

Creative Lesson Plan on

Medicinal Plants



for teachers, educators and community workers

ENRE
Ecology and Natural Resource Education
Development Research Communication & Services Centre

**'Creative lesson plan on Medicinal Plants'
(Selections from 'Basbhumii' : booklet - 4)**

Project coordinating & concept development : Ardhendu S. Chatterjee

Lesson plans design, illustration & editing : Satoko Chatterjee

Reviewing & checking the content : Ardhendu S. Chatterjee, Ruksan Bose, Anshuman Das

Translation & processing of feedback data : Sanjeev Chattopadhyay, Sukla Ghosh, Pratim Chakrabarti

Feedback contribution for this issue : teachers and children of ENRE network :

Samir Biswas, Tarun Mondol, Buddhadeb Halder, Reba Sadhu Khan (Swanirvar), Debasish Panda, Vivekananda Sahu, Protyush Mondol, Sek Jobok Ali (Kajla Jana Kalyan Samiti), Shantonu & Manosi Chatterjee (Chandannagore)

Word processing & layout : Somjita Mukherjee

Art work of 'Medicinal Plants' drawing : Manab Paul, adapted also from the booklets "Hater Kache Osudh" & "Banglar Sak" (DRCSC) and "Zoku Indo Hanatsuzuri" (Naoki Nishioka 1991, Japan)

Cover design : Satoko Chatterjee, Abhijit Das

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ENRE project / DRCSC,

58A Dharmatola road, Bosepukur, Kasba, Kolkata 700042, West Bengal , INDIA

☎ 2442 7311, 2441 1646 E-mail : enre_sc@vsnl.net

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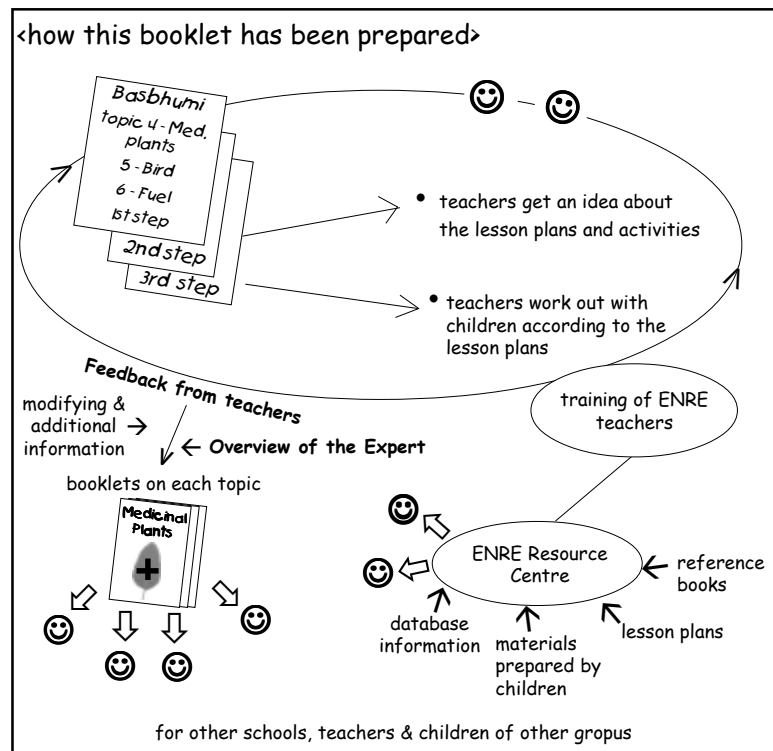
About this booklet —

All lesson plans included in this booklet were developed by ENRE team and tried out (and sometime modified) by teachers and children’s groups in ENRE network. Originally these lesson plans were provided to a network of teachers as model lesson plans **targeted for class 4-9 children** in shape of bi-monthly ENRE newsletter ‘Basbhumii (Habitat)’. Along with ENRE teachers’ training which guides teachers about concepts and skills of ‘**active learning methods**’, they have tried out each activity with their students in their class or as extra curricular activity for last 2-3 years. Their feedback makes this booklet more unique and life related.

12 topics related to Natural resources and their utilization / management etc. were discussed in various issues of ‘Basbhumii’ (in Bengali). ‘**Medicinal Plants**’ is the fourth topic centred booklet in English & Bengali.

We hope this booklet is useful for other **teachers and educators**, as well as **community workers** and even for those **parents** who are actively involved in environmental education or environmental activity in own local community. And we shall be

delighted if this booklet can help in nurturing the mind & spirit of young generation who can take key role for caring about own environment and community life.



(Please see page 89 for forthcoming issues)

How to use this booklet —

- The lesson plans in this booklet are designed step wise (see page 8 & 9). We suggest that you try out these activities step by step, but you can also adapt each core idea according to your local context.

Regarding teaching & learning process :

- You can get some ideas on how to prepare your own lesson plan promoting action learning.
- You can try out several participatory learning & sharing tools (eg, brainstorming, making charts & graphs, mapping, ranking, timeline, data collection, interview, presentation etc.) for your class.
- You can get ideas on how to connect your class room to local community.
- You can use these lesson plans both for school curriculum and extra curriculum work and obviously you can generate children's interest & enthusiasm on Environmental issues and activities.

For community aspects :

- You can help children to collect local data on natural resources in their neighbourhood and encourage them to know more about their surroundings.
- You can organize children's group to improve local environment through collective action.
- You can grow community members 'awareness on environment through children's' activity.

For home :

- You can try out some of these activities with children in your home during their school holidays. We are sure you can design your own home –based activity for a greener world, because we have already got good feedback about this from various people.

- In 'reference' section we have included **expert's view point on the topic** and also have introduced some useful documents. You can get some ideas how your community based activity can be related and contribute to global environmental issues etc. and hopefully you can utilize these resources & information to strengthen your capacity of facilitating activities.

Especially in this booklet, we have put **illustration & 'frequency dot'** for each medicinal plant appearing in children's feedback. Hope this will help to identify medicinal plants more clearly, especially for teachers/group leaders who are not so familiar with medicinal plants. We also prepared the list of **'30 selected Medicinal Plants'** based on feedback we've got. Hope you can use this booklet as valuable information source on medicinal plants.



About lesson plan —

Through activities of the ENRE project we have realized that creating & developing own lesson plan is extremely difficult for most of the teachers participating in the network. Primarily because they don't have the habit and experience to do so. The situation must be more or less same for the other teachers in our country. Though Environmental Education as a subject has been brought into the school curriculum, the teaching method is still text book centered, memorizing & repetition based and examination oriented. Unfortunately for children (fortunately for teachers?) all answers are already given and always appear on the text books. But can children develop their interest about any issue by memorizing names of trees, birds, and animals or just by copying the text book's drawing of seed germination or insects' metamorphosis? We wish the **learning process could be more exciting and open ended process** rather than 'being hammered by more and more information'.

What is 'creative lesson plan' ?

We think that good lesson plans should provide the **opportunity of discovering and searching out the fact** by children themselves. Children can choose their own learning process and context. The teachers only need to facilitate it, rather than imposing an uniform style.

Creative lesson plans have the following aspects.

- **Starting from what children already know** and what children have experienced / felt; These help to enhance children's interest about the topic.
- **Having the overall goal related to 'Social / Environmental issue' and 'Scientific attitude'.**

For example on the topic Medicinal Plants, social / environmental goal can be <growing children's awareness that Medicinal Plants are useful and valuable natural resources to be conserved> <Keeping records of the traditional / local knowledge on medicinal plants' home remedies>, and scientific goal can be <observe & recognize the medicinal plants growing in local area> <finding out whether the plants having strong smell / can be always used as medicinal plant or not> etc.

Setting up goals helps the children to be aware that they can do something to improve their environment and solve some of the social problems.

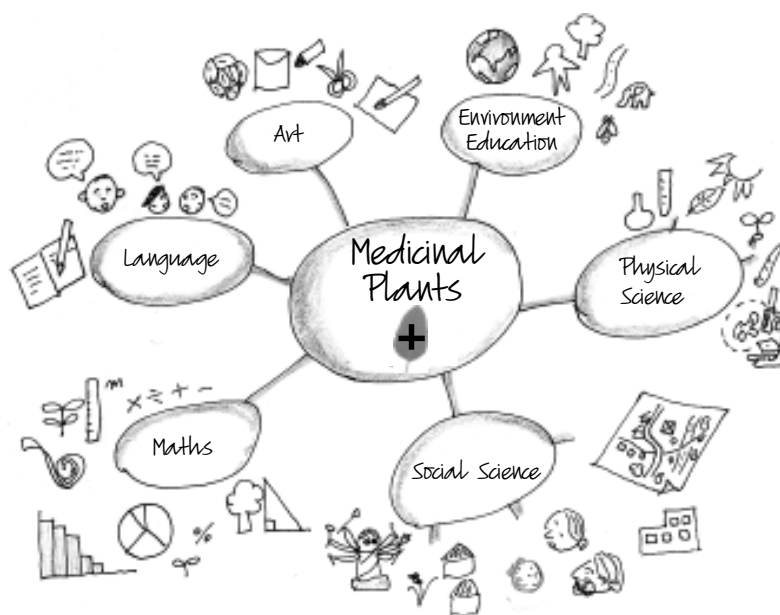


- **Including group activity as well as individual activity** through group discussion, planning and activity, children can find out better ideas and solution and also can grow their cooperative attitude and collaborative skills. They can learn to respect other's opinion too.
- **Children can have fun** and relish the moments of discovery in their learning process.
- Children's learning activity **links their class room and community**. This is essential for Environmental Education as we need more initiatives for a better environment.
- **Using active & group based learning methods** with children (eg. brainstorming, making charts & graphs, mapping, ranking, timeline, data collection, interview, presentation & sharing skill etc.)
- **Using local materials and examples** for activities. You can make the activity more low cost and eco-friendly by using waste materials.

Curriculum connection

Creative lesson plan has an integrated curriculum approach. This helps you to weave what you are doing in science or EVS (environmental studies) with math, language, social studies, geography and art etc. We illustrate below how each activity in this booklet can be connected to school curriculum.

We are getting positive feedback from network teachers that children had certainly shown increased interest to learn other school subjects (not only environment related subject) and developed their leadership abilities after practicing activity-based lesson plans.



'creative lesson plans' approach can help to increase children's interest to learn and develop a positive attitude.

+ Medicinal Plants

■ Overall goal

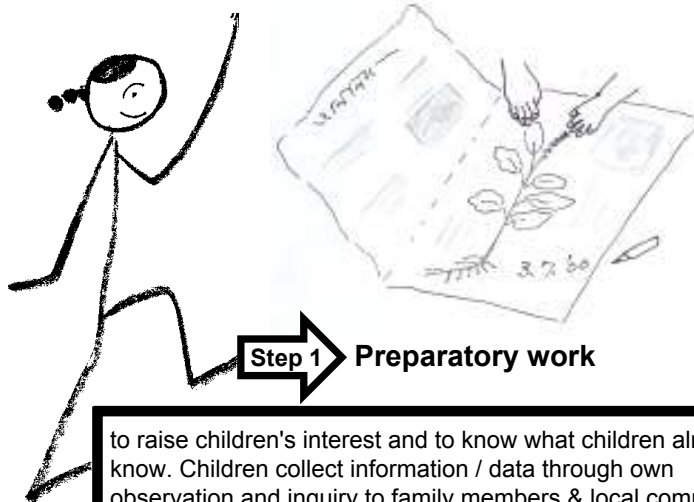
It is said that our India has about 25,000 species of vascular plants, of which 7,500-8,000 are used by folk and other traditional systems of medicine. Medicinal plants are rich and unique natural resources in our country, especially in rural area.

Unfortunately now a days, the knowledge and practice of usage of medicinal plants are disappearing rapidly even in rural areas. Some species of medicinal plants itself are also disappearing.

Through this series of activities we focus on growing children's observation skill and guide them to recognize the medicinal plants which are used for common diseases/ injuries suffered by children.

By learning, using and growing medicinal plants, children can take care of them as valuable natural resources.

■ Activity Steps



Step 2 Review & Make Sure

To make platform for further activities, have summarize & review of preparatory work. make sure Children have learnt Encourage childrens to raise further

Step 1 Preparatory work

to raise children's interest and to know what children already know. Children collect information / data through own observation and inquiry to family members & local community members.

+ Activity (A) 'Our Common Diseases & Home Remedies'

✎ ranking, collecting information

📖 common disease (Health), medicinal plants (Science), bar graph, percentage % (Math), writing experience (Language)

🕒 class periods required - 3-4 periods

+ Activity (B) 'Plants we have Used as Medicine'

✎ observation, collecting information

📖 plant profile, medicinal plants (Science), common diseases (Health)

🕒 class periods required - 3-4 periods

■ Changes Expected

- More eco-groups are created and children become actively involved in promoting herb/medicinal plants garden in their own neighbourhoods/schools.
- Children can prepare own Herbal First Aid Kit & Herbal products by using locally available medicinal plants.
- Children's effort can help to increase community members' awareness for conserving wild medicinal plants as valuable natural resources.



Step 3 Investigation/Project Work



to create child-oriented activity. Children can apply their collected information into designing studies which are meaningful for community.

+ Activity (A) 'Producing Herbal Remedy First Aid Kit for Children'

👉 practical work, group work, indexing

🕒 class periods required = 4 ~ 5 periods (1.5 hours/period)

+ Activity (B) 'Creating Medicinal Plants / Herb Garden for First Aid'

👉 practical work, garden based learning, group work

🕒 class periods required = 4 ~ 5 periods

have a discussion with children to Put any missing information and necessary points for next step. question and initiative solution.

Concepts and techniques which you can develop in activities

Keywords	Step 1		Step 2	Step 3	
	(A)	(B)	(Discussion)	(A)	(B)
Plant Profile (herbarium)	✓	✓			
Home Remedy & Medicinal Plants	✓		✓	✓	✓
Medicinal Plants' Resource Mapping		✓	✓		✓
Edible Weeds		✓			✓
Herbal products & Enterprise				✓	✓
Medicinal Plants/Herb Garden					✓
First Aid through herbal remedy			✓	✓	✓

We got feedback from different Organisations —

Even if we all do the same activity, our results could be different, depending on where one lives or the children's abilities. It's quite natural for this to happen. The results that you obtained and data collected which is specific to your locality will become a valuable case study. In this booklet, we will share with you the feedback we got from different ENRE network groups. You can compare your results with theirs.

We would like to learn more about the urban school situation & about hill areas from the other groups, since we do not work in these areas yet. So, it would be nice if you would share your experiences.

Gandhi Vihar Parishad group

Bankura district

4 teachers were involved in conducting various activities. This district is located in a dry-land area. The Vegetation & soil there is rather different from that of other groups. Fortunately, a beautiful river runs through their villages and provides an important water source including for drinking water.

Kajla group

Midnapore district

5 teachers & their students conducted the activities within their E.E. school curriculum in 6 villages. About half the children belong to Hindu families and

the rest are Muslim.

The area is located in the coastal area and regularly hit by cyclones. As a result it does not have irrigation facilities.

Agriculture, Small scale industries (handicraft) and fisheries are the main sources of livelihood in this area.



Chandannagore group

Hooghly district

One of the staff from ENRE team tried out these activities with her children as home-based activity. Children study in English medium schools unlike the other children in network. Chandannagore is a small town and located on the bank of Ganga river. Many trees and ponds are observable like in other towns in this district. Many commuters go to Calcutta everyday by train from here.



West Bengal



Swanirvar group

North 24 Pargana district

4 network teachers in association with 13 other teachers conducted activities with children in 8 villages. All the children study in government schools & are aged between 10 & 16 years.

Intensive agriculture is the main occupation of this area and the farmers used to apply large amounts of chemical fertiliser & pesticide.

Arsenic in the ground water is one of the major environmental problem in this district.



Ashuruli group

South 24 Pargana district

2 teachers conducted activity with 15 children in two villages, Sundarika, Karaghata. Children study in NGO-run primary schools.

Their area is mainly agricultural land but industrial estate is also located nearby. Villagers earn their livelihood from agriculture and working in factory.



Step - 1
Preparatory Work



for growing children's interest

+ Lesson Plans

+ Feedbacks



Medicinal Plants

Step 1 — Preparatory Work — Activity (A)

"Our Common Diseases and Home Remedies" (disease oriented)

Cuts, wounds, common colds & stomach upsets ... most children suffer from these common diseases & injuries. Let us list them up and find out their treatments. Children must find various Medicinal plants which cure or reduce symptoms of these ailments.

[🏠 both for rural & urban schools 🧑‍🎓 class 5 to 8 📊 ranking, collecting information
📖 common disease (Health), medicinal plants (Science), bar graph, percentage % (Math),
writing experience (Language) ⌚ 3-4 periods]



Objectives

- To find out common diseases & injuries, from which most children suffer.
- To aware about plants around us which are useful as medicine for treatment of common diseases/injuries.



Success Indication for Proceeding to the Next Step

- ➔ Children are interested to know more about plants that they themselves can use as medicine.
- ➔ They start by observing surrounding weeds and plants to see whether they have any medicinal use or not.
- ➔ Children start bringing some information on medicinal plants by asking their family members and neighbours.



Activity

+ Creating Interest and Motivation [LISTING]

- **Common Diseases among children**

Ask children what are the different sicknesses or injuries they or their brothers / sisters have suffered from, in the last year or two.

List all of these and ask the children to rank them in order of frequency. They can thus find out what diseases and injuries are common amongst them (for eg. bee-stings, burns, ear-aches, hair-lice, runny noses etc - all these can be included)

- **Information Gathering [based on children's experience]**

Ask children what they did when they suffered from the diseases listed. Did they go to see Doctor ? Did they go to the Health Centre ? Or did they use a self-cure, a home remedy ? What was the form of treatment ? (injection, medicine, homeopathy, medicinal plant etc). Children can share their experiences with the rest of the group and then write them down.

- **Summarizing the Information [Preparing chart]**

The children are requested to make a chart summarizing the data that they have gathered in the course of the previous activities of Listing and Information gathering. They can think discuss and put together their ideas about making a well-designed chart that will represent information clearly and attractively.

Remind the children not to forget to include basic information like when the chart was made, by whom, what it is about, the sources of information for it etc.

Some examples are shown below

(Example chart 1)

"Common Diseases Amongst us and What We Usually Do"

(Results taken from 21 children aged 6-12)

We collected the data from amongst us (class V) and our brothers and sisters.

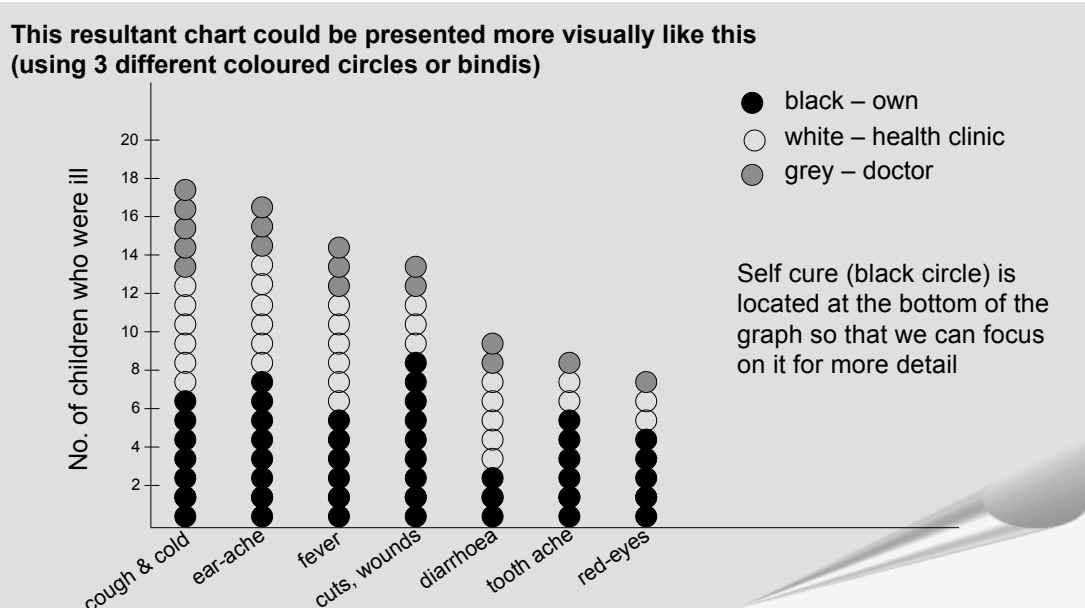
Total sample number is 21 children.

[survey date 0 X '00]

Ranking	Disease	No. of children who were ill	What we usually do (treatment)			
			Doctor	Health clinic	Self-cure	(%)
1.	Cough and cold	18	5	6	7	(39%)
2.	Ear-ache	17	4	5	8	(47%)
3.	Fever	15	3	6	6	(40%)
4.	Cuts, wounds	14	2	3	9	(64%)
5.	Diarrhoea	10	2	5	3	(30%)
6.	Toothache	9	1	2	6	(67%)
7.	Red eyes	8	1	2	5	(62%)
8.	Skin problem	-	-	-	-	
9.	Worms	-	-	-	-	
10.	Burns	-	-	-	-	
11.	Runny nose					
12.					



(Example chart 2)



(Example chart 3)

Another example of a chart with more details about "Self-cure" or Home Remedy methods

Our Self-Cure Experiences with Some Common Diseases

We re-sorted our list of common diseases, this time ranking them in order of highest percentage of self-sure used. To this list we added our experience of those treatments.
 (21 children, aged 5-15, survey date -/-/00)

Rank	Disease	Description of Treatment
1.	Toothache	Guava leaf boil and gargle Clove boil and gargle, put on painful area
2.	Cuts and wounds	Aloe leaf apply the juice of the leaf Touch-me-not crush plant to extract juice and apply Cynodon dactylon
3.	Red eyes
4.	Ear-ache	Mullen oil (homeopathic) Warm mustard oil with garlic juice

Teacher's Note

"RANKING"

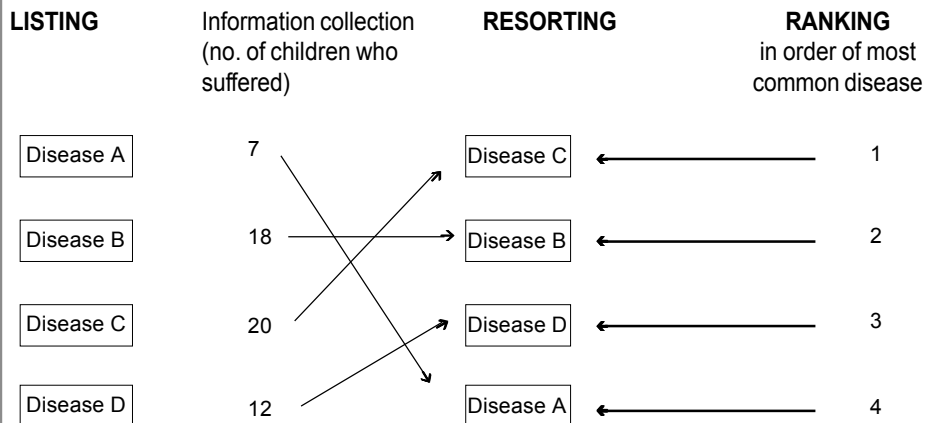
Ranking is a useful learning tool. It works very well in group-work. Ranking involves putting various items or statements in order of their number or frequency.

It is an useful technique to:

- encourage children to co-operate with each other in making choices
- making children think about priorities
- developing discussion skills including those of comparing and contrasting

When we do "Ranking" it is useful to use some cards on which each point or statement is written.

It is easier to re-sort them this way as shown below:



[Source : "THEME WORK" (Dec/1986. p28)]

+ Initial Conclusions and Further Questions

Look at the summary chart that the children have prepared.
What do we understand from it?

Have a discussion with the children about what they have understood and discovered.
If necessary ask the children to focus especially on the relationship between a medicinal plant and the home remedy for a common disease.

Each child can write down his/her conclusion on a piece of paper
OR

The children can be divided into groups and each group can write their conclusions down on pieces of paper. (Write one point on each piece of paper)

To reach the class-conclusion, group the pieces of paper according to similar point and aspect like done here (see example below).

After the children have completed the task of conclusion-making, ask them what more they would like to know about this issue and what aspect they would like to investigate further.

Discuss and list their “further questions” and investigation ideas. These will serve as a starting point for the next step, which involves “child-centered activity”

Disease	Plant	How to use plant
Children often suffers more by cut, wounds & insects' bite than sickness	Many different parts of the plant are used commonly to treat diseases/injury	Often different people use different parts of a plant OR they use the same part but apply it differently
same point		
Some diseases are treated by home remedy using medicinal plants	Some plants are used in both cooking as well as for medicine.	Some plants used in different ways
Half of our friends did not suffer from any disease & injury for last 2 years	Plants / weeds are free of cost medicines.	Spices are used in both cooking as well as for medication
Most of cough & cold can be treated by medicinal plants
.....	<p>We want to know more about</p> <p>→</p> <p>→</p> <p>→</p>	



Feedback

Step 1 — Activity (A)



+ This activity focusses on children's common diseases / injuries. Through these, teachers try to create children's awareness on medicinal plants.

Children should realise by sharing their own experiences that there are various kind of medicinal plants and understand how those plants are useful for treating common diseases.

(Illustration for each medicinal plant appeared in feedback is put by ENRE. The dots alongside the illustration shows the times of appearance of the medicinal plant throughout all feedback. This number will help you to find out which plants are popular & common among children.)

+ Summary of Feedback from Teachers

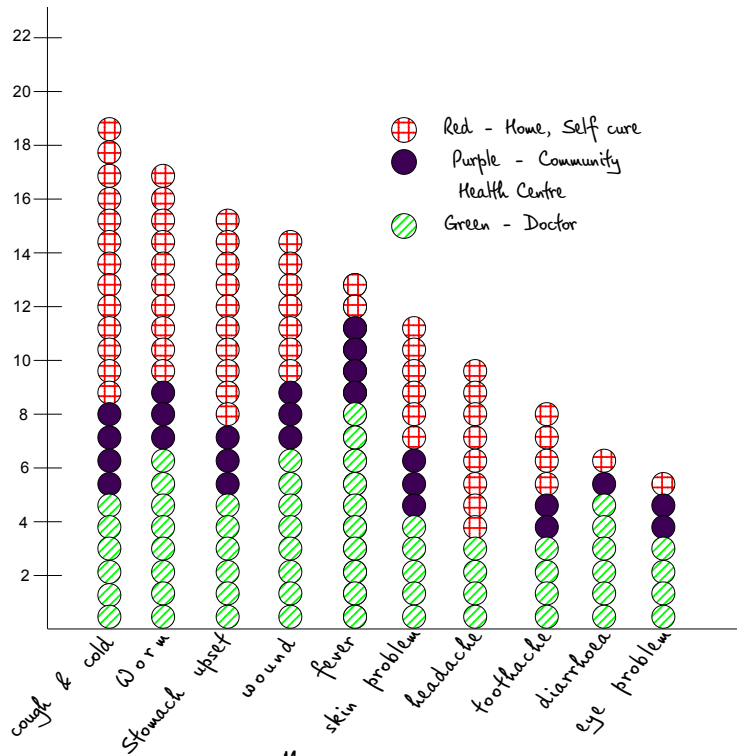
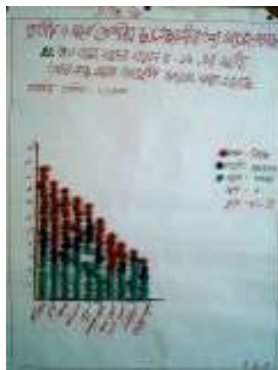
Name of the groups	Ashurali	Swanirvar	Kajla Jana Kalyan Samity	Kajla Jana Kalyan Samity
General Information				
1) Village	Karaghata	Fatullapur	Bakhsishpur	Hinchi
2) Students of which class has taken part	III - IV	IV - X	V - VIII (16 students)	VI - X (20 students)
3)Duration of the work	Not mentioned	8 periods 1 period = 45 min.	Not mentioned	Not mentioned
4)On which date the work has been done	Not mentioned	11-11-2000 to 14-12-2000	Not mentioned	Not mentioned
5)Expenses Incurred	Not mentioned	Rupees 20/-	Not mentioned	Not mentioned



1) Common Diseases & Injuries Among Children and Their Treatment

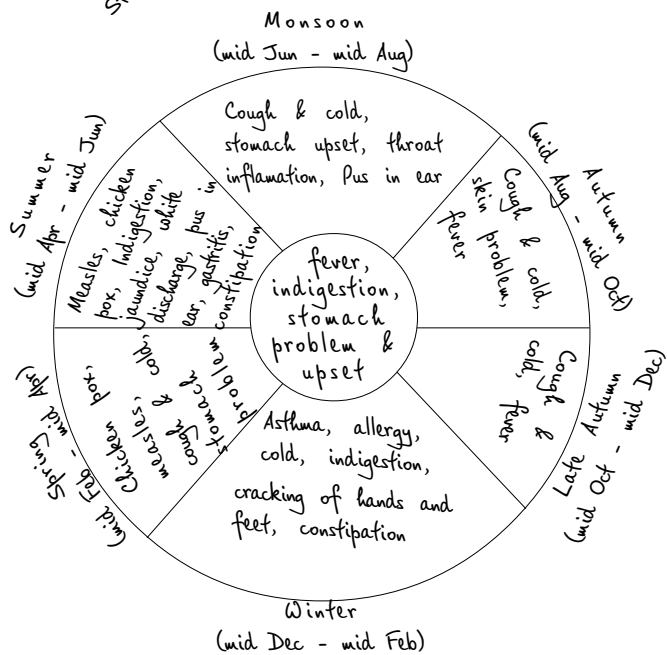
• [Ashurali] 22 students of class III & IV have prepared this chart

The children have prepared a bar-chart using three different coloured paper balls. As we suggested in the lesson plan, it would be much better if the red balls (self & home cure) located at the base of each bar-graph for focusing on it.



• [Kajla]

13 students of class VI have prepared a chart on common diseases according to the seasons



☺ From Student's Record

On of Childrens' group of Swanirvar have prepared a list of seasonal ailments with the help of Buddhadeb Haldar and Reba Sadhukhan.

Name of the Seasons	Name of the month	Name of the Diseases
Summer	mid April - mid June	fever, cough, cold
Monsoon	mid Jun - mid Aug	diarrhoea, cough, cold, fever, tape worm infection
Early Autumn	mid Aug - mid Oct	fever, cough & cold, "Kate Kaja"
Late Autumn	mid Oct - mid Dec	fever, cough & cold, gas, "phora"
Winter	mid Dec - mid Feb	cough, cold, fever, measles, tonsilitis, headache
Spring	mid Feb - mid Apr	fever, cough & cold, indigestion, measles, gastritis, chicken pox

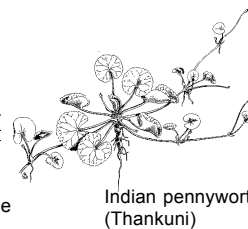
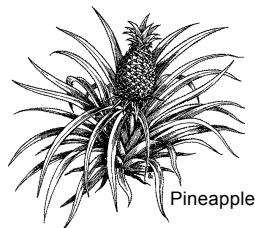
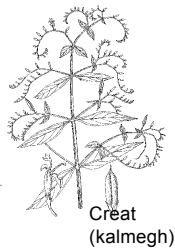
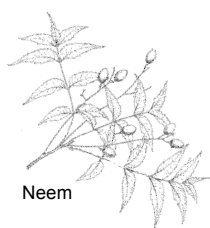
+ 2) Top 3 Most Common Diseases which are Treated by Home Remedy / Self Cure

- None of groups has calculated the percentage of the ratio of home/self treatment for listed common diseases. But we can see from the bar-graph of Ashurali that the top three common diseases for which home remedies are used are 'Headache', 'Cough & Cold' and 'Stomach Upset'. Report from Swanirvar shows those top 3 are 'cough & cold', 'diorrhoea' & 'wounds'.

☺ From Student's Record

Report of Parveen (Swanirvar)

Diseases	Self medication	Types of Treatments		Medicinal plants
		Homeopathy	Allopathy	
Cough & cold	Vasaka & honey		Parasitamol	Extract of Vasaka leaf & honey
Tape worm infection	Kalmegh plant		Elbendazol	Neem, kalmegh, pineapple leaf extract
Diorrhoea	Thankuni			Fried leaves of Thankuni in oil





3) Children's experience of self / home cure remedy for common diseases / injury

Cough & cold

- 4-5 **Bael** leaf, 5-6 **Vasaka** leaf, 5-6 **Basil** leaf, paste of **Ginger**, a bit of sugar mixed in water. Boiled to make the quantity half. Drink half a cup, 3 times a day.

- Mixture of the extract of 7-8 leaves of **coral jasmine** with 'brahmkapat', 'shushni' leaves & 1 teaspoonful honey should be taken everyday morning in empty stomach.

(Ashurali)

- 1/2 spoon of **Vasaka** leaf extract mixed with honey. Take two teaspoons daily in the morning.

(Swanirvar)



Bael



Vasaka



Basil

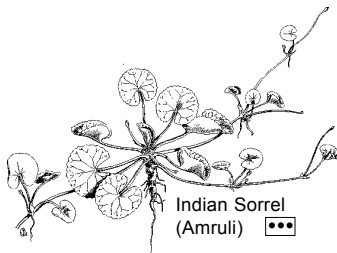
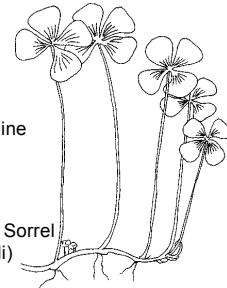


Ginger

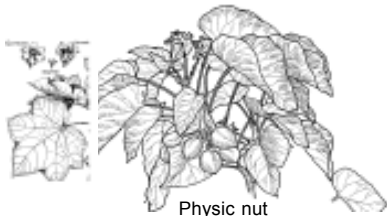


Coral Jasmine (Shiuli)

Indian Sorrel (Amruli)



Indian Sorrel (Amruli)



Physic nut

Diarrhea

- **Burigoapan** & **Thankuni** leaf extract mixed with salt. Taken for 3 days in empty stomach.

(Ashurali)

- Extract of **Thankuni** leaf with mustard oil. Taken with rice.

(Swanirvar)

- 2-3 drops of whitish juice of **Physic Nut** along with sugar should be taken in empty stomach everyday morning.

(Ashurali)

Wounds & Cuts

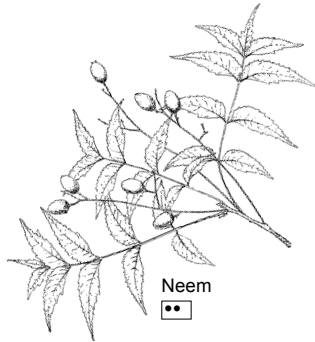
- Extract of marigold leaf, merai leaf, gum of jhanti plant administered for stopping blood loss. Wound is cleaned if neem oil is applied.

(Ashurali)



- Gum of Jhal Chikchike administered at wound to stop blood loss.

(Swanirvar)



Insect bite

- Mashed leaf of Biskatari plant is applied at the point of insect bite.

(Swanirvar)



Biskatari

☺ **From Student's Record**

- **Manosi Chatterjee(class III) from Chandanagore group wrote her experience for searching one kind of leaf to treat her friend's wound**

My Friend and 'Dakati Pata' leaf

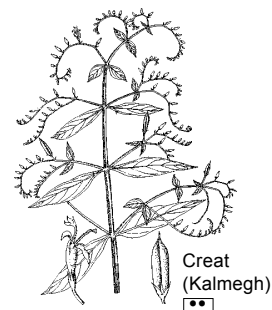
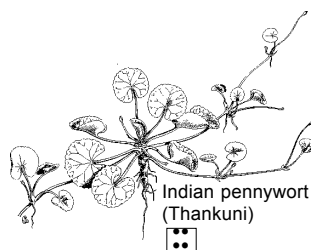
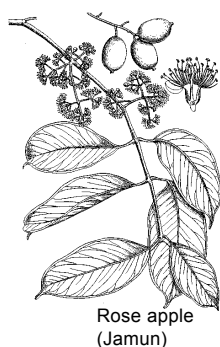
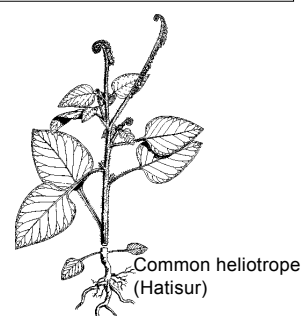
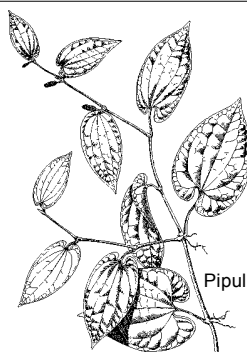
Today (16.04.2001 - Monday) my friend Pussy fell down and got a cut. We were playing lock and key, in bengali 'tala chabi'. Then suddenly Pussy fell down and cut her leg. It was a little cut but we had to go all the way across the field for dakati leaf. But we could not find the 'dakati pata'. Then we went and went till we were at my house. Then my friend told 'can you get some ice?' I told my mother, then my mother brought two ices. We put it on Pussy's leg. And we went to Shimli didi's house and asked if we could get the dakati leaf. Uncle asked for what we need it. Mamoni told what happened then Uncle said alright but actually it was at the side of the house. Mamoni climbed the gate and took the dakati pata. We went and found a place to sit, so we sat there and put it on her leg.



[see 'Sharing Ideas p.26]

□ The list is made by one of the children's group from Swanirvar

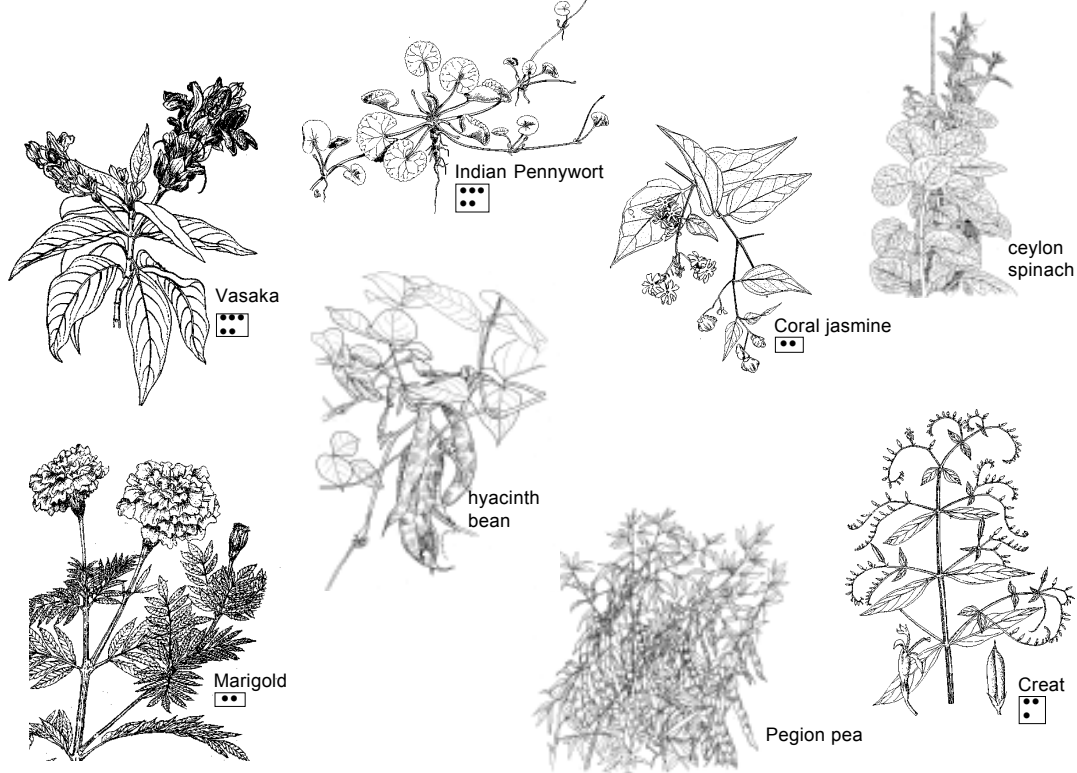
The names of the Medicinal Plants which are used by them and the Ailments						
Names of the Ailments	Name of plant	Part of plant	Quantity	Frequency	Amount	Result
Cold	Vasaka & honey	Leaf	5 leaves	once daily	2 teaspoons	cured after taking for 3 days
Cough	Pipul & Palmyra palm	fruit	10	2/3 times daily	1/2 teaspoon palm sugar, 1 teaspoon pipul	cured after taking for 4-5 days
Eye infection	Hatishur	leaf	2-3 leaves	3/4 times daily	1/2 layers	cured after applying for 5-10 times
Diarrhea	Thankuni	leaf	A handful of leaf	Once in a day	25 gm onion, mustard oil and Thankuni	cured after taking for 1-2 days
Blood Dysentery	Bark of Jamun and milk of goat	skin	—	Once a day	25 gm Jamun skin, 2/3 teaspoon of milk	cured after taking for 1-2 days
Tape worm Infection	Creat	leaf	8-10 leaves	Once a day	1 teaspoon of leaf extract	cured after taking for 2/3 days



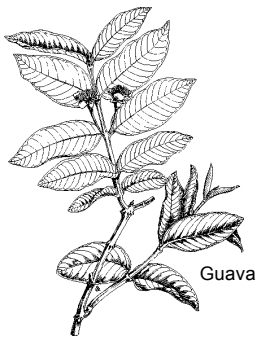
- 10 students from one of Swanirvar groups have prepared summary chart with the help of teachers Buddhadeb Haldar and Reba Sadhukhan.

Chart on common diseases and applied medicinal plants

Names of the Ailments	Name of Plant	Part of Plant	Frequency	Available at	Uses/Experience
Cough & cold	Vasaka	leaf	twice daily	garden	Cured after taken for 3 days
Diarrhea	Indian pennywort	leaf	one daily	field	Eaten with rice
Fever	Coral jasmine	leaf	once daily	homestead	Extract of leaf with salt is taken
Burn	Ceylon spinach	leaf	at the time of burn	homestead	Paste of the leaf is administered
Cut	Marigold	leaf	at the time of cut	homestead	The extract is applied
Wound	Hyacinth bean	leaf	once in a week	garden	Extract of leaf is applied
Jaundice	Pigeonpea	leaf	once	homestead	Extract of leaf is taken
Tape worm infection	Creat	leaf	once daily in empty stomach	garden	Pills are prepared and taken



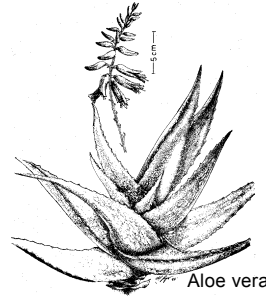
Names of the Ailments	Name of Plant	Part of Plant	Frequency	Available at	Uses
Toothache	Guava	leaf	twice daily	homestead	Boiled and concoction prepared with salt and gurgle
Fall of hair	Ridged gourd	fruit	once in a day	field	The extract of the fruit is applied 30 minutes before taking bath
Headache	Aloe vera	leaf	once a day	homestead	The flesh within the leaf is applied
Constipation	Haritaki, Amlaki, Bahera (Triphola)	fruit	once a day	market	The fruits are soaked in water and the water is taken early in the morning
Insect bite 1) Bee, 2) Wasp, 3) Centepede etc	Biskatari	leaf	At the time of bite	garden	The extract of leaf administered at the location of bite
Skin problem	Mustard	leaf	twice daily	field	Boiled in water and the body parts washed with the resulting concoction
Diarrhoea	Paddy, cumin	grain & seed	twice daily	field	Dry frying of both and then taken



Guava



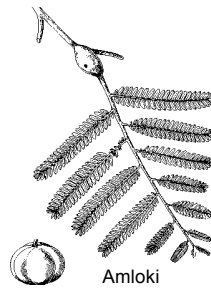
Ridged gourd



Aloe vera



Jeera



Amlaki



Bishkatari

Triphola

4) The Initial Conclusions the Children have Reached after doing this Activity

(Ashurli)

- We became more aware about home remedies with medicinal plants for treating common diseases
- Uncommon plants with medicinal value can be explored
- To find out which plants are used for what kind of diseases

(Swanirvar)

- Many common diseases can be cured with medicinal plants

5) Further Questions and Comments

(Swanirvar)

- Can the medicinal plants be used in treatment of disease like cancer, gall bladder stone, tuberculosis, fistula etc.
- Since the students have found a similarity with a section of Science book in their curriculum, they were more interested in doing the job.

(Kajla)

- Why the people are losing faith on medicinal plant.
- Children want to know more about whether other family members also get benefit from the medicinal plant.
- They have prepared a list on common ailments of their locality, their cures, the name of the plant, their parts and how they are used.
- Children became interested to extend their work into community level. They want to find out common diseases in their locality and find out the local knowledge & practice how people treat these common diseases by using medicinal plants.

+ Sharing Ideas

We got a good amount of feedback on this activity, though we could not share all of them in this booklet. It appears that knowledge & practice of using medicinal plants are still quite common in rural area from where most of our feedback were collected.

We found out a lot of local names of medicinal plants in children & teachers' reports. For example, 'Burigoapan', 'Merali', 'Jhal Chikchike' and 'Dakati pata' etc. These may not be so famous & common as medicinal plants like 'Vasaka (Adhatoda vasica)', 'Kalmegh (Andrographis paniculata)', 'Thankuni (Centella asiatica) or Marigold which appeared several times in different reports. But certainly these local named plants are also valuable for medicinal purpose and should be recorded & investigated properly.

To identify local named plants or unknown named plants, children are encouraged to collect those plant leaves & make plant impression (herbarium). These plant profiles help children to collect further detail & scientific information on the plants. For example, let us take 'Dakati pata' (thief's leaf) as an example. Seeing the plant press made by Manosi, an expert of ENRE told, the real so called 'Dakati pata' is not this but refers usually '**Mexican Daisy**' (*Tridax procumbens*).

But we can't say that, Manosi's information is wrong. The local people might have a different plant according to its availability, by using same name. Teachers' roll will be making activity deeper to find out such fact alongwith children.

Mexican Daisy (*Tridax procumbens*)

A genus of hardy, perennial herbs, native of Tropical America. Some species are grown for ornament.

T. procumbens introduced into India, has run wild. It has tiny yellow flowers.

Leaves can be cooked as vegetable & it is also a good fodder.

Leaf extracts possesses antiseptic, insecticidal and parasiticidal properties.

Therefore, it is used for cuts, bruises and wounds.

(Info source : "The Wealth of India, Raw Materials, vol. X : xp-w" Council of Scientific & Industrial Research, New Delhi, 1976)



+ Medicinal Plants

Step 1 — Preparatory Work — Activity (B)

"Plants we have Used as Medicine" (plant oriented)

Let's have a walk with children and hunt plants that children had used as medicine. pick up those plants as a specimen and let's make medicinal plant profiles.

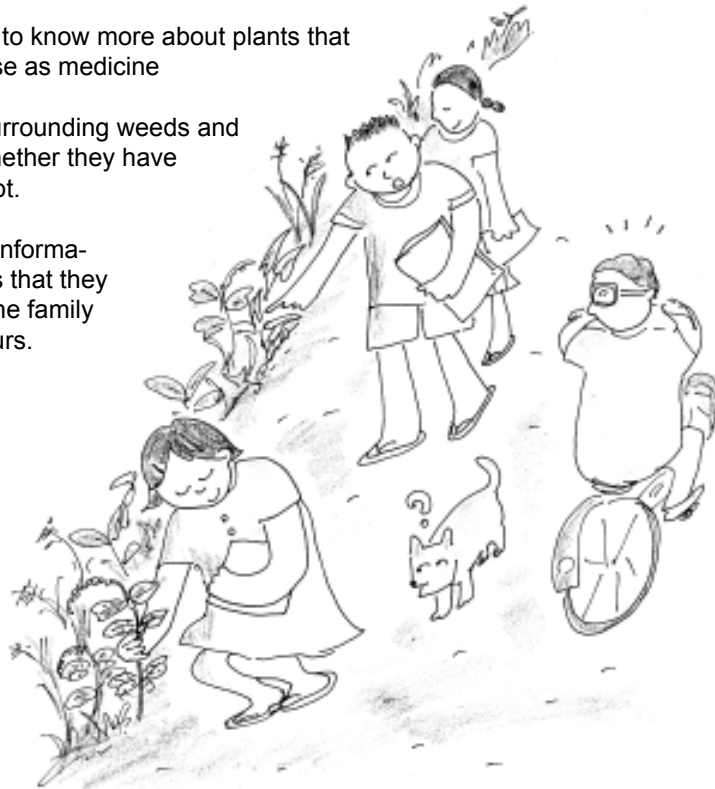
[📖 both for rural & urban schools 😊 class 5 to 8 🖱️ observation, collecting information 📖 plant profile, medicinal plants (Science), common diseases (Health) 🕒 3-4 periods]

+ Objectives

By the end of each of this activity, children will realize that many plants around them are useful as medicine - and that they can easily treat many common diseases as well as cuts and wounds with them.

+ Success Indication for Proceeding to the Next Step

- ➔ Children are interested to know more about plants that they can themselves use as medicine
- ➔ They start observing surrounding weeds and plants to investigate whether they have any medicinal use or not.
- ➔ Children start bringing information on medicinal plants that they have got by talking to the family members and neighbours.



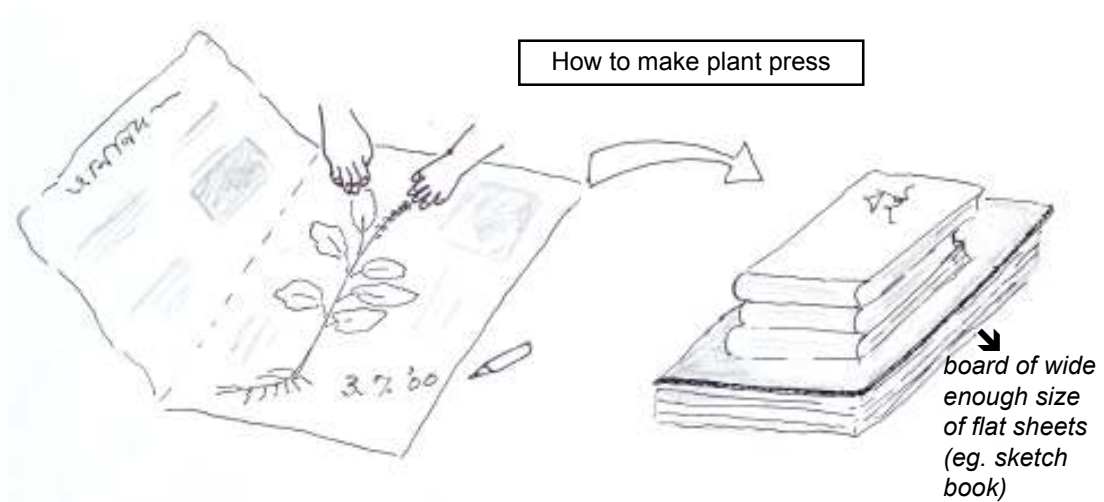
Activity

+ Creating Interest and Motivation [Out-door activity]

- **Plant-hunting**

Take a short walk with the children in the school garden or in the surrounding area. Ask the children to see if they can identify any plants or weeds that they have used at least once as medicine. Pluck the leaves of those plants (or the entire plant if it is a tiny one). These can be pressed for making the 'plant/leaf press' in the following activity.

The children need to include some details like the location and the growing conditions of the plant (e.g. sunny, shady place, wet, dry etc), the date of collection and the collector's name on the sheet along with the pressed leaf/plant.



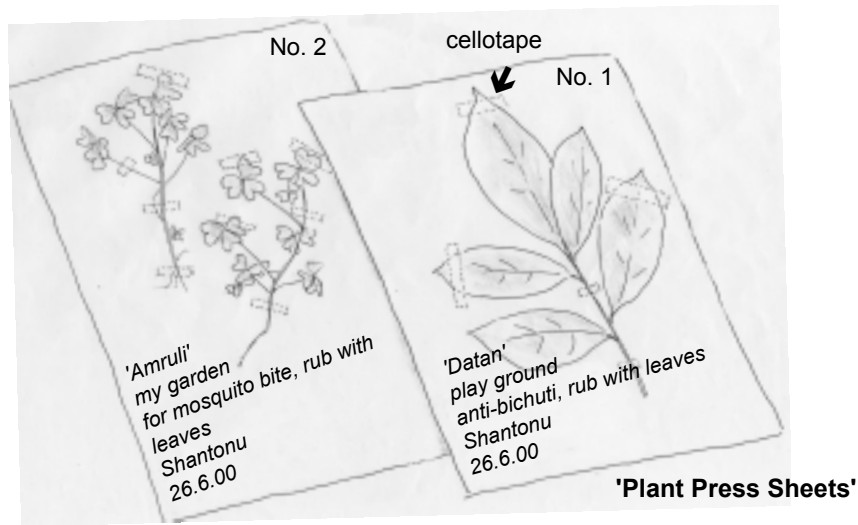
Place only 1-2 plants between old news paper which absorb plants' moisture. Write down the collecting date for your memory.

Press newspaper sheets by a pile of books or stone. It can take 2-3 weeks for plant samples to dry out. If necessary time to time the newspaper sheets should be changed to dry one.

+ Information Gathering [based on children's experience]

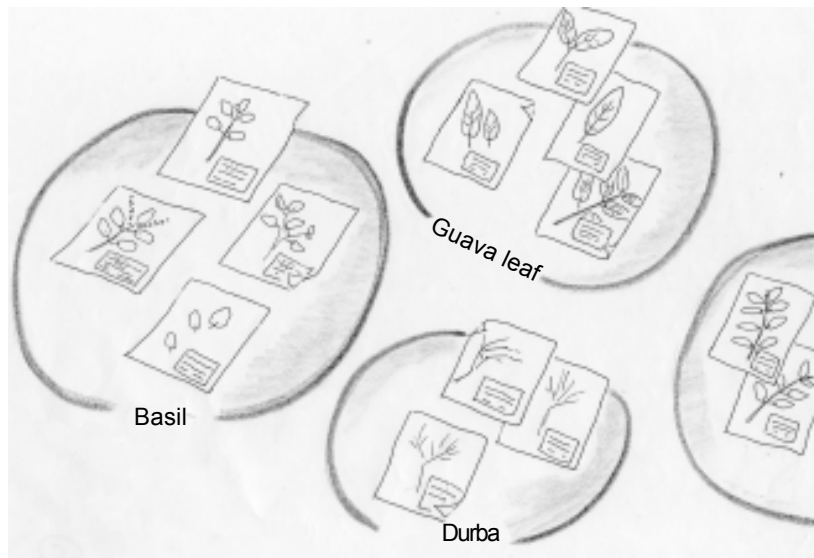
After a few days the children are each to make a plant press sheet.
Ask the children to add some details like which part of the plant is used for medication, the method of application, doses, when taken/applied? how long the treatment was continued for? how effective the treatment was? etc.

At the end of the activity, collect all the children's plant press sheets and then make the children group the sheets according to each plant – i.e. group together all the sheets that have the same plant/leaf pressed on them.



+ Summarizing the Information [Preparing chart]

Put together all the plant press sheet made by each child in the centre of the classroom. Observe them all together. The children will realize that some plants are common to different sheets. Put the plants that are the same together in a group.






Next, divide the children up into groups. Each group should take the responsibility for making a descriptive summary of one or two different plants using the sheets.



Now put together all the summaries made by each group and prepare a summary sheet of the information as a whole class.

(Example chart I – for class V-VI)

COMMON PLANTS THAT WE HAVE USED AT LEAST ONCE AS A MEDICINE
(Source of Information : 18 children in class V/ school...../village.....)
Date of survey -/-/00



<p>1. Kalmegh (leaf)</p>  <p>stomach upset, tape worm</p>	<p>2. Guava (leaf, fruit)</p>  <p>tooth aches, cough & cold</p>
<p>3. Aloe vera</p> 	

★ In this chart we have shown several types of plant profiles.

1. **Plant press** (as described in this activity)
2. **Plant/leaf impression** by wax crayons or dark pencils (4B/2B) : place the plant / leaf face down. Then place a sheet of paper over it & using wax crayons or pencils, slowly rub over the area where the plant leaf is. Make sure the direction of your stroke is always the same.
3. **Drawing** whole plant : for some plants like Aloe which is difficult to make plant press or plant impression.

Step 1 – Activity (B)

(Example chart II – for class VII-VIII)

COMMON PLANTS THAT WE HAVE USED AT LEAST ONCE AS A MEDICINE						
(Source of Information : 18 children in class V/ school...../village.....)						
Date of survey -/-/00						
Plant Name	Part used (no. of children)	For what and how used	Dosage	Treatment impact		
				o	x	?
1. Basil 	leaf whole plant	cough sore throat	3 times/day	3	2	No. of children
2. Guava 	leaf young leaf fruit	tooth ache cough		4 3	1 2	

(o = recovered, x = no effect, ? = don't know)

+ Initial Conclusions and Further Questions

Look at the summary chart that the children have prepared.
What do we understand from it?

Have a discussion with the children about what they have understood and discovered.
If necessary ask the children to focus especially on the relationship between a medicinal plant and the home remedy for a common disease.

Each child can write down his/her conclusion on a piece of paper
OR

The children can be divided into groups and each group can write their conclusions down on pieces of paper. (Write one point on each piece of paper)

To reach the class conclusion, group the pieces of paper according to similar point and aspect.

After the children have completed the task of conclusion-making, ask them what more they would like to know about this issue and what aspect they would like to investigate further.

Discuss and list their "further questions" and investigation ideas. These will serve as a starting point for the next step, which involves "child-centered activity"

Feedback

Step 1 — Activity (B)



+ Though this activity, children walk in their surrounding and become familiar with the plants & weeds which have medicinal values.

Children must be surprised to find out many of plants/weeds have something useful for medicinal purposes, though they might have ignored those small plants before.

Same as Feedback of Activity - A, we put illustrations & frequency dot for each medicinal plants appeared in reports.

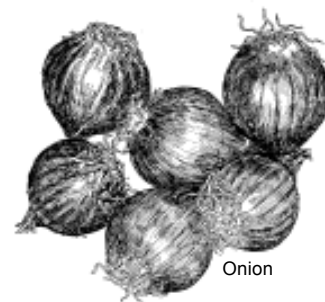
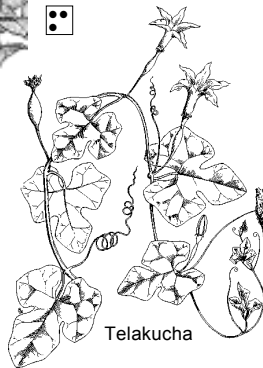
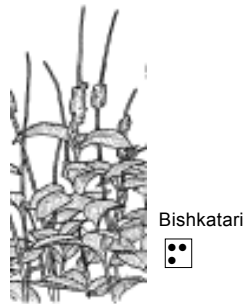
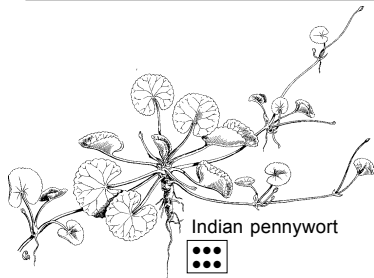
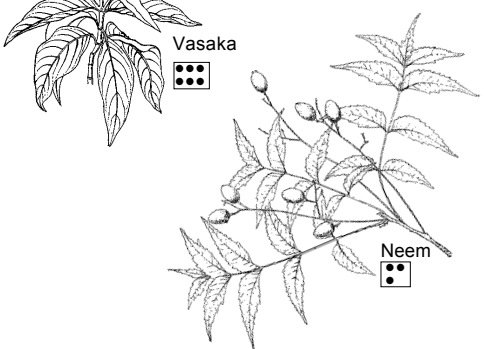
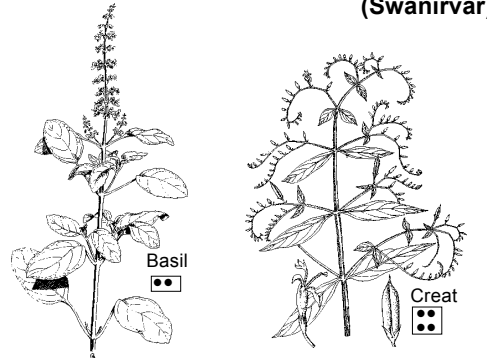
+ Summary of Feedback from Teachers

General Information	Name of the groups	Swanirvar	Swanirvar	Kajla Jana Kalyan Samity
1) Village		Fatullapur	Andharmanik	Hinchi
2) Students of which class has taken part		class IV - X (20 students)	class IV - VIII (10 students)	- (4 students)
3)Duration of the work		2 periods 1 period = 1½ hr.	3 periods	Not mentioned
4)On which date the work has been done		Not mentioned	Not mentioned	Not mentioned
5)Expenses Incurred		Not mentioned	Not mentioned	Not mentioned

+ 1) The names of Medicinal Plants which Children know or they have used at least once.

□ The list of medicinal plants which have multi use for treatment prepared by 10 students of Andharmanik. (Swanirvar)

Name of the Plant	Name of the Ailments
Basil	Ring worm infection, cough, cold,
Creat	Tapeworm infection, liver problems,
Vasaka	Headache, burn
Physic nut	Bee-string, dysentery
'Viskanthari'	Poisonous insect bite, wound
'Manasha'	Toothache, gout
Neem	Tape worm infection, dermatitis
Indian pennywort	Dysentery, heart problem
Helencha	Headache relief, asthma
Telakucha	Dysentery, headache relief
Ginger	Cough, dysentery
Onion	Cough & cold, toothache, fall of hair



- 11 students of Hinchu village have collected leaves of medicinal plants which they have used atleast once. They put dried leaves on the chart along with collected information on the plant.

(Kajla)

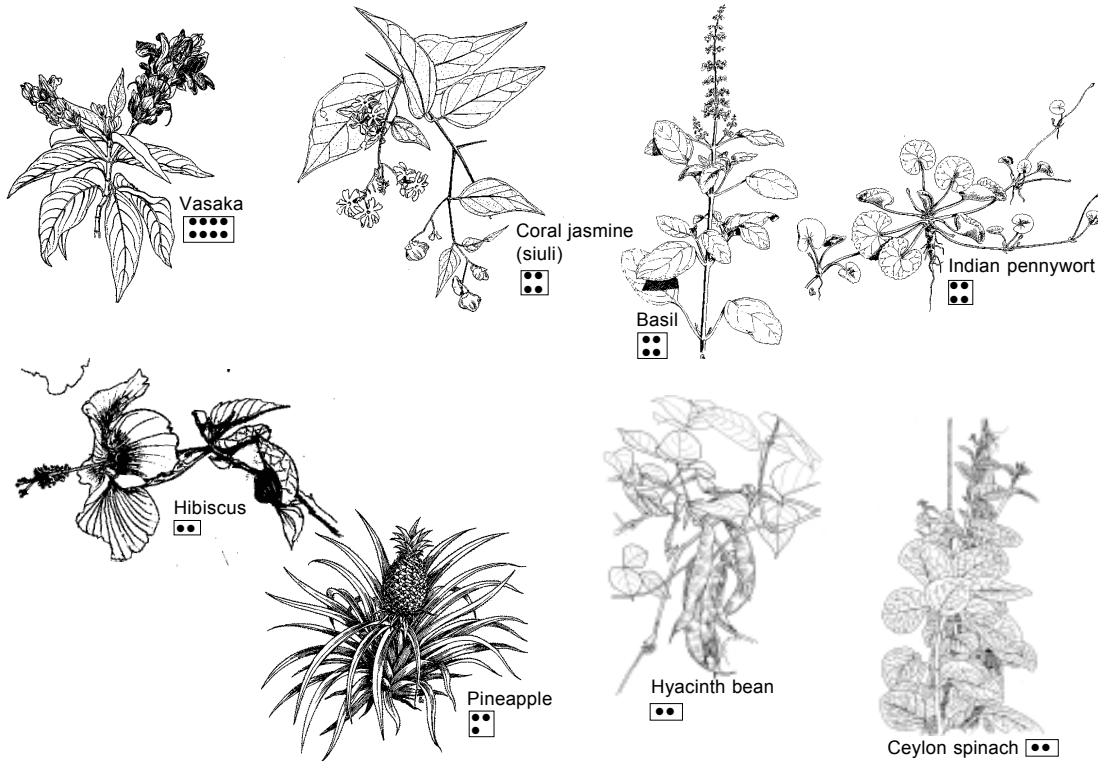


Crear <input type="checkbox"/>	Ginger leaf <input type="checkbox"/>	Pineapple leaf <input type="checkbox"/>	Peepal <input type="checkbox"/>
Fartapata	Karanja	Guava leaf <input type="checkbox"/>	
Gulancha	Kaet bel	Rabanlata	Pokashunga
Neem leaf <input type="checkbox"/>	Pumpkin leaf	Hibiscus	
Leaves of Golachi flower	Shiuli leaf <input type="checkbox"/>	Thankuni <input type="checkbox"/>	Basak <input type="checkbox"/>
Aloevera <input type="checkbox"/>	Arjuna	Marigold <input type="checkbox"/>	Bryophyllum
Basil <input type="checkbox"/>			

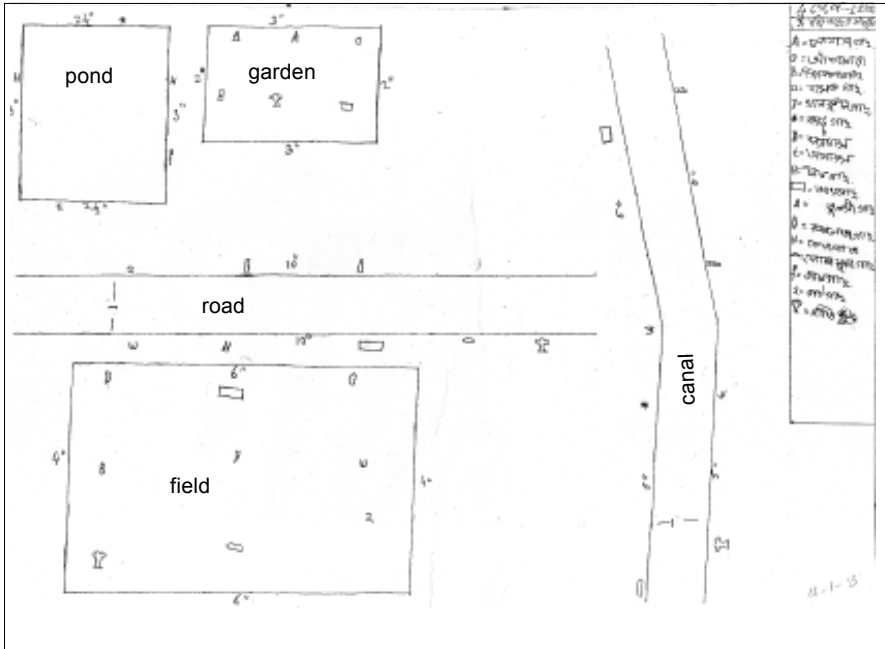
+ 2) The Places where these Medicinal Plants can be Found

□ (Swanirvar) : Name of the student — Parveen, Name of the teacher — Tarun Mondol

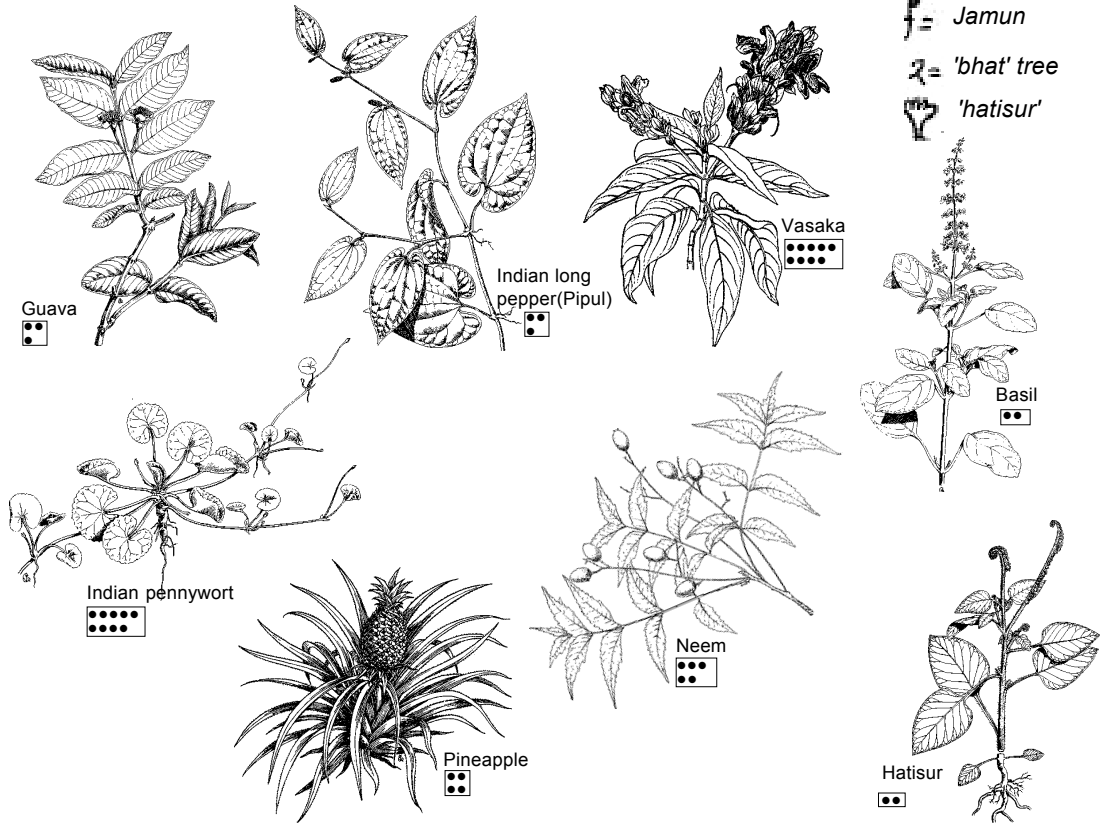
Where the Plants Grow					
Name of the Plant	Roadside	Pond bank	Farm house	Garden	Other places
Vasaka				✓	
Shiuli				✓	
Basil			✓		
Thankuni		✓			
Hibiscus			✓		
(Plantain)	✓	✓	✓		
(Mango tree)				✓	
(Jackfruit tree)				✓	✓
(Acacia)	✓	✓			
Pineapple				✓	
Hyacinth bean			✓		
Ceylon spinach			✓		
(Kacha)	✓				
(Teak)				✓	✓



□ (Kajla) : Four students of Swanirvar have prepared this map, of the places from where these medicinal plants are collected.



- A = guava leaf
- O = 'atmora'
- B = peepal
- = vasaka
- ∩ = thankuni
- * = karanj
- ≡ = ben grass
- ε = pineapple
- H = neem
- ▭ = sugarcane
- Δ = basil
- B = 'rabanlota'
- W = 'keya pata'
- ☞ = 'poka sudra'
- f = Jamun
- z = 'bhat' tree
- ∩ = 'hatisur'



+ 3) Plant Profile for Medicinal Plants

□ Children group of Bikramshila Education Resource Centre, Bardhaman made Medicinal Plant Profile using herbarium sheet provided by SAN project of DRCSC. 1 ~ 3 (Vasaka, Chikchike, Periwinkle). 1 cm² squares on the sheet help to indicate the plant's size.



□ Other Medicinal Plants' Profile made by children (class VI - VIII, Kajla group)

They made profiles of Shiuli, Thankuni, Durva, Guava leaf, Kalmegh, Pumpkin leaf, Basil, and Neem. They wrote down the records about collecting date, place and medicinal use of the plant. Some examples of the sheets are given below.

Seikh Sattar
Ali, class VI

I collected this grass from shady place of my garden on 25.09.2000. The name of the grass : Durva grass.
medicinal use : squeeze juice of this grass and put sugar, adding water to make juice. This helps to stop bleeding from nose & good for diarrhoea, too.

Seikh Ansur
Ali, class VI

I collected this pumpkin leaf from my garden on 11.07.2000.
medicinal use : Make paste of this leaf and apply it on forehead to reduce headache.

Najneena Khatun,
class XI

I collected this leaf from my home garden on 26.9.2000 at 4 pm. name : Neem.
medicinal uses :

1. Blowing wind through this tree is good for health.
2. In spring season (mid Feb-mid apr) taking fried young leaves with brinjal helps to clean the blood.
3. Boil the bark of neem tree in half a litre of water. Boil until the solution becomes $\frac{1}{4}$, then cold this & keep for curing cough in future. Take 2 teaspoon of this solution for a few days.
4. Pound the bark into the powder. Take this with a pinch of salt for tape worm in stomach.
5. Boil neem leaves in water. Filter this water & take bath with it. Apply paste of neem leaves & turmeric for skin allergy.
6. If neem leaf is put on the infected skin from chicken pox, curing process is faster.
7. Boil together neem leaf & ghee, apply it on boil. This helps to bring out the pus from the boil.

□ Fun Puzzles of Medicinal Plants (Kajla group)



Children collected medicinal plant leaves & dried them up. Then the leaves were pasted on white thick paper & cut a few pieces. Wrote down necessary information behind each leaf's paper.

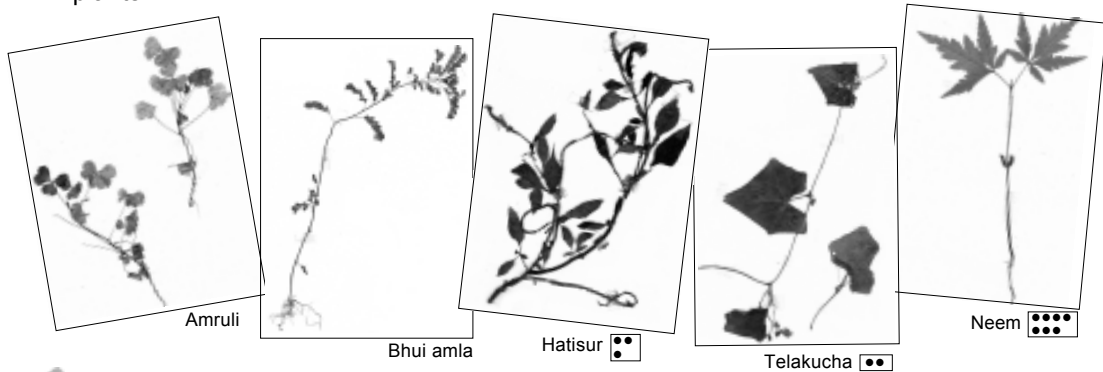
By playing these puzzles, children can recognize medicinal plant leaves & learn about them !

□ Out of 'Weeds' Profile'

One of ENRE staff tried out 'plant profile' activity with her children as home-based activity. Since they had less experience & knowledge about medicinal plants, at first they collected various weeds at random from their garden & road side nearby.

After making collected plants' press, they searched books for finding out plants' names. They also asked friends & neighbours by showing plants' press & collected information about those plants.

Surprisingly they found out that 15 plants had some medicinal values out of collected 20 plants.



+ Sharing Ideas

If children have less experience of using medicinal plants, especially in urban area, teachers can take option like Chandannagore group.

Start walking with children & collect just weeds, grasses from surroundings, then encourage children to gather information from books, family members and neighbours on those collected plants.

This process provides children a good opportunity of enjoying the process of discovering & communicating outside the class room. This is quite valuable to learn about medicinal plants in their locality.

Step - 2 Review & Make Sure



for platform towards next step

+ Lesson Plans

+ Feedbacks

Review & Make Sure

+ Review & Discussion

- After conducting the preparatory work, you now have an idea of the children's experiences and what they already know about the topic.

Could the children reach an initial conclusion after the process of collecting and summarizing information? Please check again with the points referred below.

Activity 'A'

- Did the children come to know of the diseases and injuries common to them?
- Did the children's experiences show that injuries (burns, cuts, insect bites) are a more common occurrence among them than actual illnesses?
- Were the children able to describe a self-remedy for each of the diseases?
- Did the children realise that many plants (weeds, herbs, tree leaves etc) are useful for treatment of diseases?
- Did the children realise that even spices are effective for curing some common diseases?



Activity 'B'

- Can the children recognize useful plants around them that can be used as medicine?
- Did the children identify the different parts of a plant that can be used as medicine?
- Did the children realise that the same plant can be used in different ways as medicine?
- Did they realise that their grandmothers might know much more about herbal remedies than their mothers? (connected to traditional knowledge)
- Did the children realise that herbal remedies are more effective in the initial stages of a disease and for diseases that are not very serious? (see following conversation)

- After review let's have discussion with children. This process helps for children to clear up their doubt and to identify further questions to be investigated.

Something like following conversation may be occurred in your classroom, too.

If, you were the teacher, what would you do ?

Sir, my grandmother treated with guava leaf when I had toothache, but it didn't work at all. I think herbal remedy is useless.

Scientific Approach
We need information & data to reach a conclusion or test a hypothesis.

Did you ? But wait. You can't say herbal remedy is useless based only on your experience. Let's hear other friends' experience.

I had a big hole in my tooth & had pain. That time my mother put clove's powder in it. I felt more easy after it.

I had gum inflammation, I used warm water which boiled with guava leaves. I did gurgle many times with it. It worked very well.

Guiding Questions

Well, we notice that several ways to treat toothache. How did you use guava leaf actually ?

I crushed guava leaf in gurgled with it

I think, if he used boiled water of guava leaf, it might be more effective



Now how do you think ?

Encourage children to think about the issue

If we use medicinal plants by proper way, then it is effective.



I want to know about proper way of using.

Different materials can be used for treating some ailments.



If tooth is too badly affected, herbal remedy can't relief the pain. We need to go to dentist !



Yes, before we reach our conclusion we need to collect many experiences on different disease & different home remedies. If necessary we need to check books, ask specialist. Let's start to find out whether a particular herbal remedy is useless or useful.

Continue conducting activity with childrens' motivation...

(see also teacher's note p.45)

+ Put it Together & Gap Filling Work

Before conducting investigation / project work, teachers are recommended to make sure whether children can touch all necessary points and get enough understanding about the topic based on their experiences.


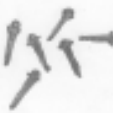

The following formats can be used for children to cover the points and summarize their preparatory work. If you feel the need of more information or found some gap among childrens' work result, encourage children collect necessary information from books, local people who know medicinal plants well about or experts etc.

To compile these summary data will be a good practice for building up base platform towards next step activity.

Also converting & re-arranging this data (from 'Disease oriented' to 'plant-oriented' OR this opposite) can be good practice for increasing children's awareness regarding the topic.

Specially if you want to conduct 'plant oriented investigation / project work' from 'disease oriented preparatory work', this 're-arranging the data' work is necessary.

- **Example of Summary chart for disease oriented activity** [preparatory work – A].
These data will be used as basic platform for next step activity
[investigation / project work – A].

Toothache & Gum Infection				
Self treatment				
With what / what part	How to use	Dose	Treatment impact	Available place
Guava (leaf) 	Boil water with leaves (3-4 leaves / 200 c.c. water). Gurgle with it.	4-5 times a day	good	school garden home garden (-----)
Clove (whole) 	Boil with water (5-6 cloves / 200 c.c. water) & gurgle with it	4-5 times a day	good	kitchen
Ginger 	Paste of dry ginger applied to gums along with a little salt	2-3 times a day	very good	kitchen

Disease/injury has high rate of self cure among children (atleast 7-8 types)

- cuts & wounds
- insect bite
- burn
- cough & cold
- worm inside stomach
- ear pain
- skin problem

each childrens' name

depends on childrens' (& their brother's & sister's) experience (very good _ good _ helpful)

□ **Example of summary chart for plant oriented activity** [preparatory work B].

These data will be used as basic platform for next step activity
[investigation / project work-B]

Plant name	Where we can find	Using part	For what	How to Use	Effective
Guava		leaf	tooth ache		
Basil		leaf whole plant			
Neem		leaf			
Chinese Hibiscus					
Mango		flower	toothache		
Pudina			teeth problem nose infection		
Bitter gourd		fruit	wounds		
Telakucha					
Amruli					
Sushni					
Kanta note					
Kalmegh					
Aloe					

Teacher's Note

In Search of Traditional Knowledge

Herbal medicine, which means healing a disease by using leaf, flower, fruit, bark, root etc from naturally growing and cultivated plants, is seen with suspicion by many of us. It is often considered to be less effective and associated with blind faith & superstition.

People educated in 'modern' institutions (that pretend to be scientific, but discourage questioning and promote commercialisation) have a basic mistrust about any indigenous / traditional knowledge or technology. 'Modernised' people do not mind using garlic, turmeric, basil, neem, but feel that it is safe to take or use them only after they have been processed in a factory, packaged by a multinational corporation, and prescribed by a shopkeeper or doctor, wearing a white coat.

We believe that many of the indigenous technology & knowledge are worth investigating. Not everything 'old' has to be trusted blindly; but those traditional medicine systems & home remedies which have prevented sickness & treated ailments of millions of people over hundreds of years, merit investigation. As teachers / facilitators, you can encourage and enable children to search for information, do comparative analysis and conduct their own experiments; this is my request.



To investigate the use of medicinal herbs for preventing & curing various disease ailments, the children will have to collect information from diverse sources. Interviewing their own family members, relatives, friends may be first step. Next, some of the practitioners of traditional medicine may be interviewed; they may also help us to identify useful herbs available nearby. Many booklets are also available on the medicinal properties of common plants.

We expect you to encourage children in their work of listening - observing - reading etc. They should listen to different opinions / facts but also learn that not all information they get is reliable. The information gathered will have to be arranged in table/charts etc and by analysing/comparing them we can discover commonalities / symmetries. Some plants would be considered effective by large number of users; and there may be similarities in the parts used, method of preparation, dosage & method of application. In other cases, there may be inadequate or mutually contradictory data. In such cases second round of interview with subject specialist, cross checking with reliable books/websites will be needed. In some cases, even field trial over long period of time under expert supervision may be required.

No one has monopoly over science & scientific method. Ordinary working people in towns & villages, indigenous people living close to hills & forests routinely use many plant products as food, fodder or medicine. The experiential learning by such people are at the root of our culture & technology. Much of this knowledge today is eroding rapidly. Partly because natural biodiversity is disappearing fast under the pressure or superprofit centred growth models and partly because of our lethargy in listening to common people and systematically documenting their observations & experiences.

The main work of science & technology is knowing and understanding the world around us. Collecting information about plants, animals, aquatic life etc around us and how they are utilised & conserved; and then collating / arranging them according to time & place, sequential flowchart framework or comparative / preferential framework etc is work of science. This work is tedious and there is little chance of prestigious awards or sudden millions; however there is joy of creative work, excitement of solving problems, of improving livelihoods of many people, opportunity of acquiring new skills and recognising the skills in others around us. You have chosen to promote scientific attitude & temper among your students/learners and our aim is to help you in doing this work well, through out ENRE network and various publications, trainings etc. Let's work together to assist the young citizens of our villages & towns to enjoy nature & recognise natural resources and learn the art & science of conservation & sustainable utilisation.

[note by Ardhendu S. Chatterjee,
reprinted from Basbhumii issue no. 8, October 2000]

Step - 3
Investigation / Project Work



for creating child oriented activity

+ Lesson Plans

+ Feedbacks



Medicinal Plants

Step 3 — Investigation / Project Work — Activity (A)

Producing Herbal 'First Aid Kit' for Children

Let's make own Herbal products by the Home remedy recepies. Children prepare the 'First Aid Kit of Natural Remedy' for their use.

[🏠 both for rural & urban schools 😊 class 6 to 8 ✋ practical work, group work, indexing
🕒 class periods required = 4 ~ 5 periods (1.5 hours/period)]

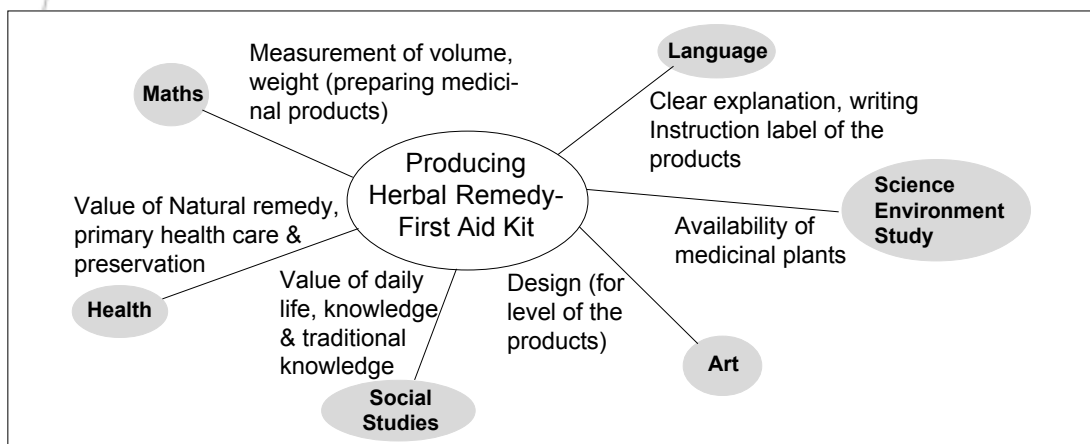


Objectives

- To apply traditional skills and knowledge to produce herbal medicine.
- To set up facility of natural herbal First Aid.



Subjects you can Integrate in this Activity



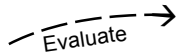
+ Activity Process

(Review)

Teacher conducts the review of the preparatory work. Makes sure that children have collected all necessary information and identified self-curable diseases and their remedies.



(Discussion)



Teacher asks questions to children for discussion. eg. 'Which medicinal plants we can use to treat our common ailments/ diseases?'
'How we can use the collected information on natural remedy in our daily life?'



(List up Solutions)

Children list up possible ideas.



(Making decisions)

Both children & teacher make decision which idea/activity to be tried out. (Teacher should get children's motivation and agreement for trying out the chosen activity. If necessary, teacher needs to explain children what is 'First Aid Kit'.



(Enter the Actual Work)

Planning

Both children & teacher make a plan to prepare our First Aid kit. Try to choose 2-3 items of herbal products for each 7-8 types of ailments. Make time schedule for necessary work.



Group Work

Children are divided into groups (4-5 children a group) and take responsibility to prepare 2-3 products including plants in pot for a chosen ailments, say

cuts & wounds (group A)	toothache (group B)	----- (group C)
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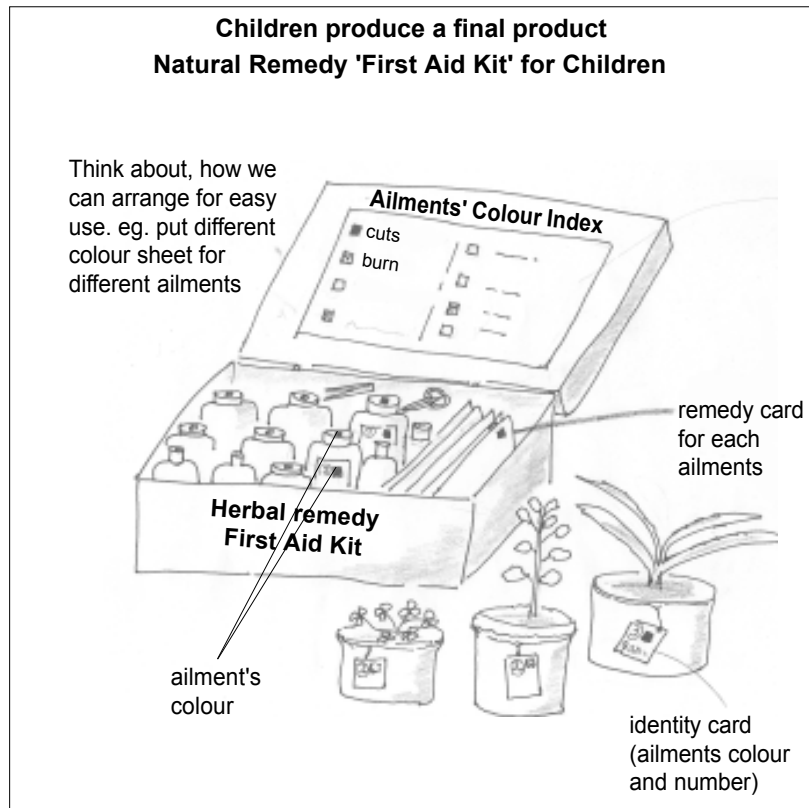
- prepare materials and ingredients
- producing medicine by mixing them in right proportion etc.
- keeping record of the process of making a particular product
- putting label & writing 'How to use' the products (effective for which ailments, ingredients, how to use, dosage, date of preparation and shelf life etc)
- writing notes on other remedies notes of the chosen disease

Actual works are done by childrens' initiative, teacher's role is to check the children's writing (content is correct/how about spelling mistake etc) [ref. ideas p.49]





Producing the Final Product



Field Test of Product

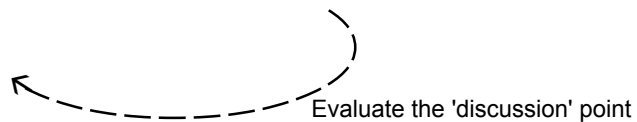
Children try out these herbal medicines in class room/school. Keep adding new products & information. If medicine became old, replace new products for it.

Teachers encourage children to prepare same kits for their home too.



Evaluation

After some time, teacher guides children to evaluate their work & usefulness of products. Teacher reviews with children about the overall goal of the whole Activity (Preparatory & Investigative work).



[Reference Ideas]

Most remedy of Medicinal Plants are made using fresh plant (leaves, flowers etc). But there are some ways of processing medicine also, so that we can keep them for long time & we can use them immediately when we need.

Here are some examples —

[source : 'Sustha Thakun Sahajei', DRCS]

a) for Toothache/Gum infection [tooth powder]

What you Need ?

- Powder of dry neem leaves 500gm
- Powder of pepper 50gm
- Powder of black salt / rock salt* 50gm (if not available, ordinary non refined salt can be used)



How to Make ?

Mix well all three powders. Keep in dry glass bottle. Ready to use (Make each powder very smooth by sieving powers 3-4 times)



How to Use ?

Wash & massage your gum & teeth with this powder by your finger. It helps to keep your teeth & gum healthy & release the bad breath.

b) for Skin Problem [body oil]

What you Need ?

- fresh neem leaves 50gm (need to wash & dry well)
- Mustard oil 250gm
- Fresh turmeric rhizome 50gm (7-8 pieces)

How to Make ?

- Pound both neem leaves & turmeric and mix with mustard oil which is kept in 'karai'
- Boil it very slowly - no foam on the surface of oil, neem leaves become crispy (check with your finger), the colour of oil becomes yellowish green - herbal aid is ready
- Remove from the fire, cool down the oil. Strain with cloth & keep it in a glass bottle
- If available a small piece of 'karpur' can be mixed for extra preservation.



How to Use ?

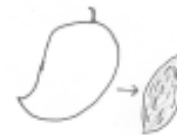
Apply this oil skin & message well before taking bath. It helps to keep your skin smooth & healthy. This oil can be used as 'baby oil' for children.



c) for Burn

What you Need ?

- Seeds of Mango



How to Make ?

Wash mango seeds well. Break the seeds & take out the core parts of the seeds. Dry them well & make them powder. Keep this powder in a glass bottle.



How to Use ?

Mix with this powder with a little water & make paste. Apply this paste gently on your burnt skin. Before applying any medicine to burns, need to wash & cool down the burnt part with a lot of cool water.

- * Teacher needs to explain what is the difference of black salt, rock salt and ordinary white salt. Why black salt / rock salt has more medicinal value than white salt ?

Black salt contains in great amount a chemical called 'sodium bi-carbonate' than white salt. This sodium absorbs water (therefore we use black salt in pickles). When we use black salt in tooth powder more saliva comes out, and this saliva can kill germs in our mouth. That's why black salt is recommended.

■ Other Interesting Ideas for Possible Project

→ Let's make 'herbal soap' (see teacher's note on next page, too)

- You ask children to study the content of soaps available from market like 'Medimix', 'Margo soap' etc.
- Visit a soap making unit in your area with children. Children will observe the process of soap making.
- Let children make herbal soap using locally available materials.

→ Making a booklet on 'Natural Remedy for First Aid'

Children can make a nicely designed guide book based on what they have learnt on herbal medicine for introducing to other children and their mothers / family members. This activity involves a lot of skills, such as creative writing, summarizing information, art, editing work, group work and even marketing skill for selling booklet!

■ Further Activity

- Workshops can be organized for exchange of experience among different groups of children working on this activity. You can invite an Ayurvedic doctor for children workshop to respond to further questions from the children. (see Teachers' Note p.64)
- Children's field visit for the herbal production unit of NGOs who conducts awareness & promotion activity related with medicinal plants. Children are asked to make field visit report, too.

Teacher's Note**Herbal Soap Making as Project Activity**

'Soap making' can be developed as an interesting project for children. You can relate it with the topic of Herbal Products as well as with waste management concepts.

In usual eco-friendly practice, hand-made soap is prepared from waste / old cooking oil. It is said if we drain waste cooking oil 1 c.c from our kitchen into sewage, our ecosystem needs 198 litre of fresh water to bring back the water quality to the level in which fish can survive.

Also soap (made with oil and caustic soda), is more eco-friendly since it is biodegradable compared to factory made detergent which badly affects our environment especially water bodies. Detergents (washing powder for clothes & dishes, shampoo, even tooth paste) contain chemical components as surface active agents like LAS or ABS (Alkyl Benzene Sulfonate) and Phosphates to increase the cleaning power. These chemicals are harmful for our health in long term and they don't biodegrade easily in natural cycle but remain in soil & water as pollutants.

Generally there are two types of soap making process. One is boiling process and the other is cold process. The boiling process is quick and cold process takes more time.

For working with children 'cold process' can be more recommendable because it might be safer and easier for children as well as saving fuel woods.

The following is the method you can try out with children.

Ingredients

Left over cooking oil from kitchen (3.3 litre), Caustic soda (500 g) – available from hardware shop, Water (1000 cc), Herbs (basil, neem leaf juice, orange peels etc)

Method

1. Put Caustic soda and water into a bucket and stir slowly (need careful handling ! the temperature becomes high nearly 100° c)
2. After the 1) solution becomes transparent, add oil little by little and keep stir ring continuously.
3. Keep stirring for 30 minutes till 2) becomes thick.
4. Add herbal materials and pour into containers/ trays
5. Cover with the cloth and leave 4) for one month
6. Cut 5) into pieces and use for mainly washing dishes/ clothes



If you want to make bath/ facial soap, it is better to use new oil.

Sources : "Kodawattoru Nou Kono Hito" (Japanese) "Water fit to Use"

Further information regarding 'detergent' :

You can refer 'Toxic Link Factsheet' no. 16 / June 2002, website at www.toxiclink.org

Feedback

Step 3 — Activity (A)



+ This activity involves a lot of practical work. Children need to keep record as how to make the product & its treatment capacity.

Through this activity children must get confidence that they can produce useful products for daily use and be proud of their products.

+ Feedback Summary


General Information / Name of the groups	Swanirvar	Kajla	Kajla (Eco group - Herbal doctor)
1) Village	Fatullapur	Hinchi	Sarada (Paulia Modern High School)
2) Students of which class has taken part	class IV - IX (20 students)	class VI - X (7 students)	class V - VIII (4 students)
3) Duration of the work	2 periods 1 period = 1.5 hr	3 periods	Participated in ENRE Eco-work exhibition, Jan 2003
4) What products were made	Body oil Tooth powder	Tooth powder Bhaskar salt	Digestive & Appetizer (Bhaskar salt) Hair oil Cough syrup



Examples of Herbal Products made by Children

☐ Tooth powder (Swanirvar)

Ingredients

1. Dried neem  leaf 250 gm, Dust of pepper 25 gms, Rock salt 25 gm.

Preparation Process

These components were used by children to make tooth powder. After using it they gave a report within 1 week. Excerpts of information on tooth powder received from them.

Benefits




1. Gum problems cured 2. Odour of breath kept away 3. Bleeding of the gum stopped

Problems

1. The powder is bitter & hot 2. It is bitter & salty also

☐ Tooth powder (Kajla)

Ingredients


1. Dried ginger  2. Black myrobalan, 3. Clove, 4. Cinnamon, 5. Cardamom, 6. Flakes of Betel Nut, 7. Catechu, 8. Pepper, 9. Babla leaf, 10. Neem leaf  11. Bark of Arjun, 12. Guava leaf 

Preparation Process

The leaves are dried and all the components are blended in the mortar and the resulting mass is filtered through, and kept in covered container. Double this amount of chalk is mixed with it. In this way tooth powder is made.

☐ Body oil (Swanirvar)

Ingredients

1. Neem leaf  250 gm (to be dried), mustard oil 250 gm, turmeric 50gm, camphor 1 piece

Preparation Process

All these were mixed to make body oil.

The report which the students gave after using the body oil.

Benefits



1. The skin has become smooth, 2. Skin problems have been cured

Problems

1. There is a smell of camphor in the body oil, 2. It has a sticky feeling

☐ Bhaskar salt (Kajla)

Ingredients

1. Three types of myrobalans, 2. Bark of Arjun  3. Ptychotis ('Ajwain'), 4. Aniseed, 5. Sea salt, 6. Dried ginger 

Preparation Process

All these components are dried properly and when they become crunchy they are well blended in mortar, passed through filter, the sea salt is made into dust, mixed and kept in a close container.

□ **Digestive & Appetizer : Bhaskar salt ('Herbal Doctor' - Kajla)**

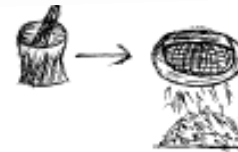
Ingredients

1. Black myrobalan 100 gms, 2. Beleric myrobalan 100gms, Bark of Arjun 100 gms, Dried ginger 50 gms, Joan 50gms, Mouri 50 gms, Pepper 25 gms, Kabab sugar 25 gms, Rock salt 400 gms (as required)



Preparation Process

All the components are dried and made into dust by mortar and then filtered through and then mixed together.



How to use

1 teaspoon is taken followed by a glass of water after 1/2 an hour of taking food.



Benefits

It permanently cures long time problem of acidity, indigestion and burning sensation in food canal.



Sheikh Riyajul Islam, Sheikh Raja Uddin, Sheikh Shamiul Islam, Amolesh Mitra (Class 5-7 students from 'Herbal Doctor' group, Kajla at ENRE Eco-work Exhibition, January 2003, Kolkata)

+ Sharing Ideas

No group could reach the level of producing own 'First Aid Kit' which required more skills of indexing & categorizing herbal medicines / products according to the convenience of the use.

However children of each group seemed to be enjoyed trying out making several herbal products by themselves. One group of the NGO, Swanirvar made 'tooth powder' according to the recipe introduced in this lesson plan. As you see, their feedback suggests the tooth powder was 'bitter, hot and safety !' Their trial & feedback is certainly valuable information to improve our herbal tooth powder.

Other group of 'KJKS' made tooth powder by different ingredients & recipes. If they clearly made the record from whom they got the recipe & how they felt after using this products, it would be more valuable & interesting information for other children's groups.

Eco-group 'Herbal Doctor' from Kajla displayed & their survey result on medicinal plants in their area and we were quite happy to see their demonstration of herbal medicine preparation. Their products were appreciable. But if they made more attractive designed packet and put useful instruction note, it would be much more interesting.

In this kind of project activity, teacher needs to encourage children to be a sort of 'professional' personnel. Children must get more eagerness and excitement when they perform as herbal doctors, graphic designers, advertising & marketing officer etc. For example children can set up a 'packet design team' to make more attractive & user friendly packet.



Herbal teas prepared from Lemon grass, Tulsi (Basil), Mint leaf etc. Children can learn from the indication note of these packets, why herbal tea is good for health

Teacher's role is to give suggestion that children need 'strategy' to create attractive package. First of all they need collect & study other products' package & instruction note etc. Then they need to create suitable design for their products and so on.

In this process itself children can learn many things. When teacher uses own imagination, 'project work' can give wonderful opportunity from which children can get fun, excitement to learn, confidence, fulfilment and sense that they connect with other people in society.



← Various kinds of herbal soaps. Check out what kinds of medicinal plants, herbs & other ingredients are used for.

Find out keywords on the packet like - 'handmade soap', 'Ayurvedic soap', 'biodegradable', 'Aromatherapy', 'essential oil' etc and learn about them.



→ Other herbal related products.
There are many interesting herbal products around us.



Medicinal Plants

Step 3 — Investigation / Project Work — Activity (B)

Creating Medicinal Plants / Herb Garden for First Aid

Let's grow Medicinal plants in school gardens / roof top garden and use them for First Aid. Children can create interesting designed - herbal gardens. If even you don't have enough garden space, don't worry ! 'container garden' is possible.

[🏠 both for rural & urban schools 🧑‍🎓 class 5 to 8 🌱 practical work, garden based learning, group work 🕒 4 ~ 5 periods (1.5 hours/period) + regular work (gardening)]



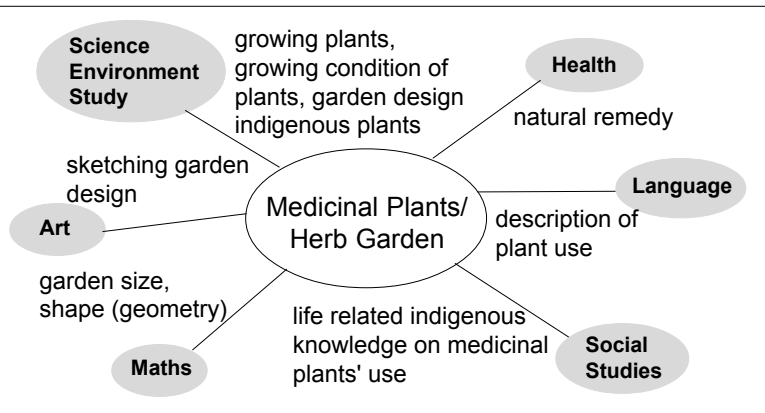
Objectives

- To apply learnt knowledge & observed result to propagate common medicinal plants by children themselves.
- To grow childrens' interest for gardening work.



Subjects you can Integrate in this Activity

Definition of Herb
The term herb technically refers to a non-woody plant that dies down to the ground after flowering. In general use, it refers to any plant species (including trees) which has aromatic smell & which is used as spice or medicinal purpose.



So

+ Activity Process

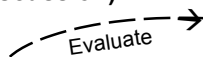
(Review)

Teacher conducts the review of the preparatory work. Put information together about growing site of each medicinal plant.

Make sure that the children understand the growing conditions such as light(sunny, semi shade, shade) soil (sand, loam, clay) & water (dry, well drained, waterlogged)



(Discussion)



Ask questions to children for creating discussion. eg. 'If we want to make a herb garden for First Aid, what medicinal plants should be included?' And ask children to list up plants based on the data from preparatory work.



(Making decisions)

Among the listed plants, both children and teacher select suitable plants for the herb garden. Review each plants' type (vine, bush, creeper, herb, tree) and their growing condition. Check out each plant's propagation type also.



(Enter the Actual Work)

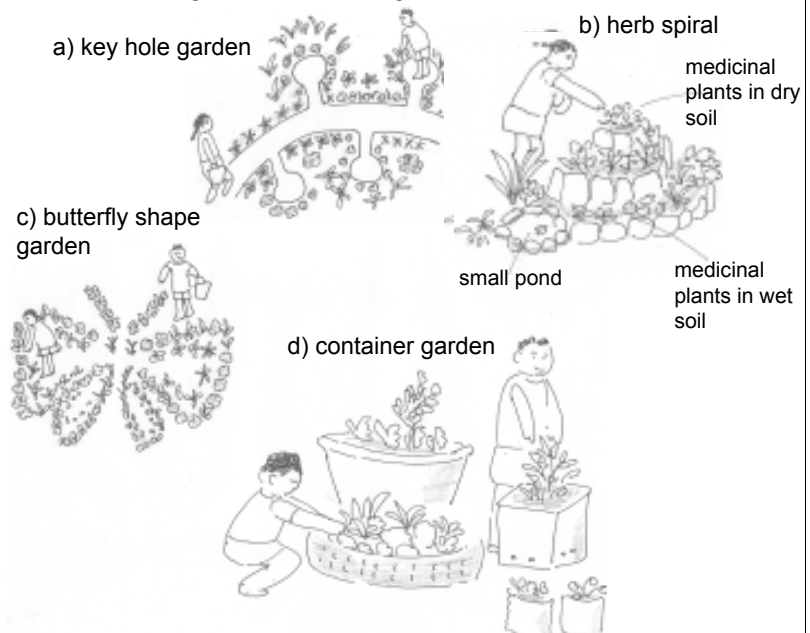
Work Out (Planning)

Both children and teacher decide the site for gardening. If you do not have enough space, try out 'container garden' (see ref. idea)

Children are asked to make a garden design (group wise, if necessary). Encourage children to use their imagination & knowledge of plants' growing condition & type for making garden map which include the planting location of each plant.

Group Work

Some interesting ideas for herbal garden are mentioned here.



Note : Site selection - need to consider protection & water availability

Step 3 – Activity (B)



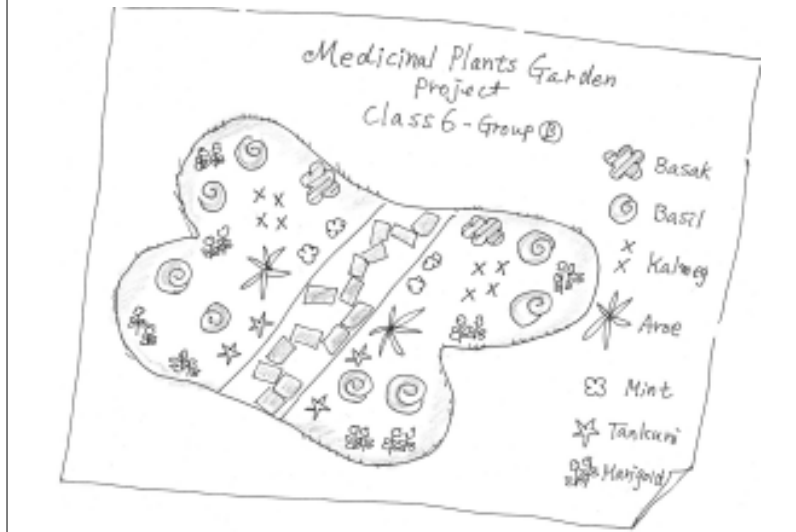
Practical work

- Children collect each medicinal plant's seed, cuttings, seedlings and plant them according to the plan.
- Children decide by themselves about the responsibility of taking care of the garden. They can water the plants in turn.



Summary Work

Each group are requesting to make a final herb garden map. In the map, each plant's name and their use should be mentioned.



Evaluation

Children are encouraged to grow some medicinal plants in their home garden too. Children keep taking care of their herb garden & increase plants' variety. After some time, discuss with children whether they have used their garden plants and how.

Evaluate discussion point

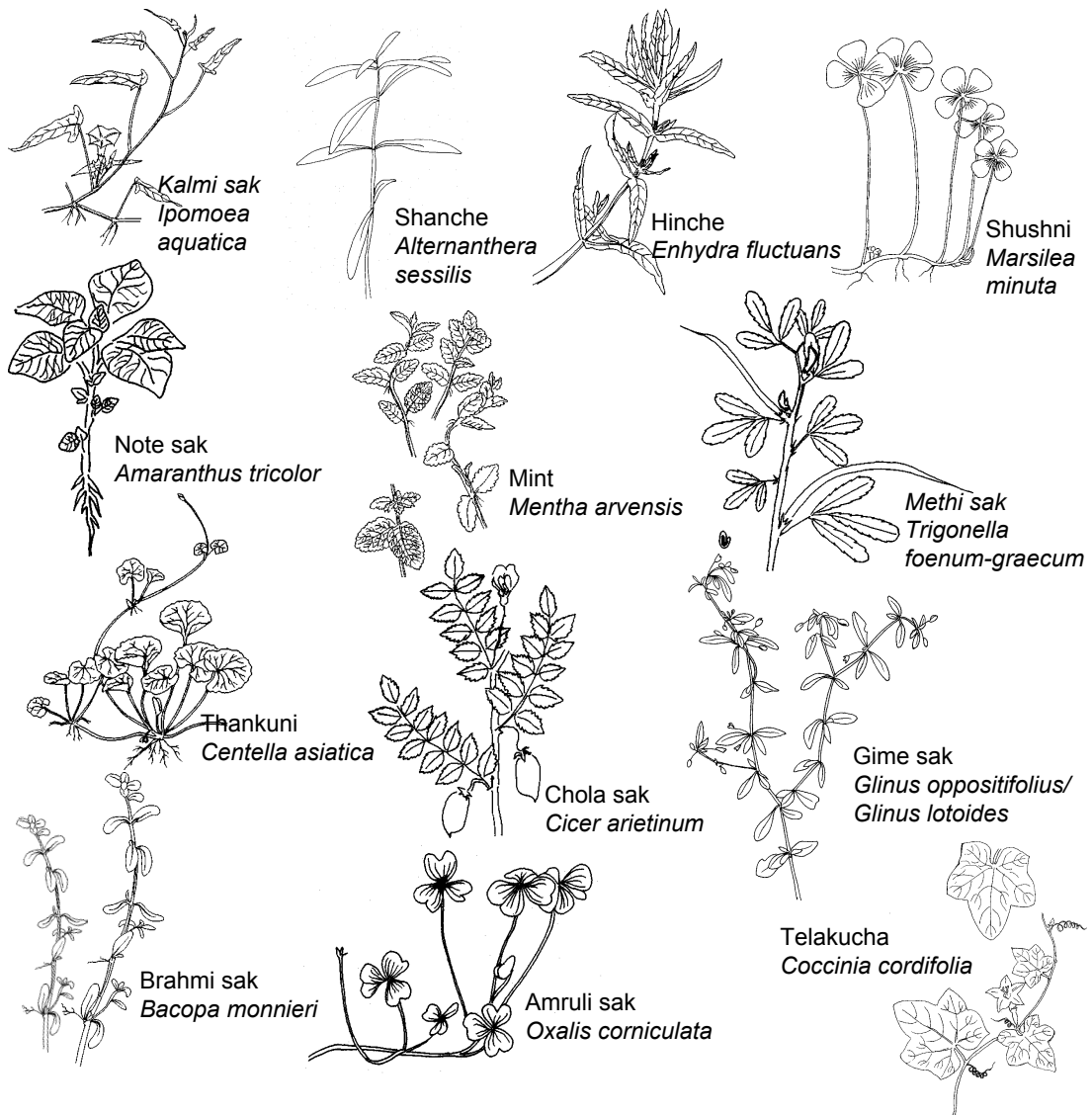


+ Future Possibility & Variation

→ Including edible plants/weeds

Children can introduce & grow some edible wild plant into their herb garden. Edible wild plant are collected from various places just like weeds. Usually they have some medicinal values too. Develop lesson plans for collecting information regarding edible plant (from the person who sells the edible weed in local market or from children's family members).

some edible wild plants (ref. Banglar Sak/DRCS)

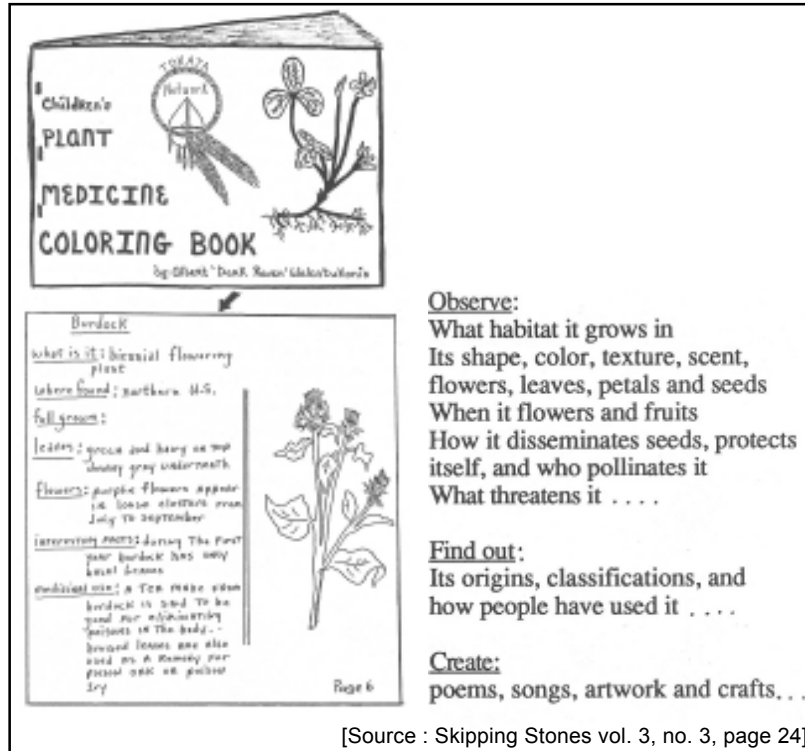


→ Resource map of local medicinal plants

Instead of making own herb garden, children can make a resource map of medicinal plants in the locality to identify the location of selected medicinal plants.

→ **Producing booklet**

Based on 'Medicinal Plant Profile Sheet' produced in preparatory work, children can produce a nice designed 'childrens' colouring book on medicinal plants' for sharing knowledge and information with others. In this process children can learn how to rearrange information, clear writing, sketching of each plant, book layout, colour design etc.



[Source : Skipping Stones vol. 3, no. 3, page 24]

→ **Organizing Exhibition**

Children can share & present what they have learnt & tried out regarding medicinal plants, and, what they have produced & created using medicinal plants in exhibition.

Exhibition helps to grow & raise awareness among other children and the community members.

Also organizing process of exhibition can provide good opportunity for children to learn various valuable things. (see teacher's note)

Teacher's Note

— Let's have an Exhibition —

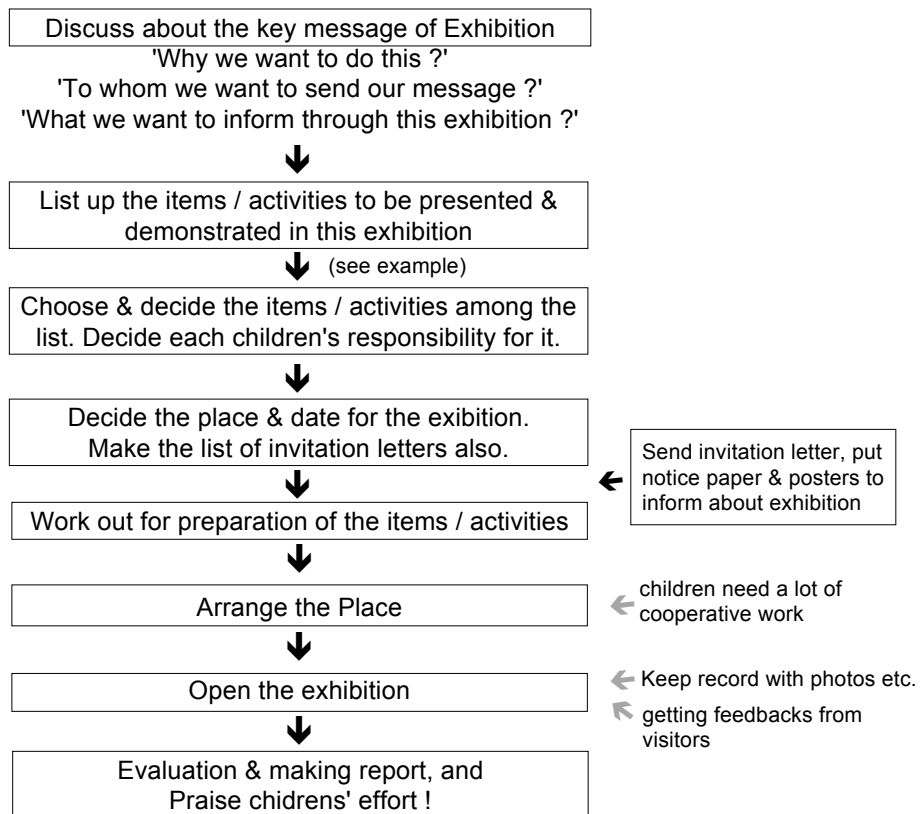
ENRE network had organized 'Eco-work Exhibition' in January 2003. It was first attempt to share each childrens' group effort with other school children and supporters.

9 groups from 5 partner organisations participated in this exhibition. It was nice to see that children took a major part of making this exhibition to be successful. They prepared summary charts/posters & products on selected topic, also demonstrated & made presentation in the exhibition.

We were quite sure that this exhibiton was effective to create awareness & interest on eco-work among visitors. Several children & teachers who visited this exhibition adopted some activity ideas for their school activity / class.

The following idea & process can be helpful when you & your students are going to organise an exhibition for medicinal plants/herbs in your school/community.

Activity Process



Preparatory Work

One of the important strategy of preparing interesting & useful items for exhibition is to appeal 'Five Senses' of visitors because usually when people use 5 senses, most effective learning process can be possible. Therefore encourage children to think about, when people visit your exhibition what they can see, hear, touch, smell and taste! there.

Example of items to be prepared

Information



- charts, posters, data sheets, graphs
- plant profiles, herbariums

(from the result of preparatory work)



Demonstration



- plants in pot
- herbal products
- herbal medicine
- greetings cards
- hand written T-shirts etc

(from the result of investigation/
project work)



Self activity & experiment



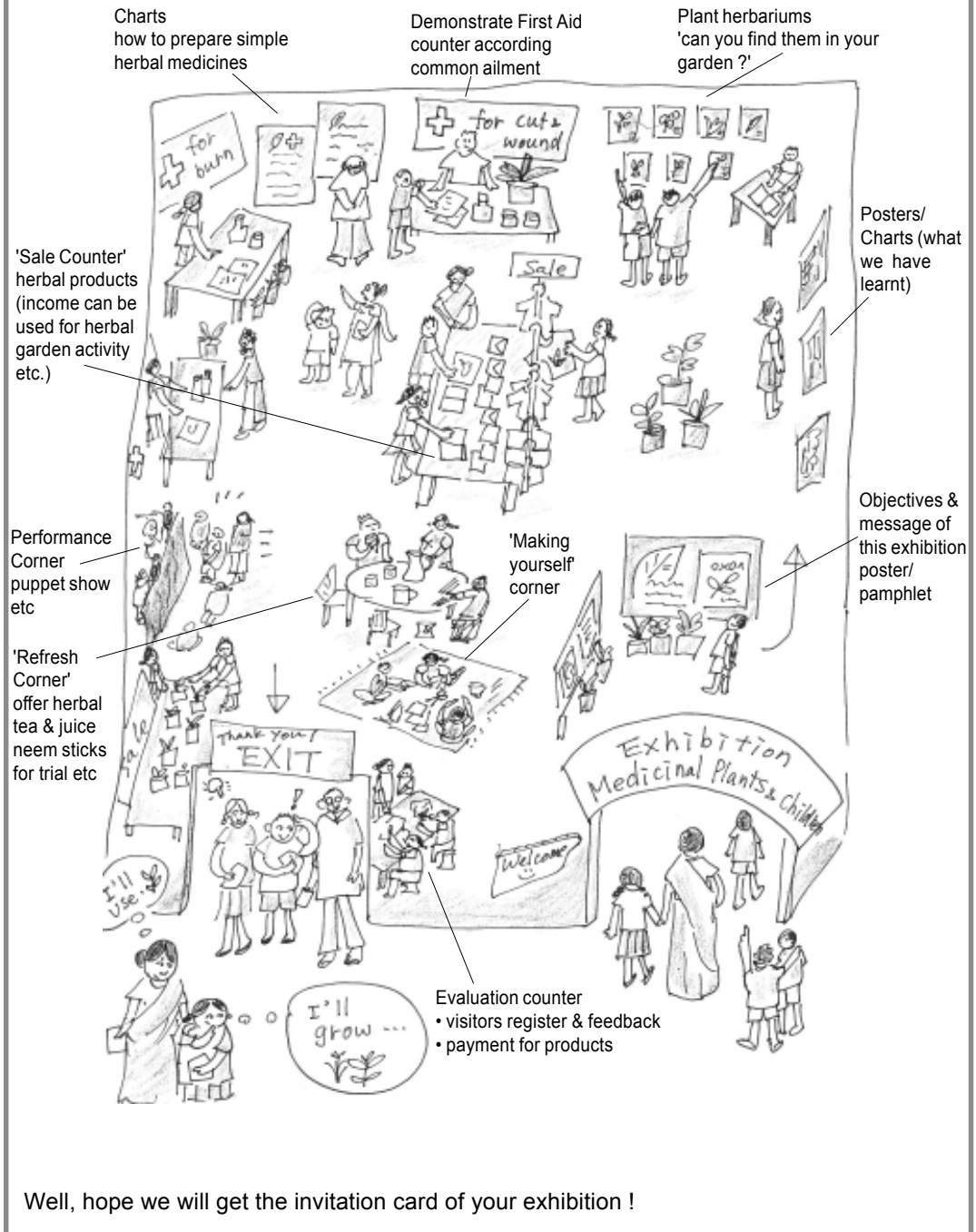
- provide herbal tea etc
- herbal scent box
- craft making



Getting visitor's feedback

- questionnaire
- poster paper for feedback writing

Possible Exhibition



Feedback

Step 3 — Activity (B)



+ This is one kind of garden based learning activity involving a lot of practical work.

Focussing on preparation of local medicinal plants & herbs in own school yard, children can learn various points & skills.

Through 'Medicinal Plant Garden', more awareness & interest can be grown among other school children & community members.

+ Feedback Summary

Name of the groups General Information	Swanirvar	Kajla (Eco group - Herbal doctor)
1) Village	Fatullapur Andharmanik	Hinchi, Bakshishpur, Dariapur
2) Students of which class has taken part	class IV - IX (20 students)	class VI - X (7 students)
3)Duration of the work		
4)What products were made	Planted several medicinal plants on the boundary of vegetable nursery	Started medicinal plants nursery
5)Children's interest	High	High
6)Teacher's opinion	Activity is useful	Activity is enjoyable & useful

+ Reports from Teachers

■ Swanirvar (teacher - Tarun Mondol)

The students of Fatullapur have planned a garden beside the school premises. They have setup a vegetable nursery (42 ft. x 23 ft.) and on its boundary they have planted medicinal plants eg. Vasaka, Kalmegh, Smart weed, Aloe vera .
The garden is still there and in good shape.



■ Swanirvar (teacher - Abul Kalam)

Activity on this topic has been done in two villages, Andharmanik and Fatullapur. Then youngstars have set up vegetable and medicinal plant nursery in 6 more villages (Gokulpur, Bajitpur, Uttar Media, Kalsur, Chandalanthi, Beliakhali). The herbal medicine made by them, have been used by them and their neighbours (neem, turmeric, tablets of kalmegh, syrup of vasaka, dust of bael pulp, aloevera, dust of rice and cumin, biting pepper, fireplant, thankuni). The activity have a smooth progress and its effects can be felt in the surrounding area. The activity on medicinal plants initiated in the year of 1997 in 5 villages. Presently, it has spread to 8 villages. Through the publication of results of these activities, in Basbhumi newsletter in August 2000, the interest of the children has risen up more.

■ Kajla (teacher - Pratyush Mondol)

75 students, spread over the villages of Kajla, Hinch, Bakshishpur, Dariapur had done this activity. It initiated in the month of August, 2001. The students have prepared the summary, analysis and herbarium sheet on medicinal plants. They have also performed survey to find out the incidence of ailments and prepared summary, analysis and awareness programme on them. In addition, they have prepared herbal medicines on their own. Herbal medicines on Indigestion, Dasham mahachurna, Syrup for cough, neem oil, pills for cough & cold have been prepared by them. The activity on rearing medicinal plants in nursery is in progress. They have also received training on this.

They have understood the significance of medicinal plants and used them for themselves. The members of their families also has developed and inclination towards using the herbal medicines. The village folk are also buying herbal medicines prepared by the children.

Presently, they are preparing herbal medicine and planting medicinal plants in the nursery.

They also have a future plan which is to

- make nursery of medicinal plants
- spread the use of medicinal plants in the locality
- organize training on this to enhance the skill.

+ Sharing Ideas : Garden Planning & How to Sustain Growing Activity

This kind of plant and garden related project, one of the important thing is to make workable and attractive plan before starting the actual work. Teacher should encourage children to create own garden design by themselves using their knowledge what they have learnt and using their imagination. Obviously, the medicinal plants' garden of Swanirvar (see photo) could be more attractive & exciting garden.



Both indoor and outdoor garden projects provide an ideal context for enabling students to strengthen their learning ability. Besides, scientific facts related plants, children will learn how to respect each other's opinion and make decision by themselves. They will learn also to work collaboratively to initiate and sustain growing project.



Using 'water tank lings' for garden. Combine medicinal plants with edible weeds, vegetables, flower plants etc.



Encourage Children's initiative



'Rooftop medicinal garden' in urban areas.



Use vertical space for growing medicinal plants. Many herbs/ medicinal plants prefer semi shade.



The image shows a herbarium sheet with a large grid area for drawing or photographing a plant specimen. To the right of the grid is a data entry form with the following fields:

- Plant Name (Local) _____
- Plant Name (Common) _____
- Plant Structure _____
- Date Collected _____
- Place Collected _____
- Type of Site _____
- Site / Soil Type _____
- Site / Sun-shade _____
- Site / Water _____
- Cultivated / Wild _____
- Special Note. _____
- Collectors Name _____

At the bottom of the sheet, there are two lines for recording the date and the person who entered the data:

Entry made on _____ Entered by _____

(herbarium sheet, original size is 1 cm² square measure on the sheet)

*A list of 30 selected
Medicinal Plants for children*



— for use and grow —

Name	Id. no.	Name	Id. no.	Name	Id. no.
Aloe (Indian)	2	Gigantic swallow wort	9	Papaya	10
Basil (Holy or sacred)	23	Ginger	30	Physic nut	18
Bishkatari	25	Guava	26	Pineapple	4
Common Heliotrope	16	Henna	19	Prickly Amaranth	3
Coral Jasmine	22	Hibiscus (shoe flower)	17	Turmeric	13
(Night jasmine)		Indian gooseberry	15	Vasaka	1
Creast	5	Indian Penny wort	11		
Cumin	12	Indian sorrel	24		
Durba grass /	14	Kamini	21		
Conch grass		Kulekhara	7		
Fenugreek	28	Marigold	27		
Five leaved	29	Mexican poppy	6		
Chaste tree		Neem	8		

Selected plants are easy to grow & commonly available. They have multipurpose use as medicine/food/ornamental etc., can grow in small space or rooftop garden.
(Id. No. is given according to the alphabetical order of each plants' Scientific Names)

30 Selected Medicinal Plants for Children First Aid Index

Common Cold

Vasaka - 1
(cough)



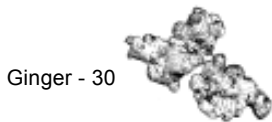
Basil - 23
(cough)
(throat pain)



Coral jasmine - 22
(fever)



Indian sorrel - 24
(cough &
sore throat)



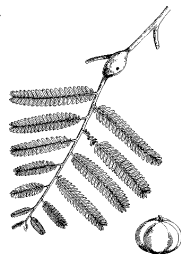
Ginger - 30

Stomach Problem



Mint - 20
(Vomiting)

Indian goose-
berry - 15
(Vomiting)



Cumin - 12
(loose motion)

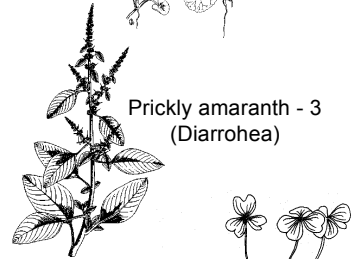


Guava - 26

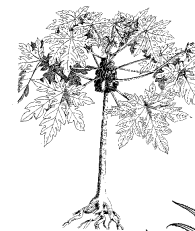
Thankuni - 11
(Diarrohea)



Prickly amaranth - 3
(Diarrohea)

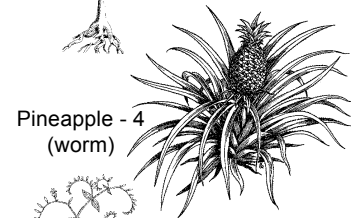


Indian sorrel - 24
(Diarrohea,
indigestion)

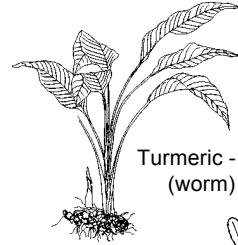


Papaya - 10
(worm)

Pineapple - 4
(worm)

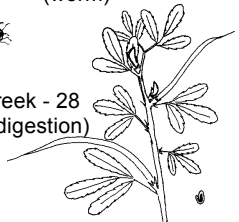


Creast - 5
(worm)



Turmeric - 13
(worm)

Fenugreek - 28
(gas, indigestion)



Ginger - 30
(loss of appetite)



Eye trouble



Common
Heliotrope - 16



Turmeric - 13



Marigold - 27

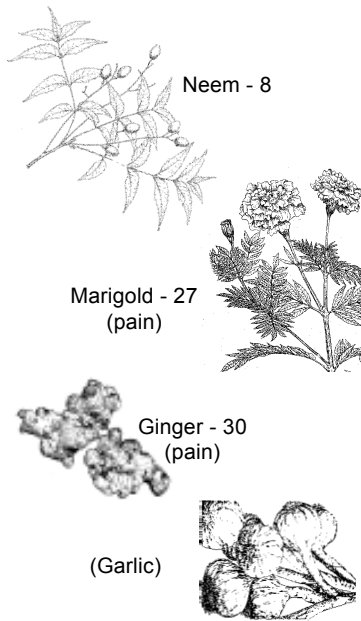
Ear trouble



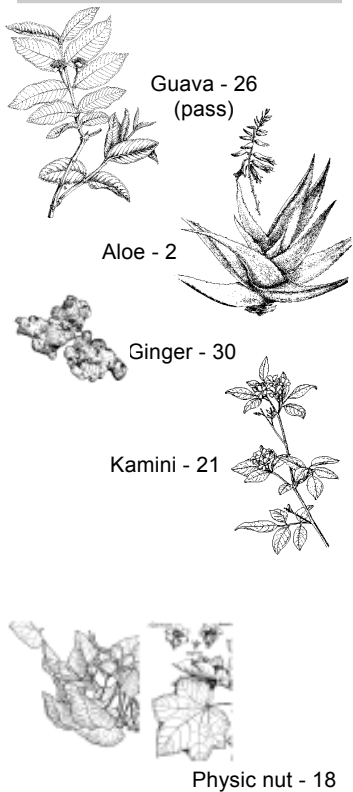
Henna - 19
(pass)

Five leaved
chaste tree - 29

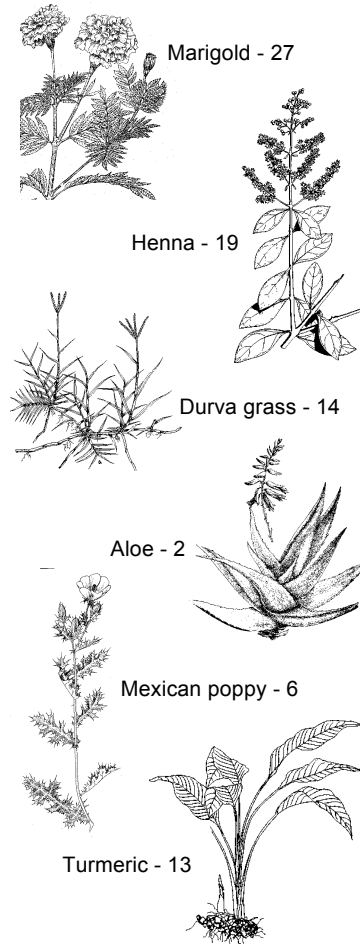




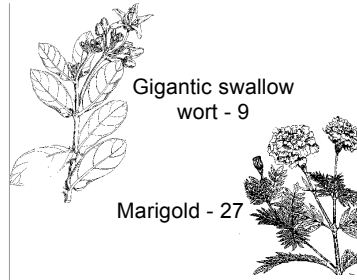
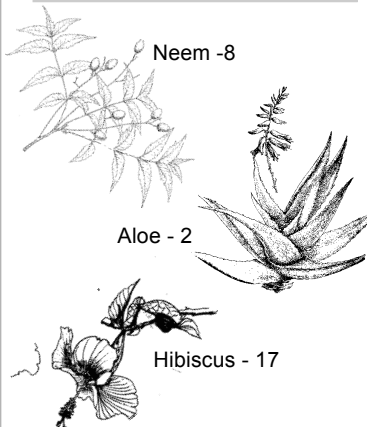
Toothache



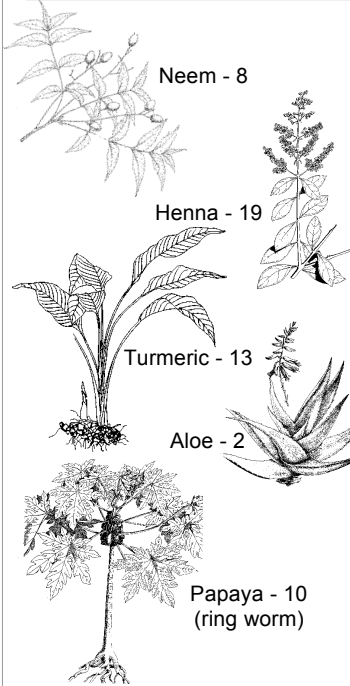
Cut & Wound



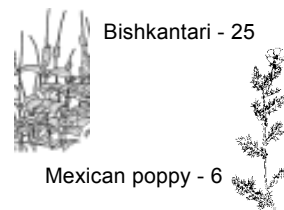
Burn



Skin trouble



Insect bites



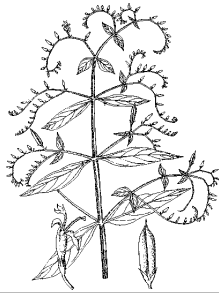
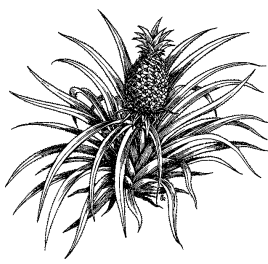
Others (Anemia)





















No. Scientific Name English Name (Bengali Name)	1. <i>Adhatoda vasaka</i> Vasaka (Basak)	2. <i>Aloe barbadensis</i> (Indian) Aloe (Ghritakumari)	3. <i>Amaranthus spinosus</i> Prickly Amaranth (Kanta note)
Parts used / Ailment	common cold 	burn, cut & wound, skin care, gum care 	whole plant - as for diarrhoea, cooling, appetizer
Part used & method	Mix 10 gm. vasaka leaf with 10gm. basil spike. Boil it in 250ml. water and when volume gets reduced to 100ml then remove the pot from heater/stove. Strain it. Add 4 spoonful honey and take it as two dose per day, for 5 days.	Break off a leaf and split open to collect the gel. • apply the gel on the affected area of burn, bruises & wounds. • brush gums with gel. It is a healing agent and reduces plague in the mouth.	Take roots of Prickly Amaranth — 4-5 piece (each root is 4" long) and 4/5 pepper together. Crush it. Use it in empty stomach with cumin steeped water twice a day, for seven days.
Let's grow • other function • Propagate through • Growing condition	 • • cuttings • almost any soil, tolerates some shade	 • • from transplant small baby plants • soil should be well-drained sandy loam. avoid too much watering. keep in shade.	 • leaves fried, cooked as spinach or added as flavouring agent in 'dal' • strong weeds reappears every year by itself, seeds can be collected easily & broadcasted for cultivation. • grows in dry area & poor soil condition
ENRE feedback frequency	•••••	••	—

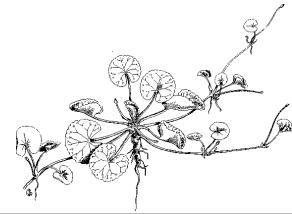
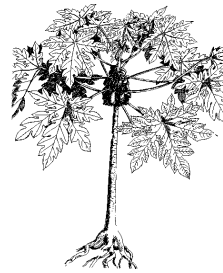
how to prepare & use medicine – parts of use : leaf, flower, branch / stem,
 let's grow: recommended for childrens' medicinal plant garden
 other function : good as flowering and ornamental plant as fruit tree



<p>4. <i>Ananas comosus</i> Pineapple (Anaras)</p>	<p>5. <i>Andrographis paniculata</i> Creat (Kalmegh)</p>	<p>6. <i>Argemone mexicana</i> Mexican poppy (Sealkanta)</p>	<p>7. <i>Asteracantha longifolia</i> --- (Kulekhara)</p>
<p> worm</p>	<p> worm, stomach problem</p>	<p> cut & wound, boil & abscess</p>	<p> anaemia</p>
<p> Crush the lower white part of the leaves and extract juice. Make warm the juice, take 4 tea spoon with honey every morning in empty stomach for seven days.</p>	<p> Crush the lower white part of the leaves and extract juice. Make warm the juice, take 4 tea spoon with honey every morning in empty stomach for seven days.</p>	<p> bee bite (oil from seed) - as a laxative</p>	<p> Make a little bit warm 4-5 teaspoonfull of juice extracted from leaves, take it every morning for 20-25 days.</p>
<p> •  crown or side sucker</p> <p>• shaded moist areas</p>	<p> •  from seed, grows often as weed</p> <p>• shaded dry areas</p>	<p> • paste of leaves with salt (portion 1:1), apply affected skin area</p> <p>• mix juice from leaves with turmeric juice (portion 3:1), apply affected area</p>	<p> •  (purple) □ as spinach : leaves can be used in soup, broth. flavour disliked by some</p> <p>• through seeds, then self propagation</p> <p>• prefer moist & wet soil</p>
<p>••</p>	<p>••••</p>	<p>—</p>	<p>—</p>

em,  bark,  root

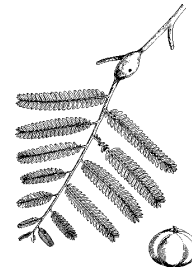
 good as fencing & hedge plant □ Food Value














<p>8. <i>Azadirachta indica</i> Neem (Neem)</p>	<p>9. <i>Calotropis gigantea</i> Gigantic swallow wort (Akanda)</p>	<p>10. <i>Carica papaya</i> Papaya (Penpe)</p>	<p>11. <i>Centella asiatica</i> (Indian) Penny wort (Thankuni)</p>
<p> skin trouble (boil, pimple) pus from ear tooth care</p>	<p> ease swelling, pull out thorns</p>	<p>Latex - worm (stomach) Ring worm (skin)</p>	<p> & whole plant - diarrhoea</p>
<p></p> <ul style="list-style-type: none"> Boil some neem leaves, wash the boil with it. After this crush some tape-vine leaves and apply over the affected part through 4-5 days. For pimple; 1 teaspoon of neem leaves juice mixed with 1 teaspoon fresh turmeric juice and 1 teaspoon sugar, take this every morning early in empty stomach for 1 month for pimple. 	<p></p> <ul style="list-style-type: none"> Warmed leaves help ease swellings. Leaves' latex is used to pull out thorns. 	<p></p> <ul style="list-style-type: none"> mix milky sap with the same portion of honey and add warm water (4 times of gum), take this every morning in empty stomach for 3 days. 	<p></p> <ul style="list-style-type: none"> Mix each 2 teaspoon full juice of Thankuni, Patharkuchi, & Durva add 1 teaspoon of ginger juice, take it thrice a day for 7 days.
<p> (offered to Lord Shiva.) used as insect repellent</p> <ul style="list-style-type: none"> from seeds (which fly in air) grow as a strong weed 	<p> leaf bitter but edible</p> <ul style="list-style-type: none"> through seeds prefer moist and well drained soil 	<p> perennial herb, edible weed (good for soup)</p> <ul style="list-style-type: none"> through stem cuttings / runners prefer moist soil & semi shaded location, can be cultivated in pot 	<p> fresh seeds, root pieces</p>
<p>••••• •••••</p>	<p>—</p>	<p>—</p>	<p>••••• •••••</p>

References

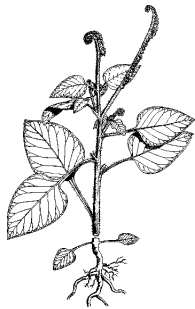
- Hater Kache Osudh, DRCS; • Banglar Sak, 1999, DRCS; • Edible Weeds' Chart, DRCS;
- Indo Hanatsuzuri vol. 1 & 2 (Japanese) (Nishioka Naoki); • 'Rog Sarate Gach Gachra' - a 4 pages



















12. <i>Cuminum cyminum</i> Cumin (Jeera)	13. <i>Curcuma domestica</i> Turmeric (Halud)	14. <i>Cynodon dactylon</i> Bermuda grass/ conch grass (Durba)	15. <i>Emblica officinalis</i> Indian goose- berry (Amloki)
Seed - loose motion	 eye infection, skin care (pimple)	 cuts & wounds	Fruits : vomiting sensation
 Grind & make powder of dried cumin seed, add same portion of gum of silk cotton tree. Mix well & make past and take it 2 times a day. (age 5-16; 6gm to 16 gm)	 <ul style="list-style-type: none"> • Paste fresh turmeric, add lukewarm water. Soak the cotton cloth in it, and press lightly on the affected eye. Also wash your eye with this water. • For pimple : Mix each 1 teaspoon of fresh turmeric juice, neem leaf juice and sugar. Take this early morning in empty stomach for 1 month. 	 <ul style="list-style-type: none"> • Make paste with durba grass and marigold leaves and apply it on the affected area for stop bleeding. If alum dust is available, mix with it and can be applied to avoid further infection. • Grind the grass and garlic (4:1 ratio) into a fine paste and apply. Bandage firmly. 	 <ul style="list-style-type: none"> • Put 3-4 gm dry amloki in a cup of water. Strain it after 2 hours. Mix sugar for taste and take it small doses from time to time.
 <ul style="list-style-type: none"> • (white) <ul style="list-style-type: none"> □ seeds used as spice • through seeds • semi shade, cultivated in pot 	 <ul style="list-style-type: none"> • □ rhizome powder used in cooking extensively • through rhizome • prefer semi shaded place, moist soil 	 <ul style="list-style-type: none"> • good fodder • division of clump • grow as wild weed 	 (as tree)  <ul style="list-style-type: none"> • through seeds/ seedling • dry soil, sunny or particularly shaded areas
• •	•	•	•

C;
ages

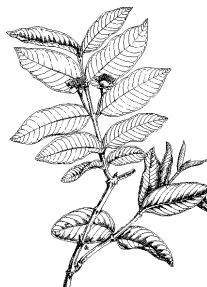
• Bhesaja Katha, 2002, DRCSC; • Home Remedies vol. I, V, III (T. V. Sairam, Penguin Books) list (Kishore Kishori Bahini, Swanirvar); • ENRE feedback results















<p>16. <i>Heliotropium indicum</i> Common Heliotrope (Hatisur)</p>	<p>17. <i>Hibiscus rosa-sinensis</i> Shoe flower (Jaba)</p>	<p>18. <i>Jatropha curcas</i> Physic nut (Sada Bherenda)</p>	<p>19. <i>Lawsonia inermis</i> Henna (Mehendi)</p>
<p> eye infection</p>	<p> boil (skin trouble)</p>	<p> diarrhoea</p>	<p> hair care & grow / cut & wounds / fungal infection / pus in ear</p>
<p></p> <ul style="list-style-type: none"> • Apply 2 drops of leaf extract in the infected eye thrice a day. 	<p> cooling body (herbal tea)</p>	<p> toothache</p>	<p> chronic stomach pain, Jaundice</p>
<p> (white)</p> <ul style="list-style-type: none"> • through baby plants / seeds • strong weeds (found at road sides, degraded soils in dry regions) 	<p></p> <ul style="list-style-type: none"> • Make a hole in the leaf and place it around the boil • Boil 2-3 petals in 1 cup of water & strain. Mix a tea-spoonful of honey. Good for cooling body & heart problem. 	<p></p> <ul style="list-style-type: none"> • for diarrhoea - 4-5 drops of leaf milk to be taken with jaggary cake, every morning in empty stomach for 3 days. • brush your tooth by the twig to ease tooth pain. 	<p></p> <ul style="list-style-type: none"> • make leaves dried and powdered, use for cuts & wounds • the leaf paste is a good coolant for cure different skin diseases & fungal infections
<p></p> <ul style="list-style-type: none"> • (red), flower petal used to make syrup, also used in hair oil • through cuttings • prefers dry & sunny place 	<p></p> <ul style="list-style-type: none"> • through cuttings & seeds • grows well in dry, sunny areas 	<p></p> <ul style="list-style-type: none"> • through cuttings • semi shade 	<p></p> <ul style="list-style-type: none"> • boil a little amount of henna leaves, pour 2 drops in ear twice a day for 4-5 days. • propagate by cuttings • semi shade
<p>••</p>	<p>••</p>	<p>••</p>	<p>—</p>













<p>20. <i>Mentha arvensis</i> (Field) Mint (Pudina)</p>	<p>21. <i>Murraya paniculata</i> ---- (Kamini)</p>	<p>22. <i>Nyctanthes arbotritis</i> Night or Coral Jasmine / (Shiuli)</p>	<p>23. <i>Ocimum sanctum</i> (Sacred or Holy) Basil (Tulsi)</p>
<p> vomiting feeling, stomach trouble, boil</p>	<p> toothache</p>	<p> cold (fever)</p>	<p> common cold</p>
<p></p> <ul style="list-style-type: none"> • crush 4-5 mint leaves & mix in one teaspoonful ripen tamarind starch with some rock salt & sugar, to be taken 2/3 times daily, with a half cup of water • 10-15 leaves in 1 cup of water & make tea. Add sugar/honey according to taste. Good for stomach problem. 	<p></p>	<p></p> <ul style="list-style-type: none"> • Take 2-4 tea-spoonful extract, make it a liittle bit hot, take it with honey or ginger. Take daily at morning and at afternoon for 5/7 days. 	<p></p> <ul style="list-style-type: none"> • juice from 5-10 leaves mixed with 1 teaspoon honey is good for soothing common cold ailment like cough & soar throat. • 10-15 leaves for 1 cup water, boil & make tea, add honey for taste, good for cold. • for cold & fever - make paste of the leaves of basil, dronpushpi, siuli with pepper and make small shaped pills. Dry these in shade, take 1 pill with ginger extract thrice a day for 4-5 days.
<p></p> <ul style="list-style-type: none"> • □ herb • through stem cuttings & seeds • semi shade & needs moist sandy soil, easily grown in pot 	<ul style="list-style-type: none"> • (white) • leaf eaten • grows from seeds & root pieces • prefers semi shaded place, clay soil 	<p> </p> <ul style="list-style-type: none"> • leaf eaten • through cutting • prefers well drained area, tolerates partial shade 	<p></p> <ul style="list-style-type: none"> • □ herb • through seeds • prefers semi shade, grows easily in pots
<p>—</p>	<p>—</p>	<p>•••</p>	<p>•••</p>

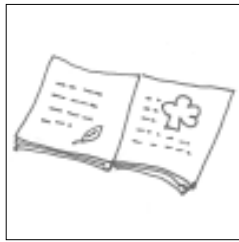


<p>24. <i>Oxalis corniculata</i> Indian sorrel (Amruli)</p>	<p>25. <i>Polygonum hydropiper</i> Bishkatari (Bishkatari)</p>	<p>26. <i>Psidium guajava</i> Guava (Peyara)</p>	<p>27. <i>Tagetes erecta</i> Marigold (Gaenda)</p>
<p>whole plant - cough (especially for children), skin irritation, headache, indigestion</p>	<p> insect bite (bees....)</p>	<p> toothache</p>	<p> boil, cut & wound</p>
<p> • For diarrhoea - mix 4 teaspoonful of juice of Indian sorrel & Patharkuchi, with dust of 2-3 peppers and 10-12 cumins, take this for 8-10 days.</p> <p>• Take 2-4 teaspoonful slightly hot extract for indigestion</p>	<p> • Mix 7-9 leaves with a little bit of salt & squeeze juice, apply the juice to affected area</p>	<p> • take 8-10 leaves and some crushed ginger, boil it in water, gargle it severally.</p>	<p> eye infection, ear pain</p>
<p> • (yellow tiny flower), good for soil covering</p> <p>perennial herb, edible weeds (leaves boiled & eaten with rice)</p> <p>• through seeds & crown division</p> <p>• prefers wet & semi shaded place, cultivated in pots</p>	<p> (purple tiny flower)</p> <p>• grows as weed</p> <p>• prefers semi shaded moist areas</p>	<p> (as tree)</p> <p>• </p> <p>• seedlings from seed & air layering</p> <p>• grows well in acidic clay soils</p>	<p> • Apply one drop of marigold extract thrice a day for eye infection</p> <p>• For ear pain-make a little bit hot the marigold extract, apply two drops at morning & evening for 1-2 days</p> <p>• Make paste with leaves of marigold & durva grass, apply it on the affected area to stop bleeding. If alum dust is available, mix with it & can be applied to avoid further infection.</p>
<p>• •</p>	<p>• •</p>	<p>• • •</p>	<p>• •</p>



<p>28. <i>Trigonella foenum-graecum</i> Fenugreek (Methi)</p>	<p>29. <i>Vitex negundo</i> Five leaved chaste tree (Nishinda)</p>	<p>30. <i>Zingiber officinale</i> Ginger (Ada)</p>	
<p> good for growing appetite & reduces acidity</p>	<p> ear problem</p>	<p> common cold, toothache, mouth freshner, loss of appetite/stomach ache, ear pain</p>	<p>along with a little salt. • (gum inflammation) - mix 1/2 teaspoon salt with 1 cup ginger water. Apply by dipping finger in water and rubbing on gums.</p>
<p> • Fry lightly with brinjal or potato.</p>	<p> • Take 3/4 drops of extract of leaves, boil it slightly, pour it in ear. • Take leaves of Indian Sarsaparilla, neem and nishinda in equal measure, boil it in 4 times more water, bring down the preparation when it turned into 1 cup. Wash your ear by chyster pype, after cooling.</p>	<p> • (loss of appetite/ stomach ache) - 1 inch piece of ginger is cut into small pieces and boiled in 2 cups of water, after mixing it with milk & sugar, take it frequently • (toothache) - paste of dry ginger applied to gums along with a little salt • (sore throat) - chew a small piece of fresh ginger • (cough) juice of ginger taken with honey 2-3 times daily • (ear ache) - a few drops of ginger juice used as ear drops • (toothache) - paste of dry ginger applied to gums</p>	<p> • fresh ginger easily available from market for use as spice, dry powder also used in biscuits, cookies & candies • by piece of fresh ginger rhizome • prefers sandy or loamy soils, moist, semi shaded areas</p>
<p> • (yellow tiny) □ cook as spinach, seeds protect books & clothes from insect attack • through seeds, covers soil & good for soil • can be cultivated in pots</p>	<p> • (tiny bluish flowers)  (repels mosquitoes) • cuttings • prefers well drained soil, open or semi shaded areas</p>	<p>•••</p>	

Resources



for strengthening your guiding role

Conservation & Regeneration of Medicinally Important Plants

by Ardhendu S. Chatterjee

Our country is rich in diversity. Diversity in soil & climate; diversity in insects, birds & animals and diversity in language, food habit & belief systems coexist & reinforce each other. Use of medicinal plants reflect this diversity.

Medicinal plants are not a separate group of plants; some or other part of almost every plant has some medicinal use. However, some plants are given particular attention because : (a) they are easily available even without cultivation; (b) they are used to prevent or treat various ailments; (c) they are easy to process and use, and their use has been documented by traditional healers & health care professionals such as birth attendants, bone setters etc. Many medicinal plants that are very useful have been given 'holy' status by various communities. **Basil, Peepal, Banyan, Bael, Neem** are some of the trees widely respected. Many tribes also respect **Mahua, Palash (flame of the forest)** and **Karanj** trees.

Shrubs like **Vasaka, Nishinda (nirgundi), Jaba (Hibiscus), Shiuli (Nycanthus), Gaenda (mari-gold)** etc are often planted around households as they come in handy as first aid plants.

Plants which are otherwise considered useless/troublesome/poisonous etc are often valuable as medicinal herbs. Some of the medicinal plants are seasonal / annual others are perennial. Medicinal plants can be a shrub, a creeper, a climber or a tree. The parts used are also diverse. Sometimes the flowers, sometimes the leaves, or bark, or root, or whole plant is used. The methods of preparation are diverse too. In some plants the ingredients are guided into a paste, in other cases a decoction is made from them; some plants are burnt and converted to ashes or distilled and mixed with oil or ghee.

The method of application too varies; some are applied externally, others are consumed as tablet or syrup, yet others are inhaled. When your students investigate use of plant by local communities, they should ask & listen carefully which parts are used ? how they are processed & applied ? and how much is consumed for how many days. They should also look at/collect sample plants as there are often confusion about plant names.

India has many schools of herbal medicine Ayurveda is very old system of knowledge, Kabiraji, Hakimi, Unani medicines are also part of our tradition. In South India Siddha medicine are popular which uses many oils & ointments. Among the hill region people Tibetan medicine is popular which uses not only plants but extracts from body parts of insects, reptiles, animals & birds etc. Many tribal medicine systems in Central & South India also use animal parts.

Traditional medicine systems have documented more than 25,000 plant based remedies. Many more plants are used locally by people, but their usage/dosage etc is not known outside the region / community.

In addition to all the plants that are used locally for first aid, for home remedies, for treating domestic animals etc. The traditional & Modern drug companies procure about 2000 tonnes of plant material every year. Indian Companies export medicinal herbs worth about 1,200 million Indian Rupees.



80% of the medicinal plant used by drug industries is collected from forests, wastelands, & wetlands. Biodiversity in these areas are declining rapidly due to encroachment of forest land by expanding cities, roads, dams etc, by monoculture of timber species and exotic short cycle species such as Eucalyptus and by overharvesting of forest products.

Chemical Intensive agricultural systems also contribute to biodiversity loss by polluting soil & water and by destroying many beneficial insects & herbs.

In this situation it is very important to train our future citizens about the importance of conserving medicinal plants and the associated indigenous knowledge. Children could assist interested traditional practitioners to develop small gardens/parks of important medicinal plants around temples & mosques, on graveyards, fallow lands etc. They can also investigate propagation / multiplication methods.

In conclusion I shall remind again, studying plants and their uses as medicine is only one part of the story. Often the same plant is useful to control insects & disease of agricultural crops; often the plant could be edible herb or spice; often the plant may be used for dyeing cloth, food etc. By learning more about plants & how we use or abuse them we learn more about our land & our culture.



important to train our future citizens about the importance of conserving medicinal plants and the associated indigenous knowledge

Ardhendu Sekhar Chatterjee is the Director of Sustainable Agriculture Programme/Projects of DRCSC, including Ecology & Natural Resource Education project. He has a wide range of working experience & knowledge on issues related to Agroforestry & NRM (Natural Resource Management). He had been working on the wasteland regenerating project & was involved in the creation of 'Green Work Resource Centre' in Auroville, South India during 1989-1993 and involved in conserving community forest (NTFP - Non Timber Forest Product project) in Cambodia, 1994-1997. Presently, beside DRCSC's work, he offers training & workshop on these topics for other organisations in India as well as neighbouring countries. He is also good at designing teaching materials. He wrote the Expert's Note for TREE booklet also.

+ References

To develop lesson plans on MEDICINAL PLANTS we have looked through the following resources. If you are interested in to see these materials, all resources listed here are available through ENRE resource centre EEL (Environment Education Library). EEL also stores topic related articles from several magazines and news clippings. Please inquire us.

Books and Booklets on MEDICINAL PLANTS :

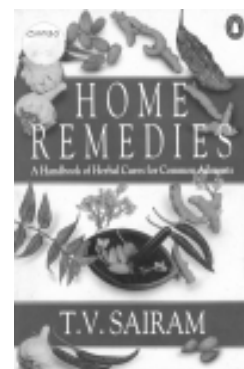
For your convenience we have put some categories.

Category (A) useful for producing materials, (B) useful for teachers & (C) materials for children.

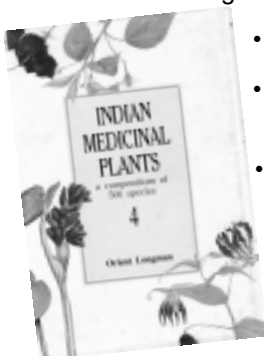
_ recommended materials for Environmental Education

P recommended for school library

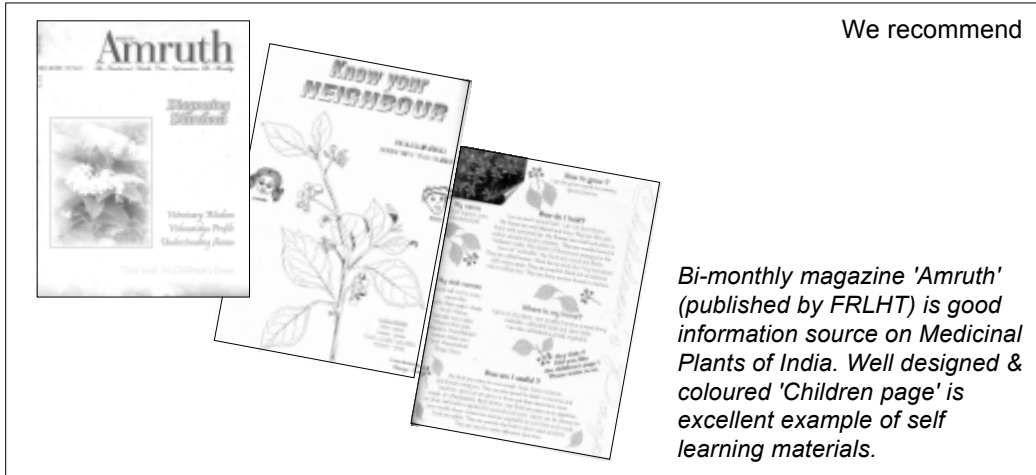
- Medicinal Plants / S.K. Jain, , NBT, 1968, 216p. / (A) (B)
- Home Remedies –1,2,&3 / T.V. Sairam, Penguin Original, 1998, 332p... / (A)
- Seasoning Herbs / K.H. Krishnamurthy, Books for All, 105p. / (A)
- 'Traditional Health Practice' ("Training Manual For Middle Level Health Workers –no.2" p.p 93-119)/ VHAI, 1998/ (A)
- First Red List of Medicinal Plants of South India- You can help save them / FRLHT, Chart / (A) (B) (C)
- An User's Guide to Medicinal Plants : For Primary Health Care / FRLHT, 1995, 60p. / (A)(B)(C)
- How to Grow Medicinal Plants : For Primary Health Care/ FRLHT, 1995,22p. /(A) (B) (C) _ P
- Eyewitness Guide : PLANT / D.K 1989, pp. 60-63/ (A) (B) (C)
- Cards And Collages / Ebury Press, 1993, 96p. / (A) (B) (C)
- Magazine 'AMRUTH' / bi-monthly/ (A))B) (C) _ P
- Indian Medicinal Plants : a compendium of 500 species – Vol.1-5/ Orient Longman, 1993 /
- The Complete Medicinal Herbal/ Penelope Ody, D.K, 1993, 192p./ (A) (B) (C) P
- Growing Ideas : A journal of Garden-Based Learning- Vol.1-10, Fall 1990- Sep. 1999/ NGA/ (A) (B)
- The Wealth of India: Raw Materials Vol X / CSIR, 1976 / (A)
- Magazine 'Skipping Stones' Vol.3, No.3 / 1991 /(A) (B) (C) P
- 'Pitchandikulam Bio-Resource Centre' (Auroville Outreach", October 2002)
- 'Looking Good to Natural Way' (Toxic Link Information, July 1999, No.5)



Remedies are introduced according to the alphabetical order of each plants' scientific name. Index of both plants name & ailment is attached.



Plants are shown according to the alphabetical order of scientific names with each illustration



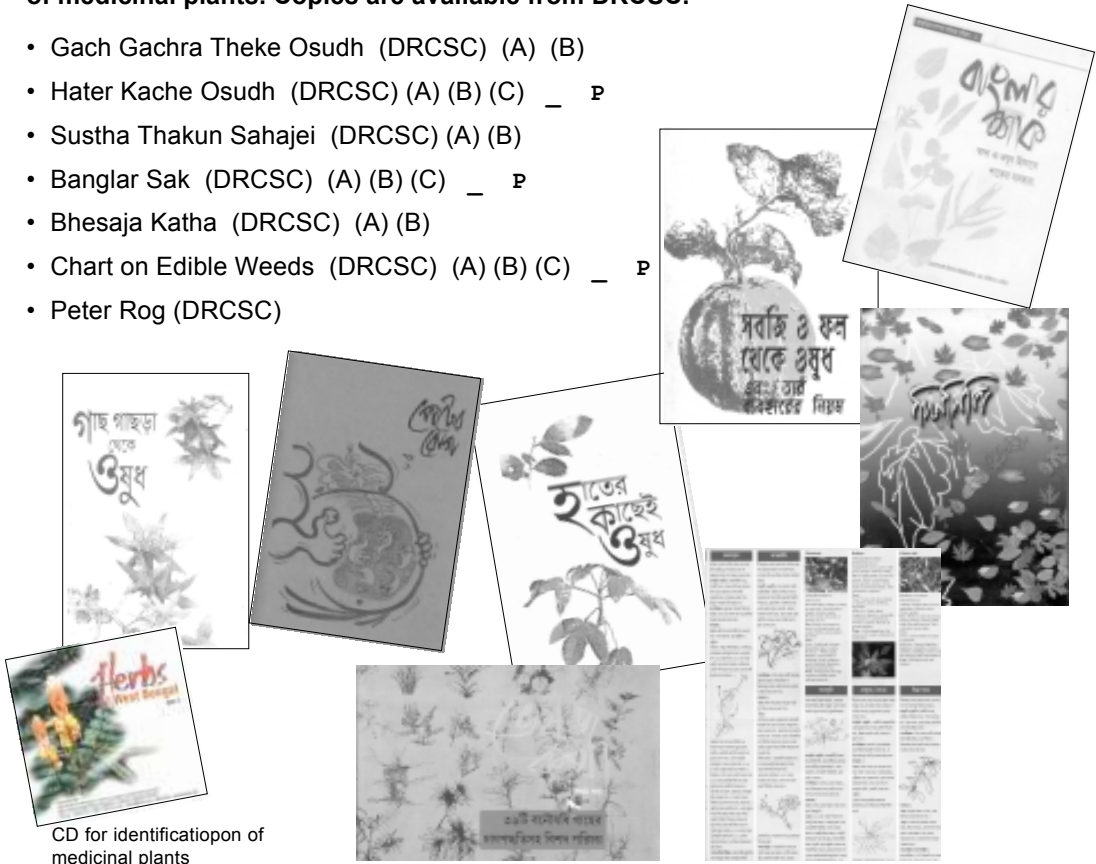
We recommend

Bi-monthly magazine 'Amruth' (published by FRLHT) is good information source on Medicinal Plants of India. Well designed & coloured 'Children page' is excellent example of self learning materials.

Bengali Books / Materials from DRCSC

DRCSC has been conducting survey and promoting Medicinal plants in Sustainable Agriculture Network programme for rural area. On this process several booklets & chart on Medicinal plants have been produced in bengali. These materials can provide you more information about Medicinal Plants. **Recently a CD has been produced for identification of medicinal plants. Copies are available from DRCSC.**

- Gach Gachra Theke Osudh (DRCSC) (A) (B)
- Hater Kache Osudh (DRCSC) (A) (B) (C) _ P
- Sustha Thakun Sahajei (DRCSC) (A) (B)
- Banglar Sak (DRCSC) (A) (B) (C) _ P
- Bhesaja Katha (DRCSC) (A) (B)
- Chart on Edible Weeds (DRCSC) (A) (B) (C) _ P
- Peter Rog (DRCSC)



CD for identification of medicinal plants

Interesting Lesson Plans on MEDICINAL PLANTS

You can find out a lot of Web sites on Environmental Education and related activities. The following are the examples of some useful lesson plans. You can directly access to each web site or contact us for the detail.

Lesson plans	Level	Web site
'Focus on Herbs', 'Herbal Adventures', 'An Aromatic Curriculum' & other documents	upper-primary, middle	www.garden.org
'The Protection of Medicinal Plants in India' (This paper & several useful documents can be accessed at FRLHT website)	"	http://envis.frlht.org.in/sangeeta.htm
Phytochemical & Ethnobotanical Databases (This site has links with several search engines, using which we can find out about a particular herb and how it is used)	"	www.ars-grin.gov/duke
Medicinal plant related information is also available at DRCS website	"	www.drsc.org



Books and References on Environmental Education & creative lesson plans (Concept, Ideas & Theory) :

Chapter / Book	'What is Environmental Education' ("Environemtal Education in Schools") / Judy A. Braus / 1993, Peace Corps / p.p.5-14 (A) (B)
Booklet	"The Green Reader – An introduction to Environmental concern and Issues" / Meena Raghunathan / 1999, CEE / 204p/ (A) (B) _
Booklet	"Environmental Orientation to school Education : A Programe of Ministry of Human Resource Development – Some experience and learning"/Meena Raghunathan / 1999, CEE / 92p/ (A)
Handbook	"Green Minds : A Reference Handbook for Environment Educators in Kalimpong" / Yusuf Simick / Ashok Trust or Research in Ecology and the Environment (ATREE) (A) (B) _

Book "Environmental Education An Approach to Sustainable Development " OECD/ 1992 (A)

Guidebook " Idea's Environment Action Program , Issues, Approach, and Initiatives towards Sustainability " CEE 1995 (A) (B)

Guidebook " The Green Club : A Guide to Setting Up and Running Clubs for the Environment" / CEE 1999 / 78p (A) (B) _

Guidebook " The Green Action guide : A Manual for Planning and Managing Environmental Improvement Projects " CEE, 1997 / 92p. (A) (B) _

Report " Environment & Development : Traditions, Concerns and Efforts in India" (National Report to UNCED, June 1992 / Ministry of Environment and Forest – govt of India / 63p. (A)

Handbook "Ecology : Principles and Applications " J.L. chapman et al, 2000, Cambridge University / 330p. (A)

Handbook "Earth Education : a New Beginning " Steve Van Math, 1999 / 334p. (A)

Curriculum guide "Connections , Cycles, and Cities ' (" Living Lightly on the Planet – volume 1, Grades 7-9 – Unit 4 " Haura O'cinnor, 1985, Schilits Audubon Center / p/p/ 76-98 (A) (B)

Book 'Curriculum Planning' (" A Children's Food Forest " Carolyn Nuttall, 1996, FeFI Books / p.p 53-72 (A) (B) _

Booklet "Toward a Green Future : A Trainer's Manual on Education for Sustainable Development " CEE, 1999 / 111p. (A) (B) _

Book "The FoxFire Book" / Eliot Wigginton & his students / Anchor Books / 1969 / 384p. (A) (B) (C) _ P

Internet paper "Classroom as Learning Laboratories" & "Core Practices" / foxfire.org / 3p.

Book " Science is ..." / Susan V. Bosak / Scholastic, 1991 / 515p. (A) (B) _



Series of 'The Foxfire Book' (1969- , USA), the originator of students' field work approach, can suggest valuable ideas for activity-based learning and how students are capable to keep records on community based traditional skills & knowledge. (soap making, p.p 151-158)

The Foxfire Fund Inc. P.O. Box
541, Mountain city, GA 30562-
0541, USA
<http://www/foxfire.org/>



ENRE Partner Organisations' Contact Address

- **Swanirvar**
(contact person : Mr. Samir Biswas)
Andharmanik, Baduria,
North 24 Parganas - 743401
West Bengal
- **Phulbari Grameen Bikash Kendra**
(contact person : Mr. Torun Kanti Bera)
Phulbari, Sagarphulbari,
Rudranagar, Sagardeep,
South 24 Parganas
West Bengal
- **Ashurali Gram Unnayan Parishad**
(contact person : Ms. Modhumita Ata)
Asurali, Sadhur hat,
South 24 Parganas - 743504
West Bengal
- **Vikramshila Education Resource Centre**
(contact person : Mr. Atanu Sain)
77 Maharaja Tagore Road
Dhakuria, Kolkata - 700031
West Bengal
- **Kajla Janakalyan Samity**
(contact person : Mr. Vivekananda Sahu)
Sarada, Contai
Midnapur - 721427
West Bengal
- **Gandhi Vichar Parishad**
(contact person : Mr. Kalyan Roy)
Sahay NC-18, Schooldanga
Bankura - 722101
West Bengal



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- Forthcoming issue of 'Creative lesson plan - Basbhumi series' are
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Please send back the 'feedback slip' (p.91) alongwith your comment and suggestion on this booklet 'Water' to us. We will put your name on our mailing list and send you a free copy of the next booklet on 'Birds' for your reference!

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Medicinal Plants

If you would like to be included on 'Basbhum Series' mailing list and receive forthcoming Creative Lesson Plans booklet then please fill up this slip and return it, in the envelope address to :

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West Bengal, India

[OR you can send the
same content by email
enre_sc@vsnl.net]

Thank you for your cooperation.

- Your name or contact person of your organisation

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Position: _____

Name of Institute: _____

Address: _____

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as a teacher educator community workers
 parents others

- In relation with your work & interest, you find out this booklet is

useful not so useful unsatisfied

because _____

- Are you going to apply lesson plans in booklet in your teaching work or in some other way

Yes, I'll try all steps some part of lesson plan no

because _____



- Among the topics of forthcoming booklets which topic are you interested in ?
(Put ✓ in as many as you want)

- 1. Tree 2. Insect 3. Water 4. Medicinal plants 5. Bird
- 6. Energy 7. Fish 8. Rice 9. Waste 10. Vegetables
- 11. Local Economy 12. Community Development

- Your contribution, if possible

- Exchange EE materials / booklet
- Exchange periodicals / newsletters of your organisation
- Others (donation, volunteer, sending your own lesson plans etc)

- Your comments / suggestions

- Do you want to place order 'Bashbhumi Series no. 4 - Creative Lesson plans on Medicinal Plants ? (10% discount offered for more than 10 copies ordered, booklet no. 1 - 3 also available, please state English / Bengali)

Yes _____ Copies No

Date _____

Signature