte balance | Proteins help to maintain the volume and composition of body fluids. |
| 6. | Acid base balance | Proteins help maintain the acid base balance of the body fluids by acting as buffers. |
| 7. | Energy | Proteins provide fuel for the body's energy needs (4 kcal/ gm) |
| 8. | Storage | Proteins help to store iron and copper. |
| 9. | Homeostasis | Proteins maintain normal osmotic balance among body fluids. |
| 10. | Transport proteins e.g.: hemoglobin, lipoprotein | These types of proteins carry nutrients to the tissues. E.g.: lipoprotein carry lipids, hemoglobin transports oxygen. |
| 11. | Contribute to sensory and physical properties of food | Proteins impart color, flavor, odour and texture to foods. |

## 5.12 ESSAY TYPE TEST

The essay type question may be defined as a relatively free written response to a problem situation or situations in which the written answer intentionally or unintentionally reveals evidence regarding the functioning of the pupil's mental powers.

Essay tests demand long answers. The essay type questions enable the student to recall rather than recognize information. In assessing the quality of the answer, other extraneous factors like neatness in presentation of ideas and good hand writing play a part.

**Suggestions to be followed while constructing and improving essay tests:-**

The question should be so written that it will elicit the type of behavior the teacher wants to measure of one's understanding and he should not ask a question that will elicit an opinion. The wording of the question should be clear, unambiguous, explicitly stated so that it will be interpreted in the same manner by all students. Time limit must be liberal so that the essay test does not become a test of speed in writing.

### 5.12.1 Advantages of Essay Type Test

- Essay examinations may be used to estimate the creative ability of the pupil.
- Chances of copying are minimal.
- Higher mental process such as application, analysis, synthesis, evaluation, formulating hypothesis, problem solving etc can be easily tested by essay type examination.
- The students' ability to organize and express their ideas effectively is another objective which tends measure in essay examination.

### 5.12.2 Limitations of Essay Type Test

- **Limited sampling of the content**

The essay examination has also been criticized on the grounds that the sampling of content or range of information tested is narrower than it is in objective examination.

- **Emphasis on rote memorization**

Another criticism leveled against essay examinations constructed by teacher is that emphasis is placed upon the recall of more or less specific information and encourages rote memorization.

- **Selective learning**

Essay type examination encourages selective learning as the sampling of the content is limited and it covers only a few selected content areas.

- **Influence of other extraneous elements:-**

Extraneous elements like the moods of the examiners, impressions created by the examinee, use of flowery and attractive language, comparison of the answer scripts by the examiners etc can affect the scoring resulting in greater subjectivity.

## 5.13 OBJECTIVE TYPE TEST

An Objective test is so named because the system of scoring is objective rather than subjective as in the case of an essay test. In fact a lot of thought and care is involved in the framing of objective type items.

### 5.13.1 Category of the Objective Type Test

- Recall type;  Recognition type,
- Simple recall type; Completion type,
- Multiple choice type; Matching type; True or False type; Grouping type.

**Simple Recall**

A simple question is asked requiring a response from the students in a word or symbol.

E.g.: Give an example for iron rich food.

**Completion type :-** (Fill in the blank)

A statement wherein an important word or concept is missing and the student is asked to supply the omission.

E.g.: The milk teeth are ---------- in number.

**True or false test:-**

True or false type items are simple statements which must be either completely true or completely false. The student judges the truth or falsity of the statement and indicates suitably with 'T' for true and 'F' for false.

E.g.: Enamel is much harder substance as compared to point (True / False)

**Suggestions to improve true or false items:-**

- Partly true statements should not be used.
- Tricky statements should be avoided
- Double negative statements should be avoided. They may confuse students.

**Matching Type :-**

This type of test can be used to measure pupil's ability to associate events with person, terms with definitions, principles with examples etc.,

| **Part A** | | **Part B** |
|---|---|---|
| 1. Filament | – | Toys |
| 2. Baby | – | Yarns |
| 3. Pregnancy | – | Carbohydrates |
| 4. Beetles and Weevil | – | Menstrual period |
| 5. Dietary essentials | – | Household Pests |
| | - | Respiratory system |

**Suggestions to improve matching type:-**

- Giving irrelevant clues must be avoided.
- Every response in one column should be a pleasible answer to every premise in the other column.
- One is to one match must be avoided (i.e.) giving equal number of premises and responses. It is good to have two or three more responses than premises.

**Multiple choice items:-**

The multiple choices item consists of two parts

- The stem which contains the problem or statement
- Three or four responses out of which only one must be correct.

E.g.:

1. Deficiency of vitamin D causes

a) Anorexia c) Pellagra

b) Rickets d) Anemia

**Suggestions to improve multiple choice test items:-**

- Overlapping answer should be avoided
- Alternatives such as “none of the above” or ‘all of the above’ must be used sparingly.
- verbal associations between the stem and the correct answer should be avoided

**Grouping test:-**

In this type of test, a number of items that have something in common among them are given along with one other item, which is in no way related to them.

E.g.: Vegetables: Carrot, Brinjal, Beans, Snake guard.

### 5.13.2 Advantages of Objective Type Test

The objective type tests in comparison with essay examination possess certain definite advantages.

- **Sampling :-**
  - Objective type tests generally show much better coverage of total course content than do essay type.
- **Ease of scouring:-**
  - Objective type tests may be scored by the use of a key listing the correct responses and the scoring can be done by anyone without any specific technical skill.
- **Objective based items:-**
  - The objective type tests can be prepared in such a way that each item is designed to assess one specific objective.

### 5.13.3 Limitations of Objective Type Test

- **Guessing:**

In objective type tests where the pupil is called upon to select one of the possible alternatives, a series of fortunate guesses will markedly increase the pupils score.

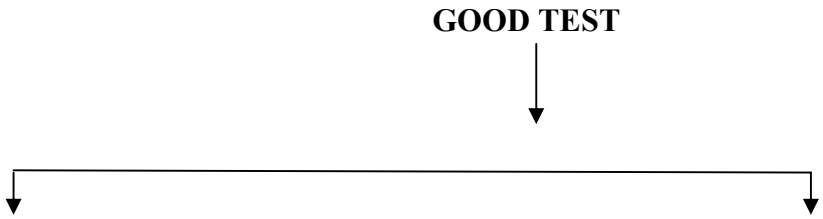
- **Difficulty in construction:-**

The preparation of objective type tests generally requires considerably more time and resourcefulness than the development of an essay type test.

- **Testing complex process:-**

Higher mental abilities like organization, expression, problem solving etc cannot be measured through objective type tests.

## 5.14 CHARACTERSTICS OF A GOOD TEST




| Technical criteria | Practical criteria |
|---|---|
| Reliability | Ease of application/administration |
| Validity | Time saving |
| Objectivity | Cost (Economic) |
| Discrimination | Universality or acceptability |
| Standardization | Ease of scoring |
| Norms | Ease of interpretation |

Educationists and researchers agree that a good test should be

**Valid:** It should measure what it proposes to measure.

**Reliable:** It must function similarly with similar groups. It should rate the same candidates with the same score even if it is examined by the same or different examiners at the same or different times. The differences in score should be negligible.

**Objective:** It should yield the same or nearly the same score, irrespective of the person who scores it.

**Practicable:** It should finish in the time allotted for it. It should neither be too long nor too short.

**Scoreable:** It should be constructed in such a way that the boredom caused by the routine of scoring is cut down to the minimum. It should allow the use of key in marking so that the test sheet is checked more or less automatically and without subjectivity.

**Clear:** The languages of the questions should be simple, understandable, definite and unambiguous.

**Comprehensive:** It should cover the whole syllabus. Due importance should be given to each topic. While setting the paper care should be taken that minimum choice is given.

**Graded:** It should be according to the age and intelligence of the students.

**Encourage reflective thinking and not reproduction:** It should test knowledge, application and skill.

**Interesting:** It should encourage the child to put forth his efforts.

**Short answer type questions:** Should also be set in order to cover a wider range of the syllabus.

## 5.15 INTERPRETATION OF TEST RESULTS

According to Croxton and Cowden, Statistics is defined as the collection, presentation, analysis and interpretation of numerical data. Horace Secrist defined statistics as follows: "By statistics we mean aggregates of facts affected to a marked extent by multiplicity of causes, numerically expressed, enumerated or estimated according to reasonable standards of accuracy, collected in a systematic manner for a pre-determined purpose and placed in relation to each other". In modern times, statistics is no longer merely the collection of data and their presentation in charts and tables - it is now considered to encompass the science of basing inferences on observed data and the entire problem of making decisions in the face of uncertainty.

**We use statistics for many reasons:**

i. To mathematically describe/depict our findings
ii. To draw conclusions from our results
iii. To test hypotheses
iv. To test for relationships among variables

### 5.15.1 Numerical representations of data can be:

a. **Descriptive statistics** summarize data.
b. **Inferential statistics** are tools that indicate how much confidence we can have when we generalize from a sample of a population.

### 5.15.1a Descriptive Statistics:

- Can be applied to any measurements (quantitative or qualitative)
- Offers a summary/ overview/ description of data.
- Number
- Frequency Count
- Percentage
- Deciles and quartiles
- Measures of Central Tendency (Mean, Midpoint, Mode)
- Variability
- Variance and standard deviation.
- Graphs
- Normal Curve

### 5.15.1b Frequency distribution

The number of objects scores or individuals in a category is known as frequency. By grouping scores into classes that is by classifying scores, we have what is called a frequency distribution.

**Steps in preparing frequency distribution**

- Determine the range
- Determine the class intervals
- Tabulate the scores

**Advantages of frequency distribution**

- It makes data easier to interpret.
- It gives a fairly clear picture of how students have performed.
- It increases the clarity of the form of the distribution of scores.

**Limitations of frequency distribution**

- Some information is lost. For example the scores of 15,16,17,18 and 19 have all been put in the interval 15-19.
- It creates trouble for further calculations.

### 5.15.1c Measures of Central Tendency

According to Prof Bowley "Measures of central tendency (averages) are statistical constants which enable us to comprehend in a single effort the significance of the whole."

One of the main objectives of statistical analysis is to get a single value that describes the characteristic of the entire data. Such a value is called the central value and the most commonly used measures of central tendencies are Arithmetic Mean, Median and Mode.

The main objectives of Measures of Central Tendency are

- To condense data in a single value.
- To facilitate comparisons between data.

**Requisites of a Good Measure of Central Tendency:**

- It should be rigidly defined.
- It should be simple to understand and easy to calculate.
- It should be based upon all values of given data.
- It should be capable of further mathematical treatment.
- It should have sampling stability.
- It should not be unduly affected by extreme values.

**Measures of Central Tendency**

a. Mean
b. Median
c. Mode

**a. Mean**

This is also known as arithmetic average and is the most common measure of central tendency and is defined is "the value" which we get by dividing the total of the values of various given items in a series by the total number of items. The mean is simply the total of all the values in the distribution, divided by the frequencies.

**Formula**

$$\textbf{Mean } (\mu) = \sum X/N$$

$\sum X$ = sum of scores

N = number of scores

Mean is half the sum of a set of values

**Example**

5, 6, 7,10,12,15

***Solution***

i. Scores: 5, 6, 7, 10, 12, 15

ii. Sum: 55

iii. Number of scores: 6

iv. Computation of Mean: 55/6= 9.17

**Example**

The marks obtained by 10 students in a test are 15, 75, 33, 67, 76, 54, 39, 12, 78, 11. Find the arithmetic mean.

***Solution***

Here, the number of observations, $n = 10$

A. $M = x = \frac{15 + 75 + 33 + 67 + 76 + 54 + 39 + 12 + 78 + 11}{10}$

$\boldsymbol{x} = 460/10 = 46$

**Arithmetic mean for grouped data**

Arithmetic mean for grouped data can be obtained in two methods which are

(i) Direct Method and (ii) Assumed Mean Method

**Example**

Calculate the Arithmetic mean of the following data by direct method

| **X** | **5** | **10** | **15** | **20** | **25** | **30** |
|---|---|---|---|---|---|---|
| **F** | **4** | **5** | **7** | **4** | **3** | **2** |

**Solution**

| **X** | **f** | **Fx** |
|---|---|---|

| | | |
|---|---|---|
| **5** | **4** | **20** |
| **10** | **5** | **50** |
| **15** | **7** | **105** |
| **20** | **4** | **80** |
| **25** | **3** | **75** |
| **30** | **2** | **60** |

Total N = 25 Σfx= 390

**Arithmetic Mean= $\Sigma f\,x/N$**

= 390/25

= 15.6.

**Merits of Mean**

- It is rigidly defined.
- It is easy to understand and easy to calculate.
- It is based upon all values of the given data.
- It is capable of further mathematical treatment.
- It is not much affected by sampling fluctuations.

**Demerits of Mean**

- It cannot be calculated if any observations are missing.
- It cannot be calculated for the data with open end classes.
- It is affected by extreme values.
- It cannot be located graphically.
- It may be the number which is not present in the data.
- It can be calculated for the data representing qualitative characteristic.

**b. Median**

- Middle value of rank ordered data
- Value that separates the higher half of a data set from the lower half
- Can be found by arranging all values from lowest to highest and determining the value in the middle
- If there is an even number of value in the data set, then the median is the mean of the two middle values

**Example**

Determine the median for the following data sets

132, 139, 131, 138, 132, 139, 133, 137, 139

***Solution***

Rearrange from lowest to highest: 131, 132, 132, 133, 137, 138, 139, 139, 139

Middle value -137

**Median = 137**

**Example**

For the data set:

6, 9, 1, 2, 6, 5, 1

***Solution***

Arrange from lowest to highest: 1, 1, 2, 6, 6, 9

The median is the mean of 2 and 6 = 2 + 6/2 = 4

**The median is 4**

**Merits of Median**

- It is rigidly defined.
- It is easy to understand and calculate.
- It is not affected by extreme values.
- Even if extreme values are not known median can be calculated.
- It can be located just by inspection in many cases.
- It can be located graphically.
- It is not much affected by sampling fluctuations.
- It can be calculated for data based on ordinal scale.

**Demerits of Median**

- It is not based upon all values of the given data.
- For larger data size the arrangement of data in the increasing order is difficult process.
- It is not capable of further mathematical treatment.

- It is insensitive to some changes in the data values.

**Mode:**

- Mode is the most frequently occurring value in a set.
- Best used for nominal data.
- The most frequent measurement.
- If no number is repeated in the data set, there is no mode

**Example**

1)132, 139, 131, 138, 132, 139, 133, 137, 139

**Mode= 139**

2)3, 3, 3, 5, 5, 5, 3, 6, 4, 8, 5, 4, 2, 4, 3, 5

**Mode= 3 and 5 = bimodal**

3)56, 23, 48, 78, 94, 35, 88, 69, 44, 53, 27

**Mode= no mode**

**Example**

The marks of ten students in a mathematics talent examination are 75, 72, 59, 62, 72, 75, 71, 70, 70, and 70. Obtain the mode.

***Solution***

Here the mode is 70, since this score was obtained by many students than any other.

A distribution having only one mode is called unimodal.

**Example**

Find the mode for the set of values 482,485,483,485,487,487,489.

***Solution***

In this example both 485 and 487 occur twice. This list is said to have two modes or bimodal.

(i) A distribution having two modes is called bimodal.

(ii) A distribution having three modes is called trimodal.

(iii) A distribution having more than three modes is called multimodal.

**Example**

12,11,15,12,12,11,14,17,15,12,13

***Solution***

| **Number of Cars Sold** | **Frequency** |
|---|---|
| **11** | 2 |
| **12** | 4 |
| **13** | 1 |
| **14** | 1 |
| **15** | 2 |
| **17** | 1 |

Mode = 12

**Merits of Mode**

- It is easy to understand & easy to calculate.
- It is not affected by extreme values or sampling fluctuations.
- Even if extreme values are not known mode can be calculated.
- It can be located just by inspection in many cases.
- It is always present within the data.
- It can be located graphically.
- It is applicable for both qualitative and quantitative data.

**Demerits of Mode**

- It is not rigidly defined.
- It is not based upon all values of the given data.

- It is not capable of further mathematical treatment.

### 5.15.1d Measures of Variability

Variability refers to the spread of the separate scores around measures of central tendency. If the spread is substantial, the variability is said to considerable; if the spread is little it is insignificant.

The measures of variability are

i. The range
ii. The quartile deviation
iii. The average deviation and
iv. The standard deviation

**i. Range**

Range may be defined as the difference between the values of the extremes (i.e) the lightest and lowest value of the data under consideration.

Range=Highest value-Lowest value

**Use of range:-**

- When a knowledge of extreme source is required.
- When the data are too scant or too scattered to justify the computation of a more precise measure of variability.

**EXAMPLE**

**Find the value of range for the following data**

**6 , 8, 5,10,11,12**

**Formula:**

| **Range=Highest value- lowest value** |
|---|

Highest value=12 Lowest value=5

Range=12-5

**Range=7**

**ii. Quartile Deviation**

Quartile deviation or Q is also called semi inter quartile range. It may be defined as one half the distances between q3 and q1 in a frequency distribution. If we know q3 and q1 we can find out the quartile deviation or Q by the formula

Q=Q3 -Q1/2 where,

Q1=l+ (N/4-c.f)/f * i)

Where c.f – cumulative frequency below Q1 class

f- Frequency of Q1 class

Q3= l + (3N/4-c.f)/f*) where c.f- cumulative frequency below Q3 class,

f- Frequency of Q3 class

**Use of Quartile deviation**

- When the median is a measure of a central tendency
- When the distribution is incomplete at either end
- When there are scattered or extreme scores which would disproportionately influence the standard deviation
- When the concentration around the median is of primary interest

### iii. Average Deviation (Mean Deviation)

It is defined as the average of the deviation of the group measured from an average (Mean, Median or Mode) taking all deviations as positive. In actual calculations, we find some of the deviations positive and negative.

But for the calculation of average deviation we take all the deviations as positive. Average deviation for ungrouped data can be calculated with the help of the following formula:

**A.D=$\sum |X| /N$ (or) $\sum |D| /N$**

Where, $|X|$ or $|D|$ deviations from mean, median or mode by ignoring sign.

For ungrouped data **A.D= $\sum f|D| /N$**

**Use of Average deviation**

- When it is desired to weigh all deviations from the mean according to their size.
- When extreme deviations would influence standard deviation unduly.

### iv. Standard Deviation

While calculating the average deviations we ignore the signs. An alternative method for eliminating the signs is to square up each deviation. We employ this method for the calculation of standard deviation. For the calculation of standard deviation one thing is certain that it is calculated from mean alone. Conventional symbol used for S.D is Greek letter Sigma ($\sigma$).

Standard deviation may be defined as the square root of the sum of squares of the deviations calculated for each item.

$\sigma = \sqrt{\sum fd /n}$

Where d- deviation from the mean.

Standard deviation for grouped data is $\sigma = \sqrt{\sum fd^2 / \sum f - (\sum fd/\sum f)^2} * c$

Where d- deviation from the mean

**Use of Standard deviation**

- When the statistics is having the greatest stability.

- When the extreme deviations should exercise a proportionally greater effect upon the variability.
- When co efficient of correlation and other statistics are subsequently to be computed.

**Example**

| **Class interval** | **0-10** | **10-20** | **20-30** | **30-40** | **40-50** | **50-60** | **60-70** |
|---|---|---|---|---|---|---|---|
| **Frequency(f)** | **8** | **12** | **17** | **14** | **9** | **7** | 4 |

| **Class Intervals** | **Frequency(f)** | **Mid value(x)** | **d= x-A/c** | **fd** | **$fd^2$** |
|---|---|---|---|---|---|
| 0-10 | 8 | 5 | -3 | -24 | 72 |
| 10-20 | 12 | 15 | -2 | -24 | 48 |
| 20-30 | 17 | 25 | -1 | -17 | 17 |
| 30-40 | 14 | **A → 35** | 0 | 0 | 0 |
| 40-50 | 9 | 45 | 1 | 9 | 9 |
| 50-60 | 7 | 55 | 2 | 14 | 28 |
| 60-70 | 4 | 65 | 3 | 12 | 36 |
| | **$\sum f=71$** | | | **$\sum fd=30$** | **$\sum fd^2=210$** |

**Formula**

$$\sigma = \sqrt{\sum fd^2/\sum f - (\sum fd/\sum f)^2} * c$$

$$= \sqrt{210/71-(-30/71)^2} * 10$$

**Standard deviation (S.D) = 16.67**

**5.15.1e Measures Of Relationship**

Measures of relationships can be used to summarize the relationship between two sets of data.

**Correlation**

Correlation may be defined as the connection, relationship of interdependence between two variables. Co-efficient of correlation is the number which describes the degree of

relationship which exists between the test scores. These numbers can range from +1.00 through 0 to -1.00

A co- efficient of +1.00 describes a perfect positive correlation. A co-efficient of -1.00 describes a perfect negative correlation. A co-efficient of 0 (or near 0) indicates little or no relationship between the test scores. The closer the co-efficient are to +1.00 and -1.00 the greatest is the relationship between the pairs of test scores.

**Rank correlation: (spearmen devised this formula)**

$\rho=1-6 \sum D^2 / N (N^2-1)$

Where

$D^2$ – Square of each rank difference

N- No of items

Generally the rank difference method will be used in educational evaluation. Knowledge of correlation techniques will be helpful to a teacher in the following ways

- It is helpful to do action.
- Knowing the reliability and validity of test the teacher can assess his pupils.
- To know the relationship between a particularly school subject and general intelligence of the pupil.
- To know the relationship between different subjects.
- To know the efficiency of different methods of teaching.
- To predict the values of one variable from another.

**Example:**

| STUDENT | TEST1 | TEST2 | R1 | R2 | D=R1-R2 | $D^2$ |
|---|---|---|---|---|---|---|
| A | 10 | 16 | 6.5 | 5.5 | 1.0 | 1.00 |
| B | 15 | 16 | 3 | 5.5 | -2.5 | 6.25 |
| C | 11 | 24 | 5 | 1.5 | 3.5 | 12.25 |
| D | 14 | 18 | 4 | 4 | 0 | 0 |
| E | 16 | 22 | 2 | 3 | -1.0 | 1.00 |
| F | 20 | 24 | 1 | 1.5 | -0.5 | 0.25 |
| G | 10 | 14 | 6.5 | 7.5 | -1.0 | 1.00 |
| H | 8 | 10 | 9 | 10 | -1.0 | 1.00 |
| I | 7 | 12 | 10 | 9 | 1.0 | 1.00 |
| J | 9 | 14 | 8 | 7.5 | 0.5 | 0.25 |
| N=10 | | | | | | $\Sigma D^2$=24.00 |

**SOLUTION:**

$$\text{FORMULA (rho)} = 1-\frac{6\Sigma D^2}{N(N^2-1)}$$

$$=1-\frac{6*24}{10*99}$$

$$=1-\frac{144}{990}$$

$$=0.855$$

The above result shows that there exists a positive correlation between the variables X and Y.

## 5.16 SUMMARY

In this unit we studied the meaning, definition, functions, purpose and types of evaluation in Home science, which would enhance a Home science teacher to prepare a blue print, construct an achievement test and interpret the test results in an eminent way. Through this unit the pupil teacher was exposed to a sample question paper and how to prepare a key answer for it. Also the various types of questions with its advantages and limitations were studied which prepares the future teachers to prepare or construct a standard question paper with limited flows or with no flaws. Finally the interpretations of the tests enable the teacher to assess oneself effectively.

## EXERCISES

- Discuss the various types of evaluation with an illustration.
- Prepare a blue print for a topic of your choice in Home science subject
- Construct an achievement test for Home Science subject.
- List out the characteristics of a good test.
- Bring out the merits and demerits of Mean, Median and Mode