



KERALA STATE

“TOWARDS BASIC EDUCATION”

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This brochure deals with the scheme of Basic Education to be launched in Kerala State from the academic year 1958 with a new accent on the use of tools leading to vocational bias.

Complete programme of activities for each class in the Primary Section (as samples given in the end of this pamphlet) is under preparation. This, together with a guide describing the various tools, and explaining their proper use in the class room will be placed in the hands of the teachers for constant reference.

Teachers will be given a short-term intensive training also to implement this programme.

PANDITJI ON THE USE OF TOOLS IN EDUCATION

Place a tool in the hands of every child

As I was coming here, I was shown some tools. I was told that they were supplied to schools and like places. It is a very good idea. This is important. I think that some kind of basic knowledge of tools should be given or should be acquired by children almost in their play. In fact, that is the best way of acquiring any knowledge, whether it be language or even the most elementary principles of Science or Mechanics. Nothing is more fascinating than tools and especially the tool with which he or she can do something or make something. They have the joy of creating something. It surprises me that this is not utilised more and some horrible and ugly things are given them to play with. I have seen boys and girls in other countries, of 13 or 14 and 15 years of age, building a toy Hydro-electric station which produces electricity in the backyard of their institutions. It is much more useful than all the lectures they would have heard. The point is that the pupil should have to do all these things for learning science or other specialised subjects which require practical experience. I think that we should give much more time to the practical aspect than to the theoretical. Theoretical is, of course, important. It is the base. But the practical is the more important. You will find that this is the tendency all over the world, to give more and more time to the practical and also to give them as good an equipment as you can, because the lecture part is the least of all. It is, as I said, necessary because it is learning from doing which is important. The whole system of basic education is just to learn from doing something. You apply that to almost everything you like—except to real theoretical subjects—and you will find how much easier it is to teach and learn and how fascinating learning becomes to the boy or girl. It is after all the only way. I mean to say, the only way to be moderately successful in life, is to know how to combine work and play. By separating them work becomes onerous and play becomes tedious. But if you combine work and play, whatever your age might be, then you know to some extent at least how to take the most from life. If children are taught from the very beginning, not drawing hard and fast lines from work and play, then they will go up well and fit in their job in their later years of life.

(Extract from the speech by Sri Pandit Jawaharlal Nehru, Prime Minister of India, at the inauguration of the College of Engineering, Trichur.)

SRI SHRIMALI ON "TOOL ROOMS IN SCHOOLS"

**Extract from the speech of Sri Shrimali, Union Minister
for Education—31-5-1958—at the office of the Director
of Public Instruction.**

"I have been very much impressed with your Scheme. There is great scope for experimentation in Education through Craft. It is very encouraging that you propose to have a tool-room in every school. This experiment to give a technical orientation to the students even at the primary stage is a good beginning. As you proceed, various educational possibilities will evolve. This type of Education in a realistic manner is greatly to be appreciated. It is inevitable that we have to meet the increasing demand of trained hands from the technical side. Our ultimate aim should be that most of the students leaving Secondary and Higher Secondary schools should be qualified for some kind of occupational pursuit. They should have attained a good standard of vocational efficiency".

PREFACE

It is an accepted fact that the overwhelming increase of school-going population, the growth of human knowledge to be made available to the children, the paucity of educational equipment and the absence of technological background in society have forced our education to be largely bookish, mechanical and examination-bound. It is high time that we find a way out to make our education more human, life-centred and socially useful.

In making education work-centred, we have to see that nothing is imposed upon the children. As a move in this direction it is proposed to adopt tools and crafts as instruments to convey knowledge to them from early stages. Adoption of tools and crafts as instruments of teaching is a new idea to be implemented with care and imagination. They should first reach the children as play things. They should be collected and kept in a convenient room in each school. The children of the primary section should be organised into small groups and each group should be put into contact with the tool-room. While the children handle the tools, appliances etc., the teacher should explain to them what they are and also their uses. In the course of his explanation, the teacher can convey allied information, if any, to the children so that the whole thing turns out to be effective correlated teaching. By the time the children go to the higher standards they must have acquired enough skill of hands so that they can operate some of the simple instruments to produce socially useful things.

Gradually they should master the use of all the simple instruments which have become unavoidable in our daily life.

Practice of craft should be preceded by familiarity of tools and their uses. Proper explanation of the mechanical advantage arising out of the use of each simple instrument would gradually create in the children a technical sense which would give them proper background to take up vocational courses under the diversified system in the High Schools and the Higher Secondary Schools.

This programme is intended to make the children learn by doing things; learning by doing is the quintessence of Basic Education according to Gandhiji.

We have to divide education into two sections—one tending to proper citizenship and the other tending to proper occupation. In both sections, actual practice is to form the basis of education. In other words, information is to follow knowing by doing things.

JOSEPH MUNDASSERY,
Minister for Education, Kerala.

INTRODUCTION*

As a result of 20 years of experiments in the field of Basic Education, it is now widely accepted, that the introduction of some of the salient features of the Basic Scheme into the curriculum of the Primary School, will tend to make the latter more evenly balanced between its physical, intellectual and social aspects. There were too many interpretations of Basic Education. The Government of Kerala therefore were careful enough to discard the scaffoldings of Basic Education Scheme, and take the kernel of it, namely, *integration of theoretical learning with its practical application*, thus making the process of learning sufficiently realistic. The Government are also particular to see that the narrow orthodox pattern of Basic Education which created many pungent and adverse criticisms, is avoided and that generous provision of educationally significant activities having utility and relevance to the present-day society, is introduced. We are now living in a rapidly changing environment, with the increasing use of mechanical, electrical and atomic devices and other scientific inventions, annihilating distance and time. Any sound Education cannot overlook this aspect.

The Basic Scheme, as *originally intended for rural parts*, has to be modified and adapted to modern needs of the society. *The Government therefore have accepted the Five-Point Programme of the All India Basic Education Assessment Committee appointed by the Government of India for orienting primary schools towards the Basic pattern, and this orienting programme will be put into operation this*

year in 1000 schools, 500 in urban and 500 in rural areas of the State. These five points may be summarised as follows :—

- I. Activities which foster a sense of self-reliance and responsibility in the pupil.
 - II. Pupil's Self-Government.
 - III. Cultural and Recreational Activities.
 - IV. Extension work which associates pupils with Community and National Life.
 - V. The practice of simple, useful crafts.
- I. Activities which foster self-reliance and sense of responsibility.**
1. Attending to and checking up of personal cleanliness.
 2. Attending to the cleanliness of the school : Surroundings and class rooms—dusting, sweeping, removing cobwebs, washing, disinfecting, disposal of waste matter.
 3. Arranging class furniture and decoration of the class rooms.
 4. Attending to the sick and the injured; first aid for bruises, scratches, cuts, blisters, simple fractures.
 5. Maintenance of health records; height and weight and general health;
 6. Maintenance of a school garden; (Both flowers and vegetables)
 7. Provision and storing of good drinking water; filtering, boiling and cooling, cleaning the vessels.

* By T. Paul Verghese, Addl. Director of Public Instruction, Kerala State.

8. Assisting in the preparation and serving of noon-day meals (Upper Primary).

9. Keeping of time and ringing of bells.

10. Maintaining daily records of work; diary writing (Upper Primary).

The Class Minister will check up the personal cleanliness of his classmates before the class begins. Facilities may be given for the same.

Environmental cleanliness activities will be taken up by a squad of pupils under the leadership of the Health Minister and the guidance of one of the teachers 15 to 20 minutes before the morning session begins.

II. Activities of Pupil's Self Government.

The school should be organised as a Co-operative Community of pupils and teachers. In its constitution, it should resemble a democratic republic with its Bala Sabha, Manthri Sabha and Nyaya Sabha corresponding to the Legislature, the Executive and the Judiciary. In such a set up, children will get citizenship training in a natural way, while dealing with community problems as they arise.

Children should be made to feel that they have an effective voice and responsibility in the maintenance of discipline as well as the organisation of school activities. For this purpose, they should be associated with all types of school work through the institutions of self-Government. It should however be remembered that the final responsibility for the well-being and management of the school rests with the Headmaster and his staff.

1. Meetings of the General Assembly * or School Parliament.

2. Election of Ministers.

3. Meetings of the Cabinet.

4. Drawing up rules of procedure of the Assembly.

5. Preparation of agenda—writing of minutes and reports, questions and answers — interpellations — framing resolutions—assigning community duties to groups—election of group leaders.

6. Constitution of a school court—consideration and punishment of offences.

Meetings of the Vidhyarthi Samajam may be held once or twice in a month.

* The General Assembly will consist of all the pupils of the school. It will meet ordinarily twice in a month, once for the election of the Ministers and again for the consideration of the reports of Ministers. Every one will be entitled to vote and eligible to stand for election as Ministers.

III. Cultural and Recreational Activities.

1. Morning Assembly and prayer.

2. Flag Salutation Practice.

3. News reading and maintenance of news-board.

4. Preparation of a School Manuscript Magazine (Upper Primary classes).

5. Preparation of School Album.

6. Building up of a School Museum.

7. Celebration of important festivals.

8. Organisation of entertainments: Group singing, Folk dances and Folk songs.

9. Visits to places of interest: School trips.

10. Literary meetings.

11. Maintenance of Weather Records (Upper Primary).

12. Maintenance of a School Co-operative Store (Upper Primary).

NOTE :— School work will commence with a short silent prayer or after singing an inspiring song extolling the values of democratic society under planned development.

The Cultural Minister will arrange to have a short news Bulletin prepared and displayed every day by one of the pupils of the higher standards. Important news items of interest to the children will also be read after prayer. These can be discussed later on in the Social Studies Classes.

IV. Extension work which associates pupils with community and National Life.

Its purpose, is to bring children into slowly increasing and fuller touch with the community through useful activities and suitable programmes. This will aim at steadily enlarging the area of the child's human interests.

Social service activities must contribute to social welfare and therefore can be better organized after understanding their social utility. The activities may pertain to such areas of work as, spread of literacy, public safety, sanitation and health, leisure time activities, improving civic sense, improving agriculture etc.

The following are some of the forms of such social service activities.

1. Organisation of health squads;
2. Management of fairs, festivals and celebrations;
3. Rendering useful service through first aid;
4. Organizing useful assistance at the time of census, elections, fairs and festivals;

5. Organizing safai programmes in localities, specially for cleaning of the drains, drinking water wells etc., (with a view to general cleanliness and health);

6. Conducting social education classes;

7. Disseminating useful information on current problems;

8. Helping to organize relief services to counteract some perilous occurrences like earthquakes, epidemics or floods etc.,

9. White washing the class-room walls;

10. Carrying on minor repairs.

The nature and the intensity of such activities will vary according to the needs of the locality in which the school is situated. It should be possible for a school to organize such social service activities once a month or periodically with the help of grown up pupils. The social service activities, if properly planned and collectively organised, will help to enrich the total personality of pupil-workers.

Such activities can be better organised through camps during holidays because living a camp-life in itself will be a good specimen of social service.

V. The Introduction and Practice of Simple, Useful Crafts.

Nobody can dispute the educational value of art and craft. The love of drawing, painting and making things seems to be instinctive in every normal child. By such means the child expresses ideas about the things which surround him, long before he can use the written word and this outlet for his lively imagination must be fostered and developed to the full. The ability in art or hand work is more likely at the primary school age (5 to 12 Years) to be the expression of the child's general intelligence than of anything more specific.

The main purpose in introducing *simple useful crafts as envisaged by the Assessment Committee is to stimulate the skill of their fingers and their interest in producing little things which will be of use to them.* At the infant stage the child seeks to explore his immediate environment. Therefore the children should have full opportunities for gaining experience in handling the ordinary materials that normally surround them and in this way, learn something about what can and what cannot be done with them. Novelty of things attracts his attention; *he handles them in a crude way and manipulates them in a 'play' attitude.* This is done *just for the sake of manipulating things out of curiosity without foreseeing any results.* During the early days of childhood, attempts at developing muscular control should be mainly concerned with the large muscles; fine work with the hands and fingers should not be expected. The aim in standards I to IV will be mainly to develop the dexterity of fingers of children and their powers of observation and imagination. Such informal work does not imply a lack of progress; for the teacher will be fully occupied in helping the child to overcome difficulties as they occur. This is the stage when experience is gained in meeting and handling materials and in acquiring technique of a simple kind for which children should have a rich field from which to choose.

In the next stage, *the child tries to employ the tools, e.g., a pen-knife or hammer and nails and later the needle to get some tangible results.* Much of what is now done will be directed by the child's own interests, but it should constantly be watched if the child is learning the right and proper use of materials. It must also be remembered that the desire to

make things is at the root of all craftsmanship, and unless the teacher is continually giving the children some stimulus to do and make things, the teaching may become formal and the distaste for work may develop.

In the last stage, the acquired skill with the consequent mastery of materials and use of *tools should now be applied systematically with a conscious purpose.* Here both the technical and the cultural aspects will have to be borne in mind. The articles that are made, should be of the right material fit for their purpose, of sound construction, good proportion and pleasing finish. Effective teaching should lead boys and girls to realise and appreciate the value of good craftsmanship and their standard of taste should be raised through their own work as well as by examples around them which should have been carefully chosen by the teacher.

Dovetailing of Basic Education with Higher Education is a big issue wherever Basic Education has been started. The uncertainties as to what will happen to children who pass out of Basic Schools and who wish to go up for Higher Education, are very real and give cause for profound anxiety in the minds of parents. It is in this connection that the attention of the teacher is invited to the preface of this brochure by the Honourable Minister for Education, Kerala State, wherein he has suggested that this slightly modified scheme of Basic Education with its successive stages of development from the familiarisation of tools, to skill in using them and from these to a technological bias, will enable the students to fare well in Multipurpose High Schools envisaged in the Secondary Education Commission Report.

Correlation

Correlation still remains a problem in Basic Schools. This aspect is not new to trained teachers. Every teacher is bound to *correlate his lessons with allied subjects and environment* so that the lessons will be made interesting, realistic, meaningful and thus understood by pupils on a wider and broader basis. But if this is stressed beyond the limit it becomes meaningless, boring and farcical. Teachers should avoid such kind of correlation. Handicraft can be of direct help to the science teaching, for, some of the time available can be given to the construction of apparatus which may be put to good use in the rooms allocated to practical work in science. Apparatus-making may even be encouraged as a hobby. *It is the community and continuity of the subject matter that organises, that correlates*; correlation is not through devices of instruction which the teacher employs in tying together things in themselves disconnected.

Handicraft has a use, if in the Primary stage a limited use, in illustrating the teaching of history and geography, and the elementary principles of physics; while, on the other hand the story of the various crafts being a significant part of the story of mankind, will provide valuable material for the pupil's reading when suitable books are available. Finally there is a social significance in craft teaching when the pupil sees the work on which he is engaged as typical of processes that have in past ages being devised by man to meet his living needs and as the key to, that vast and complex industrial machinery which the inventive genius of man has evolved out of these small beginnings.

Tool Room

Each Primary School where this new scheme is going to be introduced will contain a tool room or a space set apart for practical work with suitable furniture and tools. The existence of a work-room implies that the teacher's choice of craft should not be indiscriminate and that there should be a unity and a back-bone of purpose in his scheme. It does not imply that prolonged occupation of fine work should be expected of very young children. The 'free' occupations of the infant school stage should lead, by easy and natural gradations, with steadily growing accuracy in observation, measurement and technique, to the more definitely ordered tasks of the later primary stage, they should also grow in reality as infantile joy in mere making, begins to wane. The important point is that even in the primary school the things which the children make should be worth making.

Garden

Primary Schools should have a garden, or a place, however small where things may grow. A three-year course (Upper Primary), involving the simpler and lighter of the gardening operations, is possible. The sowing of seeds, thinning and transplanting, weeding, hoeing, watering and tending generally, teach the fundamental principles of life and growth. Gardening will be a compulsory craft for all children.

Suggested Daily Routine

Time: 9.45 to 10.10 Safai (to be carried out by the Safai Squad)
10.00 to 10.10 Assembly, news-reading and announcements.
10.10 to 1.00 Morning Session.
1.00 to 2.00 Interval.
2.00 to 4.00 Afternoon Session.

2

TOOL PRACTICE PROGRAMME IN PRIMARY SCHOOLS

(Prepared by an Expert Committee)*

The Aim.

The fundamental characteristic of Basic Education is that it is work-centred, and a basic craft like agriculture, cotton craft or wood and metal work forms the core subject of the curriculum. Almost all the basic schools in Kerala have spinning and weaving as the basic crafts. But this is not a cotton-producing area and the raw material for the craft has to be bought from outside. Gardening is taught as a subsidiary craft in almost all basic Schools. But in Kerala with a population of 150 lakhs and an area of less than 15,000 sq. miles it is not desirable to divert more men to agriculture. Most of the boys and girls now at school will have to find other occupations when they leave school. It is clear that they will have to seek employment in one or other of the new industries producing articles that have a ready market. For this purpose it is necessary to give them the basic knowledge about modern tools and some skill in using them through continued practice. This is the purpose of the tool practice programme envisaged here.

The Tool room and its equipment.

The Tool room will be a large, well-ventilated room where selected tools are assembled in groups according to the crafts in which they are used. Each tool will then be seen not as an isolated object but as one belonging to a particular group where it has a definite place and function. When the pupils see it in its appropriate place, they will recall its name and use if it is already known to them or ask for

its name and use if it is something new. In this way it is easier to familiarise children with tools and their use if they are grouped according to the crafts or to the purpose for which they are used.

The following are the tools assembled in the tool room and they are grouped under the craft in which they are used. It will be seen that a large number of them are tools and appliances of everyday use and are commonly used in school and at home.

I. Agriculture

1. Hoe
2. Spade
3. Shovel
4. Pick-axe
5. Fork
6. Transplanting trowel
7. Plough (Model)
8. Yoke (Model)

II. Carpentry

1. Hand saw
2. Tennon saw
3. Chisel
4. Wooden Mallet
5. Gimlet
6. Hand drill
7. Auger
8. Carpenter's straight edge
9. Plane
10. Yard stick.

III. Masonry

1. Trowels of sizes
2. Plum bob
3. Mason's square

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4. Spirit level
5. Straight edge
6. Sieves of sizes
7. Hammer—different types.

IV. Blacksmithy

1. Hand-operated forge
2. Tongs—flat and curved
3. Flattener—handled
4. Ball pin hammer
5. Steel scale
6. Fire shovel
7. Punches
8. Lettering punch
9. Fire rake
10. Sledge hammer
11. Hand bellows.

V. Sheet Metal

1. Cold chisel
2. Grips straight
3. Grips curved
4. Cutting plier
5. Ball piece hammer
6. Rivetting hammer
7. Scribes.

VI. Needlework and Embroidery

1. Needles
2. Crochet
3. Embroidery frame and needle
4. Shuttle
5. Knitting needle
6. Scissors.

VII. Cotton Spinning and Weaving

1. Takli
2. Charka

3. Amber charka
4. Hand gin
5. Plank and rod
6. Bamboo bow
7. Slivering set
8. Carding machine
9. Takli winder
10. Charka winder
11. Baby looms
12. Shuttle
13. Balance.

VIII. Foundry

1. Foundry sands
2. Moulds
3. Moulding box
4. Round tramel
5. Conical tramel
6. Trowels
7. Straight edge.

IX. Appliances and Tools of everyday use

1. Belt and buckle
2. Pencil cutter
3. Fountain pen
4. Ink filler
5. Screw pencil
6. Syphon
7. Football inflator
8. Brush
9. Glass syringe
10. Punch
11. Pulley
12. Tape
13. Glass cutter
14. Water tap
15. Crow bar

16. Bar magnet
17. Hinges
18. Lock and key of different types
19. Nails
20. Screw nails
21. Screw driver
22. Nail puller
23. Hook and eye
24. Hasp and staple and nut and bolt
25. Common balance and weights
26. Spring balance
27. Plier
28. Spanner
29. Cycle bell
30. Calling bell
31. Clinical thermometer
32. Hinges
33. Emery cloth
34. Hurricane lamp
35. Petromax
36. Torch light
37. Bulb
38. Lampholder with shade
39. Rubber tube
40. Water tap
41. Instrument box
42. Split pin

X. Household Tools

1. Knife
2. Axe
3. Potato slicer
4. Bread knife
5. Coconut scraper
6. Nut cracker
7. Egg beater
8. Tin opener
9. Lemon squeezer

XI. Musical Instruments

1. The mouth harmonium
2. The flute
3. The piano (Toy model)
4. The bulbul.

XII. Drawing and Painting

1. Instrument box
2. Water colours
3. Brushes
4. Beautifully drawn pictures.

On the walls will be displayed attractive multicoloured pictures and posters showing the tools and illustrating their uses. A large and well-got-up book containing pictures showing children at work using these tools will also be provided. There will also be a reference book for teachers on the tools supplied.

Stages in Implementing the tool practice programme.

The tool practice programme is organized in a series of progressive stages; at the early stage which covers the first two years of the Lower Primary School pupils are made familiar with the tools; in the next stage covering the next two years they use the tools in everyday activities and in working out simple projects leading to the production of little things useful to them. In the third stage which synchronises with the Upper Primary Stage, a series of projects and activities classified according to the different crafts will be organized so that *pupils with the requisite interest and aptitude may choose the one best suited to their needs under the guidance of the teacher.* At the same time they are expected to be familiar with the more useful tools and processes

in other crafts also so that their self-reliance is fostered. For example, a boy whose main interest is agriculture may be given opportunities to work out few wood work and metal work projects so that he may have general proficiency in repairing the tools he uses in his chosen craft.

The list of projects is so drawn up that it covers a wide variety of crafts. This will enable the pupils to explore their abilities in the different fields and choose the one for which they have special aptitude. The multipurpose school provides for diversification of studies and the pupil who has completed the tool practice programme will have the requisite experience to choose the course of studies best suited to his interests and abilities. For example the boy who has worked out a number of agricultural projects gets a fair idea as to whether he is good for a course of studies in agriculture in a Multipurpose School. Similarly those who are good at wood and metal work can go to a Technical School while those who are good at music and painting can take up the Fine Arts Course. In this way the Tool Practice Programme will yield valuable data for giving educational and vocational guidance to pupils who complete the course of studies in the Upper Primary School.

The Early Stage—Standards I & II (Familiarising pupils with tools)

One or two periods every week may be given to this programme in Standards I and II. In the first lesson, the teacher talks to the pupils about the tool room and invites them to go and see the tools assembled there. As they walk round the room looking at the various tools and appliances kept on the tables and the

pictures hung up on the walls, the pupils recognise the tools with which they are already familiar and name them. They will also say for what purpose they are used and describe the mode of using them. The teacher can then point out the new tools and tell the children their names and their uses. In this way after a few visits, children will know almost all the tools and appliances assembled in the room.

When pupils go to the tool room they may be allowed to take the tools and handle them. For example, when they see the pulley they take it up and rotate the wheel. They may take up a pair of scissors and begin cutting with it. If they hold it in the wrong way, the teacher can show him the right way of handling it.

There are many different ways of familiarising pupils with the tools assembled in the tool room. The teacher can take them there, when senior pupils are working. Then they can see tools being put to practical use or the teacher can take up a new tool, handle it in the right way and demonstrate its use. At a later stage, the pupils may be taken to a craftsman's workshop and shown what tools he uses and how he uses them.

But the best way of familiarising children with tools is to give them the opportunity to use them. Little children like activity for its own sake and some basic knowledge of tools can be given almost in their play. For example, if children are given paper and a pair of scissors they enjoy cutting it up. Paper cutting is a fascinating activity from the children's point of view, and it develops in him the basic skill in using it. At a later stage, the class may be told to prepare an album by cutting out pictures

from newspapers and magazines and pasting them. This makes the activity of cutting paper with scissors purposeful and in this way the transition from play to work can be effected in an interesting manner.

Correlation in the Early Stage.

The educational possibilities of the work in the tool room are many. It is possible to correlate the tool not only with the craft but also to the social and natural environment of the child. Conversation lessons can be organised and children may be encouraged to talk about the tool. They may describe the tool and speak about its uses. Or, they may describe how they used the tool or what they saw the teacher or other pupils do with it. They can learn to write the name of the tool in Standard I. In Standard II they may be asked to write down three or four sentences about it. In this way reading and writing can be easily correlated to the tool practice programme in the early stage.

Arithmetic may also be brought in. When the pupils are shown a number of tools, they may be asked to count them. After they go back to their classes, they may be asked to name the tools, and see whether they can name them all. Questions like the following may be asked.

(i) Name ten tools used by the carpenter.

When the pupils have named as many as they can, other questions involving number work can be given.

How many have you named ?

How many have you left out ?

The answer to the first question involves counting, and the second, one of the four fundamental operations—subtraction.

They may be given marks according to the number of tools they have named correctly.

The same work can be organized as a competitive game. Pupils may be divided into four or five groups, each consisting of an equal number. Then they may be asked to find out which group stands first as far as the total number of marks is concerned. This gives scope for number work involving addition.

In the field of general knowledge and Social Studies possibilities of correlation are immense. After familiarising pupils with carpenter's tools, it is possible to give much allied information concerning the carpenter, his work, the raw materials used by him, how he disposes of the things he makes and how the community makes use of them. This will lead on to a discussion on life in the village, and the various occupations. Then it will be clear that the services of all craftsmen are indispensable to the village and thereby inculcate a sense of respect for all.

It is in the field of General Science that there is maximum possibility for correlation. Each tool is meant for a specific purpose and it is so designed as to make work easy, convenient and efficient. When the pupil uses a hammer to fix a nail on the wall and hang a picture he finds he can hold it firmly by the handle, and strike with force on the head of the nail. In this way the child may be led on to an understanding of the basic principle, that structure should suit the function. Later on the concept of mechanical advantage can be developed. But at the early stage this need not be attempted. Convenience and use alone need be emphasised.

ACTIVITIES (AGE 6 AND 7)

I. Paper folding exercises

1. Making boats, caps, baskets, birds, ink bottle and kattadi.

II. Paper cutting exercises

- (i) Covering the reader.
- (ii) Cutting paper of different colours and making houses, umbrella etc.
- (iii) Cutting strips of coloured paper and weaving simple geometrical patterns.

III. Palm leaf work

1. Making wrist watch, bangles, rings etc.—using kuruthola (കുരുത്തോല)
2. Weaving simple patterns.

IV. Clay modelling

1. Models of pot, ink bottle, pan.
2. Models of vegetables—mango, cashew, vendakai, brinjal.
3. Models of dog, elephant, doll.

V. Needlework

1. Threading needle.
2. Threading beads — different patterns.
3. Making a kerchief—Running stitch.

VI. Gardening

1. Preparing plot for planting seeds.
2. Transplanting young plants with the transplanting trowel.
3. Making beds.
4. Weeding.
5. Watering.
6. Manuring.

VII. Spinning

1. Cotton cleaning.
2. Making slivers.
3. Takli spinning.

VIII. Other exercises

1. Cutting pencil with pencil cutter.
2. Punching paper and tying them with tags.
3. Sealing letters using rubber seal.
4. Buckling belts.
5. Putting lace to shoe.
6. Filling pens.
7. Filling syringe with water and emptying it.
8. Making knots with ropes.
9. Drawing plan of the school room (Using scale).
10. Taking weights and heights of children using the weighing machine.
11. Locking and opening locks.
12. Bolting windows.
13. Stringing brooms.
14. Tuning the flute.
15. Tuning the mouth harmonium.
16. Preparing Bonchi (ബോഞ്ചി) using lemon squeezer.
17. Group singing.
18. Decoration of class rooms.
19. Arranging class furniture, like, benches and desks.
20. Assembling meccano pieces.

STANDARDS III AND IV

A. Tool Study arising out of the normal activities in School.

At the next stage simple projects and activities may be organised with a view to give pupils tool practice involving the skill of the finger. The normal activities of the School often provide ample scope for tool study and practice. For example flag hoisting is organised as a regular activity on the first day of every week. This activity can be used to give children the basic knowledge about the pulley

and its uses. Usually the rope is passed over the pulley fixed at the top of the pole and the flag is hoisted. Among the appliances used the pupils will readily name the pulley. This leads on to a study of the pulley, its uses and its parts. Give the pulley to the pupils and tell them to name its parts and give the use of each. The wheel rotates round the axle; and the hook fixes it to the pole. By pulling one end of the rope down, we can raise the flag tied to the other end. The pulley is then seen as a device for changing the direction of the force applied for raising the flag. Moreover it makes it possible for use to pull it from a very convenient position. The importance of having a groove large enough to hold the rope will become clear, if the rope slips. In this way each activity may be followed by a study of the tool and its parts with a view to understand how it is designed to serve the purpose for which it is made. Interesting games involving the use of the tool may also be given, in order to give pupils sufficient practice in using it. For example the indigenous game of "Uri-Ade" (उरीअडे) may be organised, for giving them practice in using the pulley. Then they fix the pulley to the branch of a tree, pass the rope over it and tie the pot to one end of it. This is an interesting game the pupils enjoy very much. The quickness with which they can raise the pot and lower it, is due to the fact that there is very little friction. The importance of oiling the pulley to lessen the friction will readily be understood by the pupils in this context.

There are many other activities which arise in the normal course of school work where the use of the pulley comes in. One of the important items of work of the Health Minister is to provide pure drinking water to the pupils. He has to

draw water from the well and this means using the pulley. Similarly the Cultural Minister may organise entertainment programmes in which a curtain has to be improvised. This also involves the use of the pulley.

The pupils who have studied the use of the fixed pulley, may be given an opportunity to see a movable pulley used for its mechanical advantage. In the course of an excursion they may be shown the crane used for lifting up heavy loads. The load is suspended from a movable pulley and the mechanical advantage gained by using it can be explained to the pupils. Later on when the pupils come to study about the pulley in Physics, the experience they have gained in studying the pulley and its parts will stand them in good stead in understanding the concept of mechanical advantage.

It is therefore suggested that every activity organised, may have tool study and tool practice as an integral part of it. A knowledge of the tools available will enable the pupils to plan their activities effectively and even help them to improvise new tools when the requisite one is not available.

B. Simple Projects organised with the aid of tools and appliances familiarised in the lower standards.

In addition to the study and use of tools as and when they are used in the course of the normal work of the school, it is possible to organise simple projects for making little things useful to pupils. For example, the making of a forty-page note-book may be taken up in Standard III or Standard IV. A project like this has three stages, (i) planning (ii) execution and (iii) evaluation and assessment. At the planning stage, the knowledge of the resources of the school in the matter

of tools is very useful. It enables the pupils to select the tools required for working out the project. When they plan the work and consider the different processes involved in making it, they have to choose the right tools according to the special need. For cutting paper it is the knife that is necessary. The needle and thread are required for stitching the note book. With the broad chisel the teacher will cut the sides for them. A straight edge and a mallet are also necessary for this purpose. The pupils have to secure these tools to work out the project successfully.

It is at the execution stage that they get the requisite practice in the purposeful use of the tools. Skill in using the tools, the right method of procedure, precision and neatness of execution are all developed at this stage. By planning simple projects like making note books, and executing them efficiently, it is possible to give children the right orientation and develop desirable attitudes to work.

At the evaluation and assessment stage, how far the tool was useful for the purpose for which it was used may be considered. This may lead to interesting suggestions from the pupils for improving the tools. The skill displayed by the different pupils, in using the tool may also be assessed and further tool practice may be given to those who have not mastered it well.

Correlation in the second stage.

The possibilities of correlation during this stage are immense. As the correlation is to the activity and not merely to the tool used, almost all the topics include in the syllabus can be easily brought in. All activities give scope for oral and written composition. Describing the activity is descriptive composition, narrating how the project was worked out is

narrative composition. When pupils give an oral account of it, it is oral composition. When they write it out, it becomes written composition. The composition work given may be developed from different points of view. When pupils write a letter describing it, it is letter writing; or they may write the autobiography of the note book and give it an imaginative colour.

Many facts and principles taught in mathematics arise naturally out of the projects worked out at school. For example the note-book making project may be used to teach the following :-

(i) *Geometry.* Length, - breadth, rectangle, straight line, angle, point.

(ii) *Arithmetic.* Multiplication and Division. If the number of pages is 40, how many foolscap papers are required for making one book? If the number of pages required for making a forty page note-book is five, how many quires should be bought to make a note book for each pupil in a class of 48 ?

How many cover papers are required?

What is the cost of 10 quires of paper at 50 np. a quire ?

What is the cost of one note book, if the total cost is Rs. 7.50.

General Knowledge.

Paper and its uses, paper industry, the Punaloor Paper Mill, means of transportation, the stationery market, the price of paper, News Papers and Books.

In fact a variety of subjects covering a wide range of knowledge can be easily correlated to this activity. It is possible to cover almost the entire syllabus of the Lower Primary School through a series of correlated lessons intelligently planned round the five-point programme outlined in the Introduction of this Pamphlet.

This may be supplemented by regular and systematic teaching of the subjects as and when necessary.

TOOL PRACTICE ACTIVITIES
(AGE 8+ AND 9+)

1. Paper work —Making flags, kites.
Flowers.
Decorating School
and Class rooms.
2. Card Board work—
Making simple tray
Rectangular Box
Office file.
3. Clay modelling—Making models
and giving them suitable colours.
4. Gardening—Preparing bed, sowing,
planting, transplanting, weeding,
manuring.
5. Repairing tools and domestic
appliances including agricultural
implements.
6. Fixing nails for hanging pictures
and charts.
7. Making note books.
8. Cutting out pictures and pasting
them in albums.
9. Making office covers, envelopes
and packets.
10. Fixing padlocks, hinges, bolts.
11. Fixing nuts and bolts to them. ➤
12. Fixing door knobs and handles.
13. Making brooms.
14. Making cardboard models, boxes,
trays and flower vases.
15. Making charts.
16. Sharpening knives.
17. Making a wooden scale.
18. Making a handkerchief—chain
stitch, satin stitch, fish bone stitch.
19. Fixing press buttons.
20. Stitching button holes.
21. Making pin cushions.
22. Filling the bladder (football).
23. Sand papering furniture, waxing
and varnishing.
24. Taking temperature.
25. Jointing broken pieces of wooden
planks with iron wire.
26. Painting tins and trunks.
27. Taking weights using the common
balance.
28. Soap making.
29. Candle making.
30. Chalk making.
31. Slate-pencil making.
32. Opening tin cans.
33. Making weather charts.
34. Drawing.
35. Painting (using water colours).
36. Assembling a torch light.
37. Using letter locks and number
locks.
38. Use of the binoculars.
39. Directions using the magnetic
compass.
40. Takli spinning.
41. Cleaning and ginning cotton.
42. Carding and slivering.
43. Charka spinning.
44. Coir making.
45. Winding the time piece & Setting
the alarm.
46. Candle making.
47. Assembling model using Meccano
Set.

STANDARD V TO VII

When boys and girls have gained enough experience in work with tools and in making little things of immediate use to them, more difficult projects involving many processes and the use of many tools may be organised. It would give them greater self-confidence in the use of tools and develop the mechanical and manipulative skills necessary for all kinds of skilled work. At the same time they will be taught to operate bigger mechanisms, using small tools. Emphasis on repair work and the making of small machine parts will be given. At this stage the tool room will function as a workshop where small groups of children work at different projects or processes under the guidance and supervision of the teacher. As in the previous stage, tool study and tool practice must form an integral part of the correlated studies organised in connection with each project.

The projects at this stage may be grouped into two categories.

(i) *Operation of bigger mechanisms.* Complex mechanical contrivances like the sewing machine, the petromax, the cycle and the pump are now in common use and occasions often arise when they have to be used at home and in school.

For instance when the air inside a bicycle wheel is not sufficient, the children in the Upper grades can be taught how to force air into a tyre. The bicycle pump is the simplest example of a compression pump. It consists of a vulcanite or metal cylinder with a piston inside. A small connection tube kept inside the handle of the piston can be taken out and one end screwed to the bottom hole of the cylinder and the other side to the air tube of the cycle tyre. Fixed round the head of the piston is a cupshaped leather

washer with the rim of the cup directed towards the bottom of the pump. When the piston is raised, air passes readily between the washer and the wall of the cylinder into the space below; but when the piston is pushed downwards, while the exit is closed, the increased pressure of air below the piston presses the sides of the washer against the walls of the cylinder so tightly that no air can pass between them. As the piston descends the pressure of the enclosed air becomes greater, and sufficient to overcome the resistance of the *valve* connected to the air-tube of the bicycle tyre, to which the pump is temporarily attached.

The *valve* consists of a narrow metal tube entirely closed except for a small hole bored through its side. A piece of thin rubber tubing is stretched tightly over this tube, and it is pushed sufficiently far down for its lower end to cover a shoulder, or expansion, of the metal tube. The valve is pushed tightly against a corresponding shoulder on the inside of an outer metal tube, and held in position by a fixing-nut. The compressed air forces its way through the small hole and, passing upwards between the rubber and the inner metal tube, enters the tyre. The rubber tube prevents the air from returning back again into the pump. All these parts may be separately shown to the students and explained.

Further, cleaning of cycle, oiling, checking up its screws and nuts for looseness, tightening the brakes etc., are processes in which the pupils can be trained without much difficulty. In connection with each of these things, there can be discussion of the need for the process, leading up to the selection of suitable tools and appliances. Thus the pupils will be led to the practical uses of tools

like screw-driver, spanner, hammer, oil-can, etc. Minor repair-work like patching up a puncture in the inner tube, replacing a worn-out leather washer, replacing the broken balls of ball-bearings, replacing a damaged clutch wire, fitting new rubber shoes to brakes etc. involves the use of several familiar tools. The ingenuity of man in devising complex mechanical contrivances to satisfy his special needs will then be understood and pupils will develop greater confidence to man's ability to deal with the problems facing him.

(ii) *Minor Repair work.*

(a) In the course of our everyday life the need arises for repairing the tools we use and the appliances we have at home and the school. The handle of the spade or hoe may become loose or break and we have to mend them before they are ready for use. For making the handle tight, we have to drive a wedge in. A study of the principle of the wedge naturally arises out of this situation. Sometimes the scissors become blunt and the edges may have to be sharpened. Or the carpenter's plane may have to be then sharpened and then refitted. When such repair work is taken up, pupils get a good opportunity to dismantle the tool, set right what is wrong, and refit it. It is only when a man has learned to repair the tools he uses, that he has mastered his craft.

(b) *Mending articles and appliances of everyday use.*

Articles and appliances of everyday use, often get spoiled and have to be repaired. For example the table or bench begins to shake because a joint becomes loose. Or there may be a leak in the hurricane lamp or in the bucket used for drawing water. There may be a puncture in the foot-ball bladder which has to be

patched up. These are occasions round which good projects leading to tool practice can be organised.

For example, simple repairs are often needed for the umbrella owned by almost every pupil. Mending broken ribs, tightening the loose joints of ribs, replacing the (broken) wire that binds the rib ends, and installing a new wire-catch are some of the items that may be attempted by the pupils with the help of suitable tools and appliances. The broken ends of a hollow rib may be joined together using a piece of a hollow rib of larger size and metal clips made out of tin sheets. This involves the use of sheers to cut out rectangular bits of tin, pliers to bend them into proper shape to serve as clips and wedge and hammer to fasten the clip to the rib.

(c) *Projects leading to specific crafts.*

A larger number of projects leading to specific crafts which the pupil can take up as a vocation or as a subject of further study can be organised at this stage. The early projects will be comparatively easy and simple. But they will provide opportunity to the child to try his special talents and aptitude. The teacher who organizes the tool practice programme at this stage should maintain careful records of the pupils' work and abilities. This will enable the teacher to give valuable advice to the pupil to take up a suitable vocation when he leaves school. In the case of those who continue their studies in the High School, or Technical School, similar advice as to what course of studies he could take up can be given on the basis of the data collected. In this way vocational and educational guidance will become possible.

TOOL PRACTICE ACTIVITIES
(Age: 10 plus, 11 plus and 12 plus)

General

1. Assembling An Umbrella.
2. Lighting a Petromax.
3. Repairing the puncture of a football bladder.
4. Repairing the puncture of a cycle tube.
5. Making a photo frame.
6. Changing the washer of a pump.
7. Putting a new washer to a screw down tap.
8. Adjusting the brake of a cycle.
9. Assembling a dismantled cycle bell, calling bell, etc.
10. Fixing lock to a box.
11. Fixing hasp and staple.
12. Applying colour wash to a black-board.
13. Painting a steel trunk.
14. Changing fuse, bulb, etc.
15. Reading electric and water meters.
16. Fitting a door hinge—ordinary and parliamentary.
17. Fitting spring to a hinge.
18. Stringing cots with rope or tape.
19. Making ink.
20. Washing clothes, starching, bluing and ironing.
21. Making coir nets for keeping fowls.
22. Whitewashing.
23. Fencing.
24. Using Meccano set.

Cardboard Work

Making:

1. Simple tray.
2. Hexagonal Tray.
3. Flat File.
4. Loose file.
5. Port folio.
6. Round box.
7. Models of houses, etc.
8. Binding note book.

Carpentry

1. Repairing furniture.
2. Making a thakli or charka winder.
3. Making a flute.
4. Making a sitting plank.
5. Making Atapalaka.
6. Making simple flower and bat press.
7. Making a foot-rule.
8. Making sitting cradle.
9. Making wall bracket.
10. Making coat stand.
11. Making photostand.
12. Making wooden tray.
13. Making pen rack.
14. Making Takli stand.
15. Polishing Timber.
16. Dismantling and assembling a carpenter's plane and marking gauge.
17. Making a screw press for binding.

Smithy and Sheet metal Work

1. Making hooks for coat stand.
2. Welding a ring.
3. Making a cutting knife.
4. Repair work.
5. Framing a photo using tin sheet.
6. Making a tin can.
7. Stopping the leak of a bucket.
8. Soldering.
9. Fitting a new patch on a copper vessel.

Foundry

1. Making moulds of various simple articles.
2. Casting light-metal forms.

Masonry

1. Building a brick wall.
2. Mixing mortar.
3. Plastering.
4. Laying a cement floor.
5. Making concrete block.
6. Making sunburnt bricks.
7. Establishing the same level 50 ft. apart.

Spinning and Weaving

1. Spinning yarn of count between 16—20.
2. Weaving a small towel.
3. Dyeing cloth.
4. Printing block designs.

Needle Work

1. Making a hand-kerchief—chain stitch, satin stitch, fish bone, Lazy daisy.
2. Making a cushion cover.
3. Garment making—Petti-coat, under-wear, blouse.
4. Crochet work.
5. Knitting.

HIGH SCHOOL STAGE

STANDARDS VIII, IX & X

Provision has been given for Craft Work in High School Syllabus also. Hence every boy and girl should make 12 and 9 projects respectively from the following groups during the three-year course.

Boys: (An average of 16 hours per model).

1. Bookrack.
2. Stool.
3. Easy chair.
4. Watering tin pot.
5. Steel trunk.
6. Table lamp (Electric light stand).
7. Coir mat with designs.
8. Drawing board and T-square.
9. Photo frame with enamel finish.
10. Looking glass (including silvering).
11. Bound books (different patterns).
12. Rubber stamps with handles.
13. Fountain pen holder.
14. Hurricane lamp.
15. Electric Heater.
16. Fractional H. P. Motor.
17. Non-ferrous cast vessel.
18. Chappals.
19. Holdall.
20. Rattan Chair.

21. Men's shirt.
22. Masonry wall short length, plastered over.
23. Boot brush.
24. Window frame.
25. Tooth brush.

Girls: (An average of 20 hours per model).

1. Coir mat with designs.
2. Rug, carpet pattern.
3. Bathing towels.
4. Looking glass with silvering.
5. Bound books—different pattern.
6. Rubber stamps.
7. Children's garments and ladies wear.
8. Printed sarees and table cloth.
9. Perfumed soap.
10. Candles.
11. Holdall.
12. Soft dolls.
13. Strung glass beads.
14. Glass beads and bangles.
15. Ladies handbag.
16. Light metal casting.
17. Boot brush.
18. Broom brushes.
19. Tooth brush.

Typical Instruction to Teacher :

How to make a brush. —Take a small soft wood plank 4" x 2" x 1/4". Round off the ends. Draw equispaced rectangular designs at 1/4 per cent intervals with rounded ends. Use a hand drill and drill small holes along the ovals at 1/8" intervals. Take brush hair and fold it over, push the folded end through the holes. Pass a light steel wire through the loop in the hair. After the wire is passed through full rack the hair thus tightening the wire loop which runs continuously along the oval. Take a similarly shaped plywood and fix it over the top of the wires on the back. Trim the edges of the brush to uniform height.

A Typical Project

Each project has to be carefully planned and executed. It should arise out of some felt need of the child and when the project has been executed there must be a careful assessment of the work. In assessing the work, the person, the processes and the product should all be taken into consideration. This will be followed by a series of correlated lessons in which tool study and tool practice form an important unit. A typical project with its different stages and possibilities of correlation is outlined below.

Problem.

1. To make a bamboo reeper gate for the school garden in order to shut out cattle but allow easy access to teachers and pupils.

Planning.

Materials required

- (1) A hand saw for sawing bamboo to required size.
- (2) Chopper.
- (3) Chisel and mallet.
- (4) Pick axe.
- (5) A tape.
- (6) Brush.

The Plan.

Draw a plan of the gate showing the dimensions. The bottom reepers are only six inches apart where the top ones are 9 inches apart. This is to prevent lambs from getting in.

Execution Processes.

(1) Using the hand saw, saw off a piece 6 1/2 ft. long from the bottom part of the bamboo and split it into two equal halves with the chopper. Use a piece of wood as wedge.

(2) Mark a point 1 ft. from the bottom and mark four points 9 inches apart, one above the other. Then mark the points 9 ins. apart one above the other.

(3) Make holes 2 1/2 x 1 inch at the points marked.

(4) Saw off two pieces of bamboo each 4 ft. long and split each into four reepers.

(5) Give a coat of tar to the bamboo pieces and reepers.

(6) Dig two holes 1 ft. deep in the ground 3 ft. apart and stand the poles firmly so that the holes are in a line.

(7) Then pass the reepers through two holes.

Assessment.

1. Examine whether everything is according to plan.

2. Cost.

Cost of bamboo	30 nP.
Tar etc.	6 „
Total	36 nP.

Correlated study.

(1) *Tool Study*.—The handsaw, its parts, how it is designed to saw wood, why steel is used for making it.

Tool Practice.—Give practice in using the saw to saw pieces of soft wood.

(2) *Language*.—Narrative composition—How I made a bamboo reeper gate.

(3) *Mathematics*.—Linear measurement—Relation between inch and foot, millimeter & centimeter. Measuring lengths with tape.

(4) *General Science*.

The wedge
The Bamboo
Tar and its uses
Iron and Steel

(5) *Social Studies*.

(i) The problem of straying-cattle, fencing, fencing materials.

(ii) Industries using bamboo as raw material—paper industry—Basket-making.

(iii) Means of Transportation—How bamboo from the forest is floated down the rivers.

(6) Art. Painting the picture of a man sawing wood.

SCHOOL MUSEUM

It is necessary to equip a school museum in every Upper Primary School. Good models made by the students, and articles of uncommon beauty may be preserved there to be shown to pupils and the public. The school Museum should have a section where articles of common use falling within the environment of the child should be collected and familiarised to children. A special place may be set apart for articles of technical and technological value. Models of important plan projects, Hydroelectric Stations and Power Houses may be exhibited there. This will give the pupils a clear idea of the rapid progress the country is making and give them the right orientation towards our nation building programmes.

EXHIBITS AND CHARTS SHOWING THE GROWTH OF SCIENCE AND TECHNOLOGY

Another important function of the Technical section of the School Museum is to collect useful contrivances that add to the amenities of life. When such articles are collected and exhibited in the proper order they give a clear insight into the development of modern science and technology. Take a simple example like the electric light. If we can assemble in the same table in proper sequence, the cave man's flint and stone, the open earthen pot and paddy husk (കരമിളക്കം ഉപയോഗം) for keeping fire, the oil lamp so common in Malabar (തെളിയിച്ചെണ്ണ) the candle, the Kerosene lamp, the kerosene lamp with burner and chimney, the hurricane lamp, the petromax, the electric bulb, the torch light, and the neon light, pupils

get a clear idea of the technological progress made by man in field of lighting. Even a chart showing them in proper order is enough to convey the same idea. Special purpose lamps like Davy's Safety Lamp used by miners may also be shown in this group.

Similarly the story of the wheel from the block of wood the ancient wood cutter rolled down the hill to the modern pneumatic tyre and the unending series of toothed wheels seen in many modern mechanisms will be another interesting group of exhibits.

Another interesting way of assembling exhibits is to bring the same type of tool put to different uses. For example the scissors are made in different sizes and shapes and are used for a wide variety of purposes. There are the ordinary scissors used for cutting paper and cloth in the home, the tailor's scissors, the scissors used by the barber for cutting hair, the comb and scissor combined, garden shears, doctor's scissors, tin and copper shears, etc.

Similarly there are locks of different kinds and sizes which can be collected and shown. Besides the ordinary locks we have, letter locks and number locks.

In the same way the different types of balances can be grouped together. The Common balance, the small balance used by the goldsmith, the bigger bazaar balance, the spring balance, the platform balance used for taking the weights of children—all these can be collected in the same place. Or a large picture may be got up showing them all.

Still another interesting collection will be the group of these articles in common use in which the principle of the lever is applied. With the belt, the screw the wheel and axle or the gear as the common device, it is possible to collect a large

number of contrivances. When they are grouped together they form as it were a family constellation in which each has a definite place and function. This gives pupils an understanding of the wide variety of ways in which the same device is used by man according to his special needs.

When things are exhibited without plan or system they have no meaning but when they are assembled according to some definite plan new meanings arise and insights develop. Darwin assembled the skeletons of different animals in a definite sequence, and the concept of evolution became clear. In the same way when things are grouped like this they illustrate an idea or principle. This may be done by assembling the objects themselves, or by means of pictures. Every school must have a number of pictures depicting the progress of Science and technology and showing how it has added to the comforts and amenities of life.

Nature Table—for each class. Children collect useful and rare things from nature, arrange them on the table, label them, etc. Studies based on these. Impetus to collection, nature study, etc.

Further Education in Craft Work.

The tool practice programme is meant to introduce Primary School pupils to simple modern tools and to their use in the making and repairing of articles of everyday use. It gives the right attitude to craft work; but the training given is not enough to make them skilled workmen in the full sense of the term in any craft. As and when they take up an occupation, they are expected to get the necessary training which will make them skilled craftsmen in their respective fields.

Courses of further training will be available to those who are ready to continue their studies in Trade Schools, Junior

Technical Schools and in Multipurpose High Schools.

Thus, imagination and the strengthening of the creative impulse may be fostered just as fully through draft work as by drawing and picture making; indeed some children will find greater satisfaction and more profit through handling other tools and materials than pencil brush and paper. *The teacher should find time for discussion, for consideration of examples of the art and craftsmanship, hand or machine, not only of the past but of the present.* For this purpose pictures and illustrations may be used when original works are not available, as they seldom will be. This method of teaching will not be confined to the study of museum pieces, but will deal with contemporary building and articles of everyday use. As a background to these more positive influences which are brought to bear on the child's development, there will be those which may be considered as more incidental but none the less very important, the influence of the environment provided by the class room, the school and its surroundings, and the active part which the children are called upon to take in creating that environment.

To sum up, it may be said that the purpose of including instruction in Art and Craft in the education of the child is, twofold :—

- (1) To encourage the child's natural impulse to give visible form to ideas and to develop in him the power to do this with courage, sincerity and vividness;
- (2) to make him actively aware of what is beautiful in nature and art and what is fine and honest in craftsmanship.

SCHEME OF LESSONS CORRELATED TO THE ACTIVITY PROGRAMME

In this section is given a Scheme of correlated lessons to indicate how 'the activities outlined elsewhere lead to the teaching of the different subjects included in the syllabi for Classes I to VII.

A five point programme related to the following activities has been worked out.

- I. Cleanliness.
 - (a) Environmental.
 - (b) Personal.
- II. Gardening.
- III. Tool practice.
- IV. Citizenship training.
- V. Other activities.
 - (a) Cultural
 - (b) Recreational
 - (c) Excursions and visits
 - (d) Weather observation and study

The syllabus for Primary Classes provide for the teaching of any one or two of the following crafts.

Standards I to IV

1. Cotton craft.
2. Gardening.
3. Coir work.
4. Basket making.
5. Mat weaving.
6. Paper folding and card-board work.
7. Clay modelling.
8. Needlework.

Standards V to VII

1. Cotton craft.
2. Gardening and agriculture.
3. Coir work.
4. Wood work.
5. Card board work and book binding.
6. Leather work.
7. Pottery.
8. Rattan work.
9. Needle Work.
10. Tailoring.

But the craft chosen may differ from school to school according to local conditions. Gardening is, perhaps, the only craft taught in almost all schools. So correlated lessons based on gardening only are given here.

The work for the whole year is divided into eight monthly plans. The Scheme of work for the first month for all standards is given here. But for Standard I, the scheme given is for the first three months. Correlated teaching may be supplemented by systematic teaching wherever necessary.

Standard I. First Month.

- I. (a) *Personal Cleanliness* :—

Washing hands, feet and face. Materials required :

- (i) Water in a bucket.
- (ii) A small vessel for taking water.
- (iii) Soap
- (iv) Towel.

Let the pupils stand in a line, allow them to come one by one and take water and wash their hands, feet and face. Use soap. Wipe with clean towel.

Teach each pupil to wait for his turn—the value of queue system.

Correlated lessons.

Language.

Oral composition. How I washed my hands, feet and face.

Arithmetic

Counting the number of pupils who washed their hands etc.

General Knowledge

(i) Water—where we get it from.

(ii) The towel—why it should be clean.

(iii) The soap—why it is used.

(b) *Environmental cleanliness.*

Cleaning the class room.

Health Minister divides class into groups, each with its leader. Gives definite work to each group. Gives them appliances like brooms and cloth for dusting. Let the groups carry out the work assigned to them. Get back the brooms, etc., and keep them in their proper places.

Language

Let children describe the activity in short sentences.

Arithmetic

Counting : count the number in each group. Count the number of groups. Counting the total number of children who participated in the programme. Counting the number of leaders.

General Knowledge

Value of cleanliness. How we keep our class room clean.

II. Gardening.

Visit to the School garden. Naming the plants seen. Telling why we grow them. Planning to plant some peas.

Language

Oral composition: Our school garden.

Arithmetic.

Counting: counting the number of plants in a particular part of the garden. Counting the number of pupils who visited the garden. The number of boys and girls separately and then together.

General Knowledge :

Plants—why we grow them. What we get from them. Some useful plants.

III. Tool Practice.

Teacher gets acquainted with pupils, asks about their parents and their work; the tools they use in the course of their work, the raw materials they use, the finished goods they make and how they are disposed of. In this way pupils get an idea of the occupations of the people of the locality and the important crafts and tools used.

Correlated lessons.

1. *Language :*

My father (six sentences)

2. *Arithmetic :*

Counting the number of members in my family. Naming the tools and counting the number named.

3. *General Knowledge :*

The village—and the occupations of the people.

IV. Citizenship Training.

School Parliament—let the children attend the session and observe what is going on. The boys in the senior classes will organise the work.

Election of class Ministers—Chief Minister, Health Minister and Craft Minister.

V. Other Activities.

(A) Cultural and Recreational

Teach them a folk dance (കൊല്ലം) which they will enjoy.

(B). Weather—Observation and study.

Name the day of the week, the month, the date and the year. Nature of the day, weather—bright, cloudy or raining.

Language

The days of the week, the month the year.

Arithmetic.

7 days make a week, there are thirty days in June.

General Knowledge.

June is the month of heavy rain — The rainy season.

SECOND MONTH

I. (a) Environmental cleanliness.

Health Minister forms sanitation Squads. One squad cleans black board and benches. Another sweeps the floor and veranda. A third one sweeps the courtyard.

Correlated lessons.

Language

Oral composition. The leader of each squad describes the work done.

Arithmetic.

Counting: (Syllabus page 34 section 3) Counting work may be given as in the

previous month. Addition can be introduced as follows :

Who is absent today? Gopi.

In which squad is he? Squad I.

How many are there in the squad today? 4

Was he present yesterday? Yes.

How many were in the Squad yesterday? 5.

If we add one to four we get 5. Introduce the + sign and write $4 + 1 = 5$.

Then teach other combinations.

How much is $5 + 1$? It is 6.

How much is $6 + 1$? and so on.

Subtraction can be introduced in the same way. Gopi's father has sent a letter requesting that he may be given leave tomorrow.

In which squad is he?

How many are there in it? 4.

If Gopi won't come tomorrow, how many will there be in the squad? 3.

If we take one from 4 we get 3.

Introduce the "—" sign and write $4 - 1 = 3$.

General Knowledge :

Directions : Front, Back; East, West, North, South,

Introduce the concept by asking them questions as follows:

Where is the veranda? It is in front of the class.

Where is the courtyard you swept?. It is in front of the veranda.

Where is the vegetable garden? It is at the back.

Later on the idea of east, west, north and south may be given.

(b) Personal Cleanliness.

Cutting nails:—Teacher looks at the nails of pupils and says nails should be cut. Asks why we should cut nails. Elicits

the answer that dirt gathers there— Then he asks how we cut nails?. We cut nails with a knife or scissors. Teacher brings a pair of scissors and shows how to cut the nail. He cuts the nails of pupils.

Tells Health Minister to ckeck up, everyday and see that no one comes to school with dirty uncut nails.

Correlated lessons.

Language :

How the teacher cut my nails.

Arithmetic :

Counting—How many nails have you on one hand? On the other?

How many in both hands together?

How many nails are there on one foot? on the other?

How many in both feet together?

How many nails have you in all?

General knowldge :

(Syllabus Page No. 48 Section 2.)

Lessons in personal cleanliness—How to be clean. Importance of cutting nails. Other wise dirt gets into the food eaten.

II. Gardening:

Planting peas.

The senior pupils have made the bed. Each pupil is asked to plant ten peas about half an inch below the surface. The teacher marks the points where pupils plant them. They are in a row and are equidistant from one another.

Language.

Oral composition. How I planted peas.

Arithmetic

(Syllabus Page 34 Section 1.)

Each pupil counts ten peas and takes them. He counts as he plants them one by one. Saying, I have planted one.

Now I am going to plant another. Then there will be two. One and one are two. I have planted two. I am going to plant another. Then there will be three. Two and one are three. In this way they learn, up to nine and one are ten.

General knowldge :

(Syllabus Page 49 Section 6)

The plants of the neighbourhood.

III. Tool Practice

Visiting the tool room.

Tell children that many of the tools mentioned in the class and several new ones are collected in the tool room and invite them to go and have a look at them.

March the pupils to the tool room and let them walk round observing the tools. As they walk round and see the agricultural tools they say, "That is spade, we have it at home". Then elicit from them that they are tools used by the farmer. Elicit the names of all the tools. If there is any they do not know tell them the name and explain its use.

In this way familiarise them with the other groups of tools.

Correlated lessons.

Language.—Reading and writing: The farmer's tools. Take a large wall chart showing the tools assembled. Let the pupils name the tools one by one —

മമ്മട്ടി, മഞ്ഞക്കൊടി, മുട്ടപ്പുലി,

etc., Write the names on the board. Let pupils read them. Draw the picture of each tool and write its name against it. Give flash cards on which the names have been written in large letters, and ask pupils to place them against the tool named. Then give cards in which the letters are written to make up the word.

Teach them to write the letter 'm'. In this way teach them to read and write.

Arithmetic.—Counting—Let pupils count the number of tools shown in the chart. First let them count the number in the first row, then in the second and so on.

Addition : Ask them to find the number of tools in the two rows together. How many are there in the first row?

How many are there in the second row?

How many are there in the two rows together?

This leads to addition. Systematic teaching can begin at this stage.

IV. General Knowledge

Our Food (Section 7 Page 49 of the syllabus)

Our food—The need for food—vegetables and cereals—the story of a farmer.

V. Citizenship Training

Election of Ministers for the second month—the Class Minister the Health Minister and the Craft Minister. Teach pupils the right procedure. The name is proposed by one pupil and seconded by another. When nominations have closed, they elect the Ministers.

Language :

Oral Composition : Our new Ministers.

Arithmetic :

Counting. Counting the number of votes obtained by each candidate. Who got the highest number?

General knowledge :

In Kerala we have now 11 Ministers. They are members of the Legislative Assembly. The members are elected by the people. All adults have the right to vote.

OTHER ACTIVITIES

A. Recreational Activities.

A harvest song (കൊയ്യപാട്ട്)—Teach pupils a harvest song. It should be accompanied by suitable action.

B. Observation of the weather.

As in previous month. Today is Monday. It is 15th of July, 1958. It is a rainy day. There is heavy rain. There was rain yesterday and on the day before. This is the rainy season.

There are thirty-one days in July.

THIRD MONTH

I. (a) Environmental Cleanliness.

Carry on the work of environmental cleanliness as in the previous months. Teach them that the home and the street should be kept neat and clean. Try to see that the good habits acquired at school are transferred to the home and the village.

Language.

Oral composition: How we keep our houses clean?

How we keep the street clean?

Arithmetic

Counting: Addition and subtraction (as in the previous month)

General knowledge.

(Syllabus Page 48 Section 3.)

The home to be tidy—the cleanliness of the street. Why litter should not be thrown out.

B. Personal Cleanliness

Combing the hair. Health Minister checks up and sees that pupils wash their

hands, feet and face and have their nails cut.

Teach them to comb their hair. It gives us a smart look. It removes dirt from the head. We can remove lice from hair.

Language :

Oral composition: How I keep myself clean and tidy.

General Knowledge: (Syllabus Page 48 section 3).

Lessons on personal cleanliness—Need for combing one's hair.

II. Gardening.

Weeding and Manuring. The pea seeds planted have germinated and the plants are growing up. Grass begins to grow in between the plants. Other weeds may also sprout up. Then weeding becomes necessary. Let each pupil weed the portion allotted to him. Let them loosen the soil with a fork; gather the weeds in a basket and throw them into the compost pit. Later they may be taught to manure the plants.

Tools and appliances used: The fork.

Manure: Ashes.

Tool study: Examine the fork and show how it is specially made for loosening the soil and removing weeds. Name each part, and elicit its use.

Tool practice: Let pupils hold it in the right way and gain some practice in using it properly.

Correlated lessons

Language :

Oral composition. How I manured the plant.

Arithmetic: Counting the number of pea plants given to each pupil and the

number of baskets of weeds thrown into the compost pit.

General Knowledge :

(Syllabus Page 49 Section 3). Our Food the use of the pea and the pea leaf for making curries.

III. Agricultural tools.

Take children to the garden where senior pupils are at work. Let them see how the spade, the hoe, the shovel, the pickaxe, the fork and the trowel are used. Tell them the names of the new tools seen. Allow them to handle them if they like. Let them wash their hands and feet before returning to class.

Language :

Oral composition. How they made a seed bed.

Arithmetic : Counting.

Pupils count the number of agricultural tools they know.

General Knowledge :

(Syllabus Page 49, Section 7). The story of a farmer.

IV. Citizenship Training—

Independence Day Celebration.

Preparations are made for the celebration by the whole school. The Ministers under the guidance of the staff, organize the work. There is the general cleaning up programme on the previous day, and the school hall is decorated. On the Independence Day there is flag hoisting, procession, sports, public meeting and entertainments. The celebration may be planned as a project.

Correlated lessons.

Language :

Oral composition. Independence Day Celebration in our School,

Arithmetic : Counting—The number of flags the pupils of that class made for decorating the school.

General knowledge :

Importance of August 15 as the day on which we became free. Before August 15, 1947 we were under British rule. Now we have our own Government. Our President is Dr. Rajendra Prasad and our Prime Minister is Jawaharlal Nehru. Develop the sentiment of patriotism and the determination to safeguard our freedom.

B. Weather observation.

Today is Friday. It is 18th of August 1958. It is a bright day. There is no rain today. But yesterday there was rain. There was rain on the day before also. This is the rainy season. But we don't get such heavy showers as in July.

There are thirty one days in August.

STANDARD II.

I. (A) Environmental Cleanliness.

Cleaning the class room and premises (as in class I) Health Minister organises sanitation squads for this purpose and assigns work to each squad. He makes an oral report of the work to the teacher everyday.

Correlated lessons

Language :

Oral composition. Report of the work done by each pupil or squad.

Arithmetic :

Addition and subtraction. Number in each squad, absentees, number present, total number present.

General knowledge.

Lessons on Environmental cleanliness (Revision of work done in class I. Syllabus Page 48, Section 3).

B. Personal Cleanliness :

Health Minister inspects the class to see if all pupils are neat and clean—sees if they have washed their face, cleaned their teeth, bathed, cut their nails, combed their hair etc.

Failures are reported to the teacher who makes use of the situation to teach about personal cleanliness. For example if a boy comes without combing his hair, he tells the class how it gives a smart look and how it helps to remove dirt and lice.

Correlated lessons

Language :

Oral Composition. How to comb the hair.

Arithmetic :

Addition and subtraction. Number of pupils who have not bathed, cut their nails etc., separately. The total number of unsatisfactory cases. The number should decrease as days pass by.

General knowledge :

Lessons in personal cleanliness (Revision—what was taught in Standard I. Syllabus Page 48, Section 2).

II. Gardening.

Planting of seeds—e. g., Peas.

Divide the class into groups of 6 pupils each and give each group a row of seeds beds (already prepared by the senior pupils) each consisting of 3 seed beds. Two seeds may be planted in each bed. Spaces between each row and each seed bed are equal. Give them an idea that all seeds do not grow into plants. So good seeds should be selected. Seeds have to be sown in soil that has been dug up and made loose. Pupils observe the growth of the plant.

Correlated lessons

Language :

Oral composition. How we planted peas.

Arithmetic :

Addition and subtraction—Number of seeds planted by each squad. The total number planted. Number of bad seeds. Which group planted more? How many more?

General knowledge :

Syllabus Page 49, Section 2. The School Garden.

Parts of a plant:—Two parts—the part that grows below the soil is called the root and the part that grows above the soil is called the shoot. On the shoot there are leaves, flowers, fruits and seeds.

III. Tool practice.

Tools used in the home—Take pupils to the tool room to study the tools used in the home. Let them name the common tools like the penknife, the chopper, the axe, and the sickle, the names of which they know. Take them one by one and let them name the parts. All of them have a handle. We hold them by the handle. It is made in such a way that we can hold the tool conveniently, while working. It is usually made of wood. The blade of the knife is made of steel.

Why is steel used?

Because it is very hard. Steel is harder than iron.

Speak to the pupils about the factories where these tools are made. Some of them are made by the blacksmith. Describe how the smith makes a knife. Organize a visit to the smithy to observe the smith at work.

Correlated lessons

Language :

Oral composition. Give six sentences about each tool. Lesson 27, The Penknife. Pages 96-100.

Arithmetic.

Subtraction: Let each pupil write down the names of as many household tools as they can and give one mark for each right answer. Who got the highest number of marks? Ask each pupil how many marks more that pupil got than he? Who got the lowest mark? Let each pupil say how many marks more he got than that boy.

General knowledge :

Syllabus Page 50, Section 4. The furniture, utensils and other articles used in our house.

IV. Citizenship Training.

School Assembly: Pupils attend the school assembly and observe the procedure. The Speaker presides. The Chief Minister brings up the programme of work for the month. There is general discussion and the programme is approved.

Language :

Oral Composition: Report of the meeting of the assembly.

General knowledge :

Syllabus Page 50, Section 10. All pupils are members of the School Assembly. All take part in the meetings. The School is a big family. Each pupil and each class is a part of it. The Headmaster and teachers belong to the school family. Each has his rights. They have also their duties. Discuss the rights and duties of the headmaster, the teacher and the pupil. Impress the fact that rights are correlative to duties.

V. A. Other activities.

Cultural activities: A congregational prayer. They learn to sing the prayer. Lesson 1 of the Reader. Pages 1 to 2.

Language :

Poetry—Appreciation of the song.

General knowledge :

God is Love and has blessed man with everything he needs.

B. Weather Observation and study.

June is a wet month. We get heavy rain. The wind blows from the South-West. It is the South-west Monsoon. There are 30 days in June.

STANDARD III.

I. (A) Environmental Cleanliness.

Sanitation squads attend to the cleanliness of the class room and premises as in the previous classes. The work of the squad in charges of water supply may be discussed. They have to clean the water pot and supply pure water for the pupils to drink.

Correlated lessons

Language :

Reader. Lesson 3, Page 8, Para 2.

Why pure water should be used.

Arithmetic.

Multiplication and Division. There are 8 squads of five pupils each. How many pupils are there in all? 40.

Use $8 \times 5 = 40$.

Similarly forty pupils can be divided into 8 groups of 5 each. Introduce the ' \div ' $40 \div 8 = 5$. $40 \div 5 = 8$.

In this way introduce the operation of division.

B. Personal cleanliness.

Health Minister inspects the pupils and reports cases of failure in the matter of personal cleanliness.

If any pupil is suffering from itches seat him separately. Tell pupils it is a communicable disease. Instruct the boy to get sulphur ointment and use it.

Language :

Lesson 3. Health (Reader Pages 7 to 9).

General knowledge :

(Syllabus Page 57, Section 7 (a). The human body—Need to keep it healthy—Health rules.

II. Gardening.

Planting Vanda Seeds: Divide the class into groups of 6 pupils each. Pupils are led to the plot where the seed beds have been prepared. Draw their attention to the spacing of the seed beds (2 ft. apart). The seed beds are so prepared that the plants can get sufficient air and sunlight when they grow up. The necessity of digging up the soil before planting the seeds may be explained. Roots grow easily into the loose soil, fix the plant firmly and absorb food from the soil.

Conditions necessary for the germination of seeds.

Air is necessary for the germination of seeds. So seeds should not be sown deep in the soil (not more than $\frac{1}{2}$ an inch deep) water is also necessary. Seeds will not germinate in the absence of water. Too much water will cause decay.

Language :

Diary of garden work. From Standard III onwards pupils should maintain a diary of the garden work done by them. The following scheme may be adopted.

<i>Date and Day of the week</i>	<i>Work done</i>	<i>Description of the work done</i>
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Arithmetic :

Multiplication and Division. Find the number of vanda seeds planted by multiplying the number of pupils by the number planted by one.

General knowledge :

Syllabus Page 58, Section 6. Plant life. Roots. Function of roots—fixation and adsorption.

III. Tool Practice.

Cutting out pictures and pasting them in an album.

Tool used—A pair of scissors.

Tool study—Elicit the names of the parts. It has two parts. They are hinged together. Each part has two edges. One edge is sharp while the other is blunt. There are two finger holes. Put paper between the sharp edges and cut. It is made of steel. Steel is very hard. It is harder than iron.

Tool Practice: Let children cut paper and get practice in cutting with scissors.

Language :

Let pupils maintain a diary of their activities from this stage onwards. The diary may be written in the same way as in Gardening.

Lesson 20, Iron(Reader Pages 72-75).

General knowledge :

Iron and steel. Lesson in the Reader Pages 72-75.

IV. Citizenship Training.

Class Assembly—Election of Ministers.

Teacher tells how class, health and craft ministers are elected and what their

rights and duties are. Then names are proposed and seconded. Voting is done by show of hands. The pupil getting the largest number of votes is elected minister. Teacher congratulates the ministers on their success at the election and exhorts them to do their duties well.

Language :

Composition: Report of the election. Let pupils write out a report of the election for being put up on the news bulletin board.

Arithmetic :

Addition and subtraction. Votes got by each minister; by how many votes he defeated his rival, etc.

General knowledge :

How Ministers are chosen. All the three class Ministers are elected by the pupils. But in Kerala the Chief Minister is elected by the members of the party that has a majority in the Legislative Assembly. The other Ministers are nominated by him.

V. Other Activities.

Excursion: Visit to the Post Office. Tell children about the post office and how letters are sent and delivered.

The way to the post office—how to go there. Tell them the rules of the road—keeping to the right. Tell children what to see in the post office—the letter box, the counter where stamps are sold, talk to the officers about their work, how outgoing letters are sorted and sent, how incoming letters are delivered. Importance of the work done by the post office and the postman. Return to school after visit.

Language :

Oral Composition. How letters are sent. The work of the postman. The post office.

Arithmetic :

Money—price of a card, cover and inland letter. Stamps of different prices.

General knowledge :

Teacher marks on the map the road from the school to the post office. Direction—Right and Left, North, South, East and West. On the map upward is north; downward south; left side is west and right side is east.

Rules of the road.

Means of communication—the postal system.

B. Weather observation and study.

Pupil should keep a calendar from this stage onwards.

The following entries may be made :

<i>Date</i>	<i>Day of the week</i>	<i>Nature of the day (rainy, cloudy or bright)</i>

General knowledge :

Why we get rain in June. The south-west monsoon.

STANDARD IV

I. Environmental Cleanliness.

June is the month of rain. Stagnant pools of water are formed everywhere. Pupils dig channels so that water may drain off. Where water still remains stagnant, they spray oil.

Language :

Maintain the diary as was done in the previous class.

Arithmetic :

Volume—Syllabus Page 41. Measuring liquids. How oil is measured. Bottle, gallon, tin. One bottle contains 24

ounces. There are six bottles in one gallon and 4 gallons in one tin.

General knowledge :

Why oil is sprayed over stagnant water—How mosquitos breed.

B. Personal cleanliness.

Health Minister checks up the cleaning activities of pupils as before. Cases of failures are taken up and the need for cleanliness is stressed. For example if some pupils come with dirty clothes on, impress the need for neat dress. This leads to a discussion of how to wash clothes. Soap and washing soda are used for washing clothes. Explain how soap removes dirt and cleans clothes.

II. Gardening :

Transplantation :—*Chillies*. The plot for the plantation of chillies should be made ready. Take long beds and put compost manure into them. Manures that dissolve in water are absorbed by the roots, may be mentioned. Chilly plants grown to a height of 3" may be taken out from the nursery bed without breaking the roots. Use transplanting trowels for this purpose. Seedlings should be planted at a distance of 1½ ft. from each other. Why ?

Tool Study. The transplanting trowel.

Language :

Maintenance of the Diary of garden work. Composition—Syllabus Page 6, Section 4. Letter writing. Write a letter to a friend describing their gardening work.

Arithmetic :

Linear measurement:—Measure the length and breadth of the plot. Find out the number of rows in the plot and the number of beds in each row. Calculate the total number of plants. Other sums using the principle.

General knowledge :

Plant life (Syllabus Page 53 Section 7).
The shoot and its parts—Leaf, flowers,
fruits and seeds.

Parts of a leaf— 1. Leaf stalk.
2. Leaf blade.

Functions of leaf—Preparation of food,
transpiration and respiration.

III. Tool Practice.

Making envelopes—Teacher shows, how
paper is cut so that it can be folded and
made into an envelope. Pupils cut paper
into the required size, and make envelopes
as shown by the teacher.

Tools used:—A pair of scissors.

Tool study—The scissors and its uses.
Let pupils understand how the force
applied by the fingers is used to cut paper
placed at the other end. Show other
types of scissors collected in the school
museum (or show them a chart where
they are depicted).

Language :

Writing the diary. Composition :
Writing a leave letter.

Arithmetic :

Syllabus Page 41, Section 9. Linear
Measurement. Let pupils measure and
find out the length and breadth of a sheet
of paper (crown size). In the same way,
find out the length and breadth of a
piece of paper required for making an
envelope. How many such pieces can be
cut out from a sheet? In this way
introduce the idea of dividing one length
by another. Impress the fact that the
unit used should be the same.

General knowledge :

The price of paper. The paper industry,
The Punaloor Paper Mill.

IV. Citizenship Training.

Activity : Election of New Class
Ministers. In the beginning and at the
end of the month elections are held and
new ministers are appointed. The works
of the outgoing ministers is discussed
by the class and their achievements as
ministers are assessed.

Language :

Pupils write a report of the work of the
outgoing ministry.

General knowledge :

Just as class ministers are elected once
in every month, general elections are
held in the country once in five years.
People assess the work of the ministry
and the party in power and vote them
back to office if they are satisfied. If
otherwise, they vote against them and
new ministers come to office.

V. Other Activities.

Flag hoisting:

Arrangements are made in the flag
maidan for flag hoisting. Pupils march
to the place and stand in a semicircle.
Teacher hoists the flag and pupils salute
the flag. They learn the flag song.

Language:

Lesson 11. Our National Flag (Reader
pages 54-59).

Arithmetic:

Linear measurement. Measure the
length and breadth of the national flag,
in inches and in centimeters. Let them
discover the fact that the breadth is
threefourths of the length.

General knowledge:

The wheel on the National Flag. It
is taken from the Asoka Pillar at Saranath.
Tell them the story of Asoka the Great.

B. Weather observation and study.

Let pupils maintain the diary as was done in the previous class. Introduce the thermometer and teach them to read the temperature. Let them read the temperature at a fixed time everyday (say at 2 O' Clock) and record it in the diary.

STANDARD V.

I. Environmental Cleanliness.

Sanitation squads work under the direction of the Health Minister as in the previous class.

Discuss the work of the squad that cleaned the premises of the well and explain the need for it.

Language:

Composition—Water and its uses.

Mathematics:

Syllabus Page 44 Section 10. Drawing a plan of the school compound showing the position of the well. Use the scale and set-squares for drawing the plan.

General Science:

Water—Syllabus Page 58-59 Section III (1). The need for water ; Course of water supply—Impurities commonly found in water.

B. Personal cleanliness.

Tell the pupils about the importance of personal cleanliness and entrust the Health Minister with the work of general inspection as in the earlier classes. He must report cases of failure to the teacher who impresses upon the importance of each item.

Language:

Composition—How to keep good health.

General Science:

Syllabus—Page 59 Section VI (2). Health and Hygiene. Rules for keeping good health.

II. Gardening.

Planting beans. Divide pupils into five or six groups. Let each group prepare a bed and plant 3 bean seeds in it. Make also rectangular 'pandals' (of bamboo) for the climber to grow on. The seed beds must be about 8 ft. apart and the pandals large enough for the bean to spread.

Language:

Descriptive Composition—The bean plant.

Story composition—Jack and the Bean stalk.

Mathematics:

Syllabus Page 44 Sections 10 and 11. Rectangles. Length and breadth. How to draw rectangles using the scale and set-squares scales. Draw a plan of the pandal. Drawing to Scale.

General Science:

Syllabus Page 59 Section V. Germination of seeds.

Experiment:

Divide the class into 5 or 6 groups and give each group a glass tumbler, a piece of blotting paper and some soaked seeds. Give necessary instruction to arrange the seeds between the wall of the tumbler and blotting paper and to observe the various stages in their growth and to make sketches.

Radicle grows first and comes out breaking the seed coat near the hilum. Radicle grows downward. The roots grow first so as to fix the plant firmly to the soil and absorb food from the soil, the radicle and its branches form the root system. The plumule takes a bend which is called the hypocotyl. The hypocotyl helps the tender shoot to come out of the soil without being destroyed by the sand. The seed leaves spread out. The seed leaves are thick because they contain food materials for the growth of the young plant till it is capable of absorbing food from the soil. Gradually the cotyledons become thin and fall off. Roots begin to absorb food from the soil. The green leaves begin to prepare food with the help of sunlight. Thus the young plant begins to grow as an independent plant.

III. Tool Practice.

Carpentry: Takli winder. Show the class takli winder and plan a project for making one. Pupils measure the length, breadth and thickness of the winder. They measure the two pegs fixed and the distance between the outer points of the pegs. They are exactly 2 ft. apart. Let pupils plan the activity and select the tools and materials required. The processes and the order in which they are to be done may also be discussed.

After planning, the Craft Minister gives the necessary tools and materials to the group working on the project.

Teacher walks round helping the pupils. When they have finished the model, assess the work done.

Tool Study.

The Carpenter's Plane, the Chisel, the Mallet, the Straight Edge.

Tool Practice.

Planing: Give them soft wood to plane. Also teach them to dismantle the plane and then assemble it.

Language.

Narrative Composition—How we made a Takli winder.

Arithmetic.

Linear Measurement. Measuring yarn. The length of one round is 4 ft. 80 rounds make one kanni. 8 kannis make one hank.

What is the length of a hank of yarn in yards?

General Science.

Wood and its uses. Soft wood and hard wood.

Social studies.

Syllabus Page 53 Section 1.

The natural wealth of Kerala: Forest resources.

IV. Citizenship Training.

Election of Ministers. Teacher tells class, that the class, health and craft ministers have to be elected and explains the procedure. Then the election is conducted and the names of successful candidates announced.

Correlated lessons.

Language.

Writing a report of the election, to be put on the news bulletin board.

Social Studies.

Syllabus Page 54 Section 6. Representation by election. Adult franchise. Election of popular representatives. Election to the Legislative Assembly. Election to the Panchayats and Municipalities.

V. Other Activities.

Excursions to some place of interest in the neighbourhood. Plan the excursion carefully. The route to the place, the means of transport used, the total cost involved etc. Tell pupils that they can see there and what they have to observe. After the excursion, assess the project and utilise it for correlated lessons.

Language.

Composition : Letter writing—Pupils write a letter describing the excursion and how they enjoyed it.

Arithmetic.

Money. Let pupils calculate the total expenditure on transport, food etc. How much was spent on one pupil?

General Science.

If the place visited is a factory, there is scope for teaching science.

Social Science.

If it is a place of historical importance, there is scope for teaching of social studies.

Syllabus page 54 Section 3. Transport and Communications in Kerala. Backwaters, roads, railways, air route.

B. Weather observation and study.

Pupils maintain the diary of their observations as they did in the previous class. They find that day follows night, and full moon and the moon days come at regular intervals. This leads to a discussion, why it is so.

General Science.

Syllabus Page 58 Section 1. The earth we live on—the earth, the sun and the moon. Rotation and Revolution.

STANDARD VI.

I. Environmental Cleanliness.

Sanitation squads are assigned definite work and Health Minister organises the work of the squads.

Teacher discusses the work of the squad that cleaned the urinals. Lotion is used for washing the floor. The lotion contains disinfectants. Disinfectants destroy germs.

General Science.

Syllabus Page 61 Section 6. Health and Hygiene (3) and (4) contagious diseases. How they spread. How to prevent them. Use of disinfectants—common disinfectants—Detol, Phenyle. How to make a dilute solution of Phenyle for washing the floor.

Arithmetic.

The idea of ratio. i.e., 1 oz. of phenyle in.....oz. of water.

Personal Cleanliness.

Health Minister brings cases of pupils suffering from scabies and other communicable diseases to the notice of the teacher. Teacher seats them in a separate seat.

Teacher then tells them how scabies is caused, about the itchmite and how it is destroyed. Sulphur ointment is used for this purpose.

General Science.

Syllabus Page 61. Section VI. Health and Hygiene. Common diseases, Scabies.

II. Gardening.

Preparing seed beds and planting tomatoes. Teacher discusses the project with the pupils. They inspect the school

compound and choose a suitable plot for tomato cultivation. The length and breadth are fixed. The place is measured and boundary marked.

Divide the class into groups each with its leader. The leader gets the tools required for the work from the Craft minister. Assign work to each group. The first group digs up the ground to make the soil loose. The second group levels the ground and removes all the weeds. The third group spreads manure and mixes it with the soil. Another group forms beds 1 ft. wide and 3 ft. apart. The fifth group plants the seedlings in the beds. Only healthy seedlings are selected. After finishing the work they clean the tools and return them to the Minister

Language.

Composition—Kitchen gardening.

Arithmetic.

Syllabus Page 45 Section 10. Square measure—Area of a rectangle—Acre and cent.

Let pupils calculate the area of the cultivated plot in sq. ft. first and then convert it into cents.

General Science.

(Syllabus Page 61 Section V)

All seedlings are not healthy. For getting good yield, healthy seedlings should be selected.

The soil should be made loose so that the thin roots of the plant can grow freely and easily into the soil.

In planting care should be taken to see that the seedlings do not get crowded. If this happens, the plants will not get sufficient air and sunlight when they grow up.

Provision should be made for the excess of water to drain away from the beds.

III. Tool Practice.

Fencing—(using bamboo reepers).

Tools and materials required.

Chopper, handsaw, chisel, mallet, hammer, bamboo and nails, tar and brush.

Teacher discusses the project with the pupils. They measure the length of the fence to be made. They plan the activity. The class is divided into a number of groups and each group is given a definite part. One group is in charge of fixing the poles. Some have to mark the points where poles have to be fixed and dig holes for fixing them. Others cut bamboo to the required size to be used as poles. Some fix them on the ground in the holes dug for the purpose. In this way the whole work is planned. It takes many days to complete the project.

In the end, assess the work and see how each group has done its work. The total expenditure incurred and the time taken man-hours of work must be calculated.

Tool study—The handsaw.

Mathematics.

Linear Measurement—To find the number of poles required for a given length of fence. To find the number of bamboos required for making enough reepers for the fence. To calculate the total expenditure involved and the number of man-hours spent.

General Science.

The use of tar as protection against white ants.

IV. Citizenship Training.

Court of justice: The court of justice is constituted of three members. One of them is nominated by the class teacher, another by the ministry and the third is elected by the pupils.

Teacher discusses the rights and duties of the court of justice, how the court functions. The judges have to see that school laws are obeyed and those who break them are punished. Specific cases of breaking school laws are reported to the Judges who pronounce judgements in each case, after proper enquiry.

Language.

Composition—The court of Justice.
Social studies.

Just as the school has its court of justice, the State has its Judiciary. There is a High Court and many subordinate courts in Kerala. There is the Supreme Court at Delhi.

Syllabus Page 55 Section 5 (a) . The State as Protector and Arbiter. Maintenance of Law and order. Administration of justice.

V. Other Activities.

Excursions—Visit to the local market. The teacher discusses the project in the class. The pupils draw up a plan of the route. The time of going, the time to be spent, etc. are then fixed. Teacher gives them an idea of what they have to observe—the shops, what things merchants sell, how they get the stock etc. After the visit the teacher discusses with the pupils what they have done and make them write a report of the excursions.

Language.

Descriptive composition—The village market.

Arithmetic.

Profit and loss.

Social studies.

Syllabus Page 55 Section 2. India—Ports and harbours—Exports and imports.

Syllabus Page 55 Section 4. The story of money. Change from the system of barter.

Weather observation and study.

The class keeps a diary of weather conditions from day to day. The Maximum and Minimum Thermometer may be shown and they can be taught how to read each arm.

Let pupils observe the index on each arm. The spring attached to the index keeps it in the minimum or the maximum position. A magnet is used to move them back and set them properly.

General Science.

The Maximum and Minimum Thermometer.

Social Studies.

Geography—Climate—Seasons. Zones, the torrid zone, the Temperate zones and the frigid zones.

STANDARD VIII.

I. A. Environmental Cleanliness.

Pupils of Standard VII are in the last year of the Primary School. They would have formed regular habits of personal and environmental cleanliness during the six years at school and may be expected to give the lead to the younger pupils in organizing programmes of work related to this activity. The planning of the sanitation programme with the advice of the staff may be their work.

The more difficult item of work should be assigned to this class. For example the general cleanliness of the school in the month of June will depend on the facilities for the rain water to flow off. Otherwise the school compound becomes water-logged. The Health Minister inspects the compound and plans how to provide drainage channels for this purpose. The plan is discussed by the class and suitable modifications made. Then squads are set to work on the project. Examine how far the work has been successful when it rains next.

General Science.

Syllabus Page 62 Section III Water—Floods and flood control. Water power—Hydroelectric Projects.

Personal Cleanliness.

Regular habits of personal cleanliness would have been formed in children by this time. Teacher should make them understand the scientific basis of all the hygienic habits developed at school.

Correlated lessons.

This leads to a study of the structure and functions of the human body and its parts.

II. Gardening.

Making compost manure—Discuss the value of compost manure and plan a project for making a compost pit. Inspect the School compound and choose a suitable place for it. Then plan the work. Dimensions 6'x3'x3'. The length and breadth may vary, but the depth should not be more than 3 ft. Make a bund all round so that water may not drain into it. Let the pupils collect weeds and green leaves and cut them to pieces with a chopper. Spread this evenly in

the pit to a height of one foot. Over it spread cowdung mixed with water to a thickness of 1". This process may be repeated periodically till the pit is full. Then cover it with earth. Leave it like this for one month. Then rake it up and cover it with earth as before. Do this again at the end of the second month. After one more month the manure is ready for use.

Correlated lesson—General Science.

Page 62 Section V of the syllabus. Manure is the source of the food for the plant. The salts present in the manure dissolve in water and this solution is absorbed by the roots. From the roots the solution is sent to the other parts of the plant. Two kinds of manures—Natural and artificial.

Natural manure — Farm yard manure, green leaves, other waste materials and ashes.

Artificial manure—4 kinds.

Nitrogenous.

Phosphatic.

Potash.

Calcareous.

1. Nitrogenous Manure —For the healthy growth of the plant; gives dark green colour to the leaves—good for the cultivation of cheera, lettuce, cabbage etc.

2. Phosphatic Manure—Produces plenty of flowers and fruits. Helps early ripening of fruits.

3. Potash Manure—Helps building up of starch—good for cultivating tapioca, 'chena' etc. Also protects the plants from diseases.

4. Manure containing Calcium. To be added to soils deficient in lime. Strengthens plants against attacks of virus diseases.

Arithmetic: Syllabus Page 47. Section V Volume.—Finding volume given length, breadth and depth.

III. Tool Practice.

Sheet metal work. Making a funnel (Using tin sheet).

Show a funnel used for pouring kerosene oil and discuss how it can be made. It consists of two parts. — (1) The cone and (2) the tail. Measure the dimensions of the cone draw the sector of a circle of the same dimensions on a sheet of paper. Mark it on tin sheet and cut it with tin-shears. Then join the sides and solder it. In the same way make the tail. Then join it to the cone by soldering.

Mathematics.

Arithmetic—Calculate the cost of a funnel.

Geometry—Circle, Centre, Radius, arc, sector (revision of work done in Standard VI)

General Science

Tin and its uses. Galvanized iron.

Social studies.

South East Asia—as supplier of tin. Mineral wealth of India — Iron. Our Iron and Steel Industry. The new steel plants.

IV. Citizenship Training.

Activity—Organising pupil self - government. Meeting of school parliament, electing ministers and constituting the Court of Justice.

Social Studies.

Syllabus Page 56 Section 3. The idea of the sovereignty of the people. The Government of India—Executive, Legislature and Judiciary.

Just as the School has a Headmaster and teachers, a Parliament, a Cabinet of Ministers and a Court of Justice, we

have the executive, the Legislature and the Judiciary at the State and the national levels. This leads to the Study of the topic in the syllabus.

V. Other Activities.

Extension work—Cleaning up programme in the village. Cleaning the road and drain in front of the school. A complete afternoon may be devoted to this work. The work is planned carefully. First inspect the place and specify the area to be cleaned up. Then divide the pupils into squads and assign definite work to each. Provide them with necessary implements. As the squads fall to work, develop the spirit of healthy competition. This is a joint project in which the teachers and the villagers participate. After the work is over, assess the work done.

Language.

Composition: Writing a dialogue. A pupil who participated in the cleaning up campaign, tells another how it was organised and carried out.

Mathematics.

Drawing a plan of the area cleaned up. Drawing to scale.

Social Studies.

Sanitation work—The Village Panchayat. The Public Health Department.

Weather observation and Study.

The Class maintains the diary of their observations relating to the weather as was done in the previous year.

June is a month of heavy rain. Discuss the question of rainfall and how to measure it. Set up a rain guage and let pupils measure the rain that falls every day. Let them get a clear idea of what is meant by

of rain. Add another column to the weather chart for making entries relating to rainfall everyday.

Correlated Lessons

Language.

Poetry—selected passages describing the rainy season.

Mathematics.

Volume — Calculating the volume of rain water that fell in a given area if the

rainfall is 1". Section V of the syllabus Page 47.

Social Studies.

Rainfall—Climate Factors that influence climate. Natural regions of the world.

Social Studies.

Syllabus Page 55, Section 2. India—Ports and harbours—Exports and imports.