

Child-Centered Teaching Methods in School Gardens

Teacher Training Manual

CRS LAO PDR

Training Summary	
Overview	Starting and running a school garden involves not only horticulture skills, but skills to motivate people and plan in advance. For this training, we discuss the technical aspects of growing certain plants and also how to plan the management of your school garden for maximum impact and sustainability. Participants also know how to capitalize on the school garden to use it as a Child Centered Teaching Methodology.
Objectives	<p>By the end of the training, participants will have the tools and knowledge that they need to successfully start and maintain a School Garden. They will also understand Child-Centered Teaching Methods and how the school garden can be used as an experiential learning laboratory.</p> <p>Participants will leave the training with:</p> <ul style="list-style-type: none"> • Tools to orient them as they engage teachers, students and the community in starting a school garden • The beginnings of a School Garden Management Plan • Ideas for lesson plans using the school garden • Knowledge on Child Centered Teaching Methodologies and how to teach different types of learners. • Technical knowledge on planting and harvesting different types of vegetables and fruits, as well as raising animals if desired. • A clear timeline for rolling out these trainings in their schools • Confidence to take what they learned to train fellow teachers and teach students.
Participants	School Principals and Teachers
Facilitators	DEB (School Gardens teams in each district), PESS, TTC, IEC, PAF and CRS
Dates	October-December 2015

DAY	Training Topics
1	<ul style="list-style-type: none"> • Intro to School Gardens: Understanding the Benefits • Pre-planting: Beginning a school garden in your school • Engaging the community • Starting a School Garden Management Plan
2	<ul style="list-style-type: none"> • Technical Skills for growing crops (lesson plans taken from IEC School Gardens Manual) <ul style="list-style-type: none"> ○ Land preparation ○ Bio-Fertilizers and Water Resources ○ Vegetables (inc. harvesting, processing & nutrition) ○ Fruits (inc. harvesting, processing & nutrition)
3	<ul style="list-style-type: none"> • Technical Skills Continued (from IEC School Gardens Training Manual) <ul style="list-style-type: none"> ○ Animal Raising ○ Technical Production Calendar • Introduction to CCTM • Examples of learning activities for each different type of learner • Using CCTM in the classroom vs. traditional teacher-centered teaching
4	<ul style="list-style-type: none"> • Lesson Planning for using School Gardens as a CCTM • CCTM/School Garden Training Practice • Planning Roll-Out in Schools

Day 1				
Achievement Based Objective		<ul style="list-style-type: none"> • Identified different benefits of school gardens • Practiced gaining community support • Demonstrated understanding of how to create School Garden Plans 		
Resources/Materials Needed		<ul style="list-style-type: none"> • Makes Copies of “Activity 1: Getting to Know you Game” • Make Copies of “Hand Out 1: Pre Test” • Day 1 Powerpoint • Prepare FlipChart with “Parking Lot” written on the top—this will be used all 4 days • Hang 5 other flip charts around the room for School Gardens Benefits activity • Print out “Activity 2: The Benefits of School Gardens” and cut up and laminate each sub-benefit for Activity 2 • Make copies of “Hand Out 2: The Benefits of School Gardens” • Make Copies of “Hand Out 3: School Garden Management Plans” • Make Copies of “Hand Out 4: Secrets to School Garden Success” • Sticky Notes for End of the Day Review 		
Detailed Agenda				
Time	Session	Topic	Resources	Facilitator
8:30am-8:50 am	D1S1	Welcome Remarks		
8:50am-9:15 am	D1S2	Participants get to know each other/icebreaker	Game	
9:15-9:35am	D1S3	Pre-Test	Handout	
9:35-10:00 am	D1S4	Training objectives and agenda are reviewed, parking lot is presented	Powerpoint	
10:00-10:15am		Coffee Break		
10:15-11:15am	D1S5	Intro to School Gardens	Activity, hand out	
11:15-11:30pm	D1S6	Where do we start? Can’t do it alone!	Powerpoint	
11:30-12:00pm	D1S7	How to Gain Community Support (Part 1)	Powerpoint	
12:00-1:00pm		Lunch		
1:00-2:00pm		How to Gain Community Support (Activities)	Activity, handout	
2:00-2:30pm	D1S8	The First Steps: Creating a School Garden Management Plan	Powerpoint	
2:30-2:45pm		Coffee Break		
2:45-3:45pm		School Garden Management Plans (continued)	Hand out, powerpoint	
3:45pm-4:45pm	D1S9	Sharing Session		
4:45pm-5:00pm	D1S10	Re-cap of the day and daily training review		

D1S1 Welcome Remarks (20 mins)

Thank everyone for coming to the School Gardens for Child-Centered Learning Training.

D1S2 Participants get to know each other (25 mins)

Participants play a “getting to know you game” (*See Activity 1*) in order to break the ice.

Ask participants to share their findings which people already have a school garden at their school. Check whether all participants with a school garden have been identified (*make a note of these participants’ names, for later in the day*).

D1S3 Pre-test/Post-test (20 mins)

(See Hand out 1)

D1S4 Training Objectives and Agenda are Reviewed, Parking Lot is presented (25 mins)

Powerpoint

SLIDE 1 & 2: Show slides with training objectives and agenda.

Emphasize:

- *The main goal is that participants leave the training:*
 - *1) enthusiastic about school gardens*
 - *2) with the knowledge they need to be successful in starting or improving or maintaining their school garden*
 - *3) with tools that will help them get the most out of their gardens in terms of productivity and in terms of using the garden as an educational tool.*
- *Are there any questions?*
- *Does this fulfill the participants’ expectations? Is there anything they would like to learn that is not included?*

Introduce the Parking Lot (already set up flipchart) and explain that participants can come and write any questions or comments they have that may not have been covered in a session. These questions and comments will be reviewed at the end of each day.

D1S5 Intro to School Gardens (1 hour)

Powerpoint

SLIDE 3: Show slide that explains the basics of school gardens

- school gardens have a wide array of benefits

Using blank flipcharts that you have already hung around the room, ask participants what they think the main benefits of school gardens are. As they give answers—write relevant answers on the top of flip charts around the room:

- School Gardens are Good for Children’s Nutrition
- School Gardens are Good for Academic Learning
- School Gardens Improve the Environment
- School Gardens are Good at Linking Parents and Community to School
- School Gardens are Good at promoting Life Skills

Now, after we have the main titles of the flipcharts, hand out the laminated cut out papers (See Activity 2) and ask those who have a paper to stick it on the appropriate flip chart. The participants will guess under which main topic their sub-topic falls.

After they have finished, have one participant per flip chart read what everyone posted. Have the students comment whether the paper should go there or not. If it is misplaced—move it to the correct flip chart and explain. Some may be able to go under two different categories.

After you have gone through the flip chart as a group, give participants the answers (see hand out 2) for their reference.

Start a discussion by asking:

- *Is there anything you would add? Why would you add that? Which benefits do you think are most important? Why?*

As they add things, write it on the flipcharts and ask them to add it to their papers.

D1S6 Where do we start? (15 Mins)

Powerpoint and discussion

Explain:

- *So you have decided that you want to start a School Garden. What next? The preliminary questions that each school needs to discuss are as follows-*

SLIDE 4: Who will be responsible for the garden?

SLIDE 5: Select a Garden Manager

Explain:

- *A garden manager needs to be selected for each school. This can be a principal or a teacher, even a VEDC or other community member. It is essential that this person be very enthusiastic about gardening and the benefits of the school garden.*
 - *The garden manager can not do it alone! Who will help them? (Ask participants)*
 - *A garden committee (of students or other teachers), a school garden club (of interested students), community members, the cook, etc.*
 - *It is for each school to decide in a participatory way who will be in charge of the garden. It is important that the teachers, students and principal all decide together the exact tasks of the garden manager, teachers, students, parents, etc. This will be discussed more on Day 3.*
 - *Do you already have a garden manager in your school? How did you select the person?*

SLIDE 6: Responsibilities of the Garden Manager

- *What is the garden manager responsible for?*
 - *Overall planning and management of the garden*
 - *Encourage and motivate others to help and support the garden*
 - *Organize garden work & lessons*

SLIDE 7: Responsibilities of Teachers

- *What can teachers be responsible for?*
 - *Using the garden in lessons. School gardens are valuable for learning about science, math, environmental studies, and even writing and art*

SLIDE 8:

Responsibilities of Students

- *What can students be responsible for?*
 - *Helping plan and prepare the garden*
 - *Caring for the garden (planting, weeding, watering, harvest)*
 - *Using the garden as a 'living laboratory' for learning*

SLIDE 9:

Responsibilities of Parents & Community Members

- *What can parents and other community members be responsible for?*
 - *Volunteer to help with garden work (land preparation, planting, weeding etc)*
 - *Give advice on good gardening practices*
 - *Providing small amounts of materials (animal manure, seed etc) to help the garden get up and running*
 - *Encouraging students to learn and make the most from their garden*

SLIDE 10:

What will we need?

Explain:

- *Community Support!!!*
- *The school can't start the garden alone*
- *Start small with what the community can contribute.*

Ask participants to brainstorm initial ideas about what could be contributed by the community.

D1S7 Gaining Support (1 hour 30 minutes)

Powerpoint (25mins) and Individual Activity (30mins) and Group Activity (35minutes)

Explain:

- *Community contribution is essential to make the garden successful and sustainable.*

Ask participants:

- *Why do they think this is the case?*

SLIDE 11:

The 4 Pillars of Community Contribution

- Wealth
 - *Community members can contribute supplies (tools, watering pails, seeds, etc)*
- Wisdom
 - *There are farmers and expert gardeners in your community who may be willing to help lend some expertise when you are planning the best ways to plant your garden.*
 - *If there is a long tradition of home gardens in the community—this can be built upon.*
- Work
 - *Children should NOT do all of the heavy lifting that is required to prepare the land and plant a school garden. While older children (with supervision and support from adults) can help create garden beds; community members should contribute their time and muscles to helping prepare the garden for the students.*
- Weight (influence)
 - *Influential people in the community that others listen to and respect can help change point of views about the garden and encourage people to contribute.*

Explain:

- *We now understand why community contribution is essential to the success of the school garden. The next question is—how do you mobilize the community to contribute?*
- *For those who have gardens already—are communities involved? Would you like them to be involved more?*
- *When we talk about these four things—do people in your community come to mind?*

ACTIVITY 3 (Identification of community support)

Have individual participants take 10 minutes to write down the people in their communities that they think could be well-placed to contribute one of the 4 pillars. *Who are they? Why would they want to contribute? What could they contribute? How might they be recognized for contributing?*

If participants are not from the village where they teach and appear to be struggling with the exercise, prompt them to think about engaged/active parents, VEDC members, families they have observed in the community that grow vegetables already...

Encourage them to think of all sorts of different members of their communities—not just the wealthy or powerful members. Even if it is just a small contribution—what can everyone do to pitch in?

ACTIVITY 4 (Debate)

- Have the participants split into pairs. So, each person has a partner.
- Discuss what some negative views about the community garden may be. *Why don't people get involved in school gardens?*
- Assign one partner to be a skeptical community member. The skeptical community member should adopt one of the negative points of view discussed.
- The other partner will be a teacher or principal or VEDC member that needs to change the point of view of the community member (participants can be themselves)
- Reference the “benefits of school gardens” hand out to convince the skeptical community members that not only are school gardens beneficial, but that they should contribute.
- Let them debate. Then, let them switch positions and debate.
- After the activity—discuss as a group. *Were you convinced? Why or why not? What works in convincing community members that school gardens are good and they should be involved?*

D1S8 The First Steps: Creating A Garden Management Plan (1 hour 30mins)

Powerpoint and discussion

*Before starting out the powerpoint—hand out the School Garden Management Plans (**hand out 3** attached) and let the students follow along with those:*

Explain:

- *Now we understand:*
 - 1) *why school gardens are beneficial*
 - 2) *why community support is necessary*
 - 3) *hopefully some strategies to engage the community*

SLIDE 12: Step 1: Get everyone involved from the very beginning.

- Ask participants: *Do you think it is important that students make the major decisions about the gardens? Why or why not?* (Lead this discussion for 10mins)

- It will be the “Garden Manager’s” job to guide the students in making the decisions about the school garden.
- Students should be taught about the different, important benefits of school gardens (like we did today); as well as the nutritional value of vegetables grown in school gardens (we will talk more about this tomorrow)
 - Idea: Choose a School Garden Committee of motivated students, who can participate in developing the School Garden Management Plan
- Teachers should also use the school garden as a tool for teaching students about other subjects (math, language, science, art etc). We will talk more about this on Day 3 and 4 of this training.

SLIDE 13: Step 2: Mission Statement: A mission statement outlines in one sentence the main GOALS of the garden. Why it exists.

- *We discussed all of the different uses of a school garden—but what will be the priority for your school?*
- The main priority goals of the school garden should then be selected off of what the students think and a mission statement—agreed upon by all—should be created.
 - Idea: Have students submit ideas for a school garden name and slogan. Students then vote on the best one and a sign is created with the name and slogan on it for the garden!
 - Younger students can do this!

SLIDE 14: Step 3: Decide how big the garden will be and what to grow

- This is also something that should be decided by the students. Let younger children create the name and sign, but perhaps have older students participate in more complex discussions about how big the garden should be and what to grow (see below).
- How big?
 - School gardens should always start off small. It is better to start small and build up to more later than to start off too big and get discouraged. Start small so that the need for student and community contribution isn’t too pressing at first. After a small garden is successful, more people will be interested in helping and seeing it expand. You can use the success to get more support.
 - Idea: My Dream Garden--Have students draw what they would like the garden to look like. Choose from a drawing a garden layout. Have students post their drawings around the school.
- What to grow?
 - Food grown should be based on the following:
 - What fruit and vegetables grow well in the area
 - High nutrition value (leafy greens!)
 - Low maintenance
 - What students like to eat! (Not candy!!)
 - What cooks know how to cook/or is easy to cook.
 - Idea: Have students interview cooks about the types of fruits and vegetables that they know how to cook, and that they suggest should be grown in the garden
 - It will require the Garden Managers support in this discussion, as they will be able to tell them what is easier to grow, more difficult, etc.
 - Use students’ knowledge. Do many students have parents that grow spinach, for example? So a lot of them know how? This might be a good thing to grow!
 - Idea: Homework--Have students who grow certain vegetables at home write up how to grow that vegetable. They can go home and ask their parents and then come back and share with the other students.

- Have children in the school vote on what will be grown. List the different vegetables and fruits that the school is willing to grow and have children vote for their preferences

SLIDE 15: What will we need?

- STEP 6 in Management Plan
 - After you have decided what to grow and how big the garden will be, you will need to work with the students and garden manager to decide exactly what items are needed to start the garden
 - Brainstorm together on where you might be able to get these items. If the school does not have funds—who in the community might be able to help? How can tools be acquired? Can you borrow some?

SLIDE 16: How will the work get done?

- Step 7 in the Garden Management Plan
 - Choose participants to read aloud through the list of ideas on the School Garden Management Plan template
 - As participants: *what might you add to this list?*

SLIDE 17: Scheduling Garden Tasks

- Step 8 in Garden Management Plan
 - Tasks should be divided into two categories: Hard Labor and everyday tasks. Students should NEVER be involved in any of the hard labor (such as preparing the land and garden beds, building fences, etc.)
 - For the easier everyday tasks, schools will need to decide exactly how those tasks will be completed.
 - Monitoring tasks (record keeping)
 - Fun activities and learning opportunities also should be scheduled

SLIDE 18: Garden Monitoring

- Step 9 in the Garden Management Plan
 - Who works in the garden and when should be kept as a record. You can print out the table in the School Garden Management Plan and put it in a plastic folder kept with the Garden Manager or with the tools and after a student, group of students, class or community member(s) does some work in the garden—they note what they did. This way, the Garden Manager and students can keep track of who has been working most in the garden and who may need to contribute a bit more.
 - It would be good to have a garden “file” where monitoring and the schedule can be kept

SLIDE 19: CELEBRATE!

- Step 10 in the Garden Management Plan
 - So, you have started you garden small because you don’t have a lot of community contribution yet. You and the students are working hard in the garden and you see all the benefits. One way to make sure that the benefits are seen by the whole community and to generate enthusiasm for your garden is through celebration!
 - Ideas include:
 - Invite Parents to taste school meals prepared using produce from the garden!
 - Put on a harvest festival
 - Parents can join the harvest festival. Those who contribute seeds/tools and commit time can be given prizes or put in a raffle for prizes.

- Students can put on a play about the benefits of vegetables growing in the school garden (e.g. nutrition & preparation) [See *Annex A*]
- Students can give guided garden tools to parents where they tell them about all they have learned in the garden
- Any type of outdoor games can be played around the garden, and community members can appreciate the way the garden beautifies school grounds

After you finishing going over the management plans, ask the participants: *What do you think? Is there anything you would add? How will you get this information?* (This last question is a test—they should get the information in a participatory way!)

Tell participants that we will share some suggested activities for involving students in the garden planning and management process later in the week (*Annex A*).

D1S9 Sharing Session (1 Hour)

Group work

Hand out 4 (The secret to a successful garden handout)

Start by going over the handout as a group. (10mins)

ACTIVITY 5

Based on the energizer activity to identify participants that already have a school garden, break participants into groups of 5 (including a mix of people who have school gardens and those who don't). (30mins)

Ask:

- For those who have school gardens, share with your group what has worked well in your school and why. Ask those who don't yet have a school garden if they think it would be applicable to their schools.
- For those who don't have school gardens, mention something you aren't sure about or that is confusing to you. Talk about possible difficulties in starting or maintaining a garden and then listen to the advice from group members that already have a school garden.

One person from each group then summarizes the group's discussion for everyone (20mins)

D1S10 Recap (15mins)

- Thank everyone for their participation
- Ask participants to write on sticky notes something they liked about the day and something they didn't like
- Have participants post the sticky notes on a Smiley Face flip chart and a Sad Face flipchart.
- Tell participants that tomorrow you will discuss some of the technical components of starting a school garden

After participants leave...someone consolidates the feedback for presentation the next morning.

- Collect flip chart paper and stick them around the training center (not front and center)
- Set up for the next day
- Collect Sticky Notes and get a general idea of what people liked and didn't like

Day 2				
Achievement Based Objective		<ul style="list-style-type: none"> • Demonstrated increased knowledge in gardening techniques 		
Resources/Materials Needed		<ul style="list-style-type: none"> • IEC School Gardens Manual 		
Detailed Agenda				
Time	Session	Topic	Resources	Facilitator
8:30am-8:45am	D2S1	Welcome/Icebreaker		
8:45am-9:15am	D2S2	Review of previous day		
9:15-10:30	D2S3	Technical Introduction— Beginning your garden	IEC SG Manual	
10:30-10:45		Coffee Break		
10:45-12:00pm	D2S4	Technical Session - Water resource - Bio-Fertilizer	IEC SG Manual	
12:00-1:00pm		Lunch		
1:00-2:45 pm	D2S5	Technical Session—vegetables	IEC SG Manual	
2:45-3:00 pm		Coffee Break		
3:00-4:30 pm	D2S6	Technical Session—fruit	IEC SG Manual	
4:30-5:00 pm	D2S7	Re-cap of the day and daily training review		

D2S1 Welcome/Icebreaker (15 mins)

Do a short game for an icebreaker:

- Say “My aunt works in the market and there she sells something....”
- Then start to list adjectives one by one and see if anyone can guess what she sells. Whoever guesses first wins!
- For example:
 - My aunt works in the market and in it she sells something....
 - Orange
 - Full of Vitamin A, which is good for your eyes
 - Full of vitamin K, which is good for your heart
 - Grows in the ground
 - People yell “Carrots!”

D2S2 Review of Previous Day (30mins)

- As a participant to explain something they learned to the entire group (they can use any of the flip charts on the walls)
- Ask another participant to do the same with a different topic
- Ask a third participant to do the same
- Go over some of the sticky notes left the day before—address any concerns (sad face comments) people may have had
- Go over parking lot questions (if there are any)

D2S3 Technical Introduction—Preparing Your Garden (45mins)

Help from Agriculture Expert/Partner Here!

- I. Tell participants: We have talked so far about the many uses of a garden and what it is for. Now, we can discuss some of the technical aspects of growing things in your garden. This can help everyone here be a technical mentor to the teachers and students involved in growing things in the garden.
- II. The first step is preparing the soil for the garden and making sure you have all the necessary things in place for your garden to be successful (garden plan, garden beds, water source, fencing, safe place to store tools and seeds, etc.)
- III. Conduct the School Gardens Manual Technical Lesson on Preparing for the Garden and Preparing the Soil

D2S4 Technical Session—Water Resources & Bio-Fertilizer (1 hour 15mins)

Help from Agriculture Expert/Partner Here!

- I. Tell participants: For a garden to be successful, it needs water and nutrients from the soil. In a school environment, it is highly recommended to use organic farming practices, that don't require lots of chemicals to be applied to the vegetables to ensure good growth. In this session, we will talk about ways to ensure that your school's garden has the water and soil nutrients it needs, without using chemicals.
- II. Conduct the School Gardens Manual Technical Lessons on Water Resources and Using Manure Fertilizer & Bio-Extract.
 - a. Note that each lesson will need to be shorter than what is in the manual (manual suggests 50 min per lesson). Suggest reducing time for water resources lesson; and focusing discussion on bio-fertilizer on compost-making (and other things that are available at the community level – e.g. only very short discussion about effective microorganisms (EM))

D2S5 Technical Session—Growing Vegetables (90 min)

Help from Agriculture Expert/Partner Here!

- I. In this section, choose 2 or 4 vegetables to review. Choose which vegetables to train on (which lessons to do) based on what most people are already growing in that district; specifically choosing vegetables that have high nutrient value.
- II. Conduct the School Gardens Manual Technical Lesson for the selected vegetable types
 - a. If 2 vegetable types are selected, conduct the School Garden Manual Lesson for both vegetable types with all participants (45-50 minutes per vegetable)
 - b. If 4 vegetable types are selected, divide participants in half, allocate one vegetable type to each group, and then conduct the School Garden Lessons separately with the two groups of participants. Repeat for the additional two vegetables.

D2S6 Technical Session—Growing Fruits (90 min)

Help from Agriculture Expert/Partner Here!

- I. In this section, choose 1-2 fruit varieties to review and use the IEC School Gardens Manual lesson plans for those fruits. Choose which fruit to train on (which lessons to do) based on what most people are already growing in that district; specifically choosing fruits that have high nutrient value.
- II. Conduct the School Gardens Manual Technical Lesson for the selected fruit types with all participants (45 min per fruit)

D2S7 Recap (30 min)

- Thank everyone for their participation
- Ask participants to write on sticky notes something they liked about the day and something they didn't like
- Have participants post the sticky notes on a Smiley Face flip chart and a Sad Face flipchart.
- Tell students that tomorrow you will have a few more sessions on technical aspects of school gardens, and then move to discuss child centered teaching methods

After participants leave... someone consolidates the feedback for presentation the next morning.

- Collect flip chart paper and stick them around the training center (not front and center)
- Set up for the next day
- Collect Sticky Notes and get a general idea of what people liked and didn't like

Day 3	
Achievement Based Objectives	<ul style="list-style-type: none"> • Demonstrated increased knowledge in animal raising techniques • Produced technical calendars for implementing their school garden plans • Demonstrated understanding of CCTM • Practice identifying different CCTM methods for different types of learners • Identified Teacher vs. Child Centered Learning strategies
Resources/Materials	<ul style="list-style-type: none"> • Parking Lot • Day 3 Powerpoint • Copies of Hand Out 5 (School Garden Calendar Template) • Copies of GOL School Gardens Manual for all participants • Flip Chart for Activity 7 (qualities of good teachers) • Set up Flip Charts for Activity 8 (activities for different learner types) • Copies of Hand Out 6 (Child-centered teaching methods examples) • Print out of Hand Out 7.1 (facilitator reference) • Copies of Hand Out 7.2 (Teacher vs child-centered education) (for participants) • Copies of Hand Out 8 (school garden activities to do before garden work starts) • Copies of Annex A (CCTM activities to do with the school garden)

Detailed Agenda				
Time	Session	Topic	Resources	Facilitator
8:30-8:45am	D3S1	Welcome/Icebreaker		
8:45-9:15am	D3S2	Review of previous day		
9:15-10:45am	D3S3	Technical—animal raising	IEC SG Manual	
10:45-11:00am		Coffee Break		
11:00-12:00pm	D3S4	Technical—Create School Garden Calendar	IEC SG Manual	
12:00-1:00pm		Lunch		
1:00-2:40pm	D3S5	Introduction to CCTM	Activity, powerpoint	
2:40-2:55pm		Coffee Break		
2:55-4:00pm		Introduction to CCTM continued	Activity	
4:00-4:30pm	D3S6	Using the School Garden for CCTM		
4:30-5:00 pm	D3S7	Re-cap of the day and daily training review		

D3S1 Welcome/Icebreaker (15mins)

D3S2 Review of Previous Day (30mins)

- As a participant to explain something they learned to the entire group (they can use any of the flip charts on the walls)
- Ask another participant to do the same with a different topic
- Ask a third participant to do the same
- Go over some of the sticky notes left the day before—address any concerns (sad face comments) people may have had
- Go over parking lot questions (if there are any)

D3S3 Technical Session—Animal Rising (90 min)

Help from Agriculture Expert/Partner Here!

- I. Choose two animal raising lessons to discuss here, depending on what is already being done by schools in the district, or animals that schools are interested in learning about (chicken, fish ponds or pigs).
- II. Conduct the School Gardens Manual Technical Lesson for the selected animal types with all participants (45 minutes per animal)

D3S4 Technical Session—Creating School Garden Technical Calendars (60 min)

Explain to participants:

- For good planning, it's important to think through when different activities will happen in the school garden; the resources needed; and who will be responsible
- A school garden calendar helps to document all of this important information, and make a yearly plan for producing food from the garden

Give Participants *Handout 5 (School Garden Calendar—IEC calendar handout)* and explain the different columns

SLIDE 20: Questions to think about when developing a school garden technical calendar

- When does the growing season for different products begin and end?
- When do cultivation activities need to be done for each product (e.g. compost making, planting, weeding)? How long does each production activity take?
- Do we want to harvest all products at once, or stagger planting so that we have a longer-lasting supply?
- Are there any gardening techniques that can help us produce vegetables throughout the whole year – during both the rainy and dry seasons? (If not sure, who can we ask about this?)
- Is there any way to store or preserve produce so that it lasts through the school year? When does this need to happen?

ACTIVITY 6: Create School Garden Calendar

Break participants into groups of 4-5 (combining participants that already have a garden with those that do not). Ask participants to use the handout to create a calendar on flipchart for one of the products discussed during the training (vegetable, fruit or animal) (20 min)

Have participants post their calendars on the wall, and have all groups walk around, read the different calendars, and the discuss about any similarities/differences.

Explain to participants that they will need to work with the school garden manager, other teachers, and the student garden committee (if applicable) to develop a full school garden calendar.

To finish the technical sessions:

- Emphasize WHERE schools can go for more technical information. Hand out the contract information of people in the district who they can call for help and support
- Provide all participants with the School Garden Training Manual produced by GOL

D3S5 Introduction to CCTM (2hrs 45mins)

Powerpoint/Discussion/Group Work

Activity 7, what makes a good teacher? (30mins)

- Ask participants to take a few minutes to think of a good teacher they have had in the past—even their favorite teacher who they learned a lot from.
- Have participants quietly write down some of the teachers' strengths and good qualities
- With the person sitting next to them, have participants discuss with a partner the qualities of their teacher.
- Using a flip chart—ask participants for some of the qualities that their partner listed. Write them on the board.
- After a list is formed, ask probing questions, such as:
 - *What do these qualities have in common?*
 - *Do they take into account that different students learn differently?*
 - *Do they let students practice and participate?*
 - *Do they make learning fun?*
 - *Do they foster independence in students?*

Powerpoint; Intro to CCTM (10mins)

Ask the participants: *What is CCTM? Who has heard of CCTM?*

- Discuss for 5 mins
- Answer: Child Centered Teaching Methods is based on the fact that each child learns differently and in a classroom, a variety of teaching methods needs to be employed in order to educate each child to their unique needs.

Explain (via powerpoint)

SLIDE 21: Child-Centered Teaching Methods

- Child Centered Teacher Methods are the same as *Student-centered teaching methods*—these are teaching methods use that shift the focus of activity/lesson from the teacher to the learners.
- When students are the center of the activity—they are actively engaged in their own learning.
- They are discussing with each other, thinking about the questions themselves, getting involved directly.

We will talk in this session about the different types of learners as well as specific methods that can be used in the classroom to engage them.

SLIDE 22: Different Types of Learners (10mins)

Explain:

- Now we will discuss the four primary learning styles. Each student has a unique way that they learn best and no two students are exactly the same (as teachers know!). Most students are mixes of the four styles we will discuss now, but understanding each learning style will hopefully help teachers better plan their lessons to include each of the different styles.

SLIDE 23: Visual Learners:

- These learners absorb information by seeing it in front of them—in graphs, diagrams, pictures, etc. They often have hard times following lectures and are distracted by noise.
 - Ask: If you wanted to teach a visual learner about nutrition—what is something you might do?
 - (answers may include: show pictures of the benefits of each food, bring the foods into the classroom and have them identify color and nutrition, show diagrams of different types of food and why they are needed for the body)

SLIDE 24: Auditory Learners:

- These learners use verbal language as their prime form of learning. They learn best by hearing and speaking—they learn through stories and rhymes.
 - Ask: If you wanted to teach an auditory learner about nutrition—what is something you might do?
 - (answers may include creating a song about vitamins, reading a story aloud about the functions of the body and what each food does, having the student prepare a speech about a certain type of food)

SLIDE 25: Kinesthetic Learners

- These learners learn best by doing: moving, being active, touching or handling physical objects. The majority of children fall under this category to some extent and this time of learning is very important to integrate into a classroom.
 - Ask: If you wanted to teach a kinesthetic learner about nutrition—what is something you might do?
 - (answers may include having the student categorize food-or pictures of food—in order of most nutritious to least nutritious, have the student go outside and look at the types of food and touch it, have the students act out what each type of food does, for example: carbohydrates give you energy, so run in place as fast as you can! Protein builds muscle, so flex your muscles! Vitamins keep you from getting sick, so stretch your arms up!)

SLIDE 26: Read/Write Learners

- These learners learn best through the written word. They need to see something written to understand. They are often excellent readers and writers. They like handouts with explanations.
 - Ask: If you wanted to teach a read/write learner about nutrition—what is something you might do?
 - Answers may include: have them read about the benefits of different food and write a summary

ACTIVITY 8 -- Activities for different learner types (1 hour)

Pass out the hand out about different CCTM classroom strategies (**Hand out 5**) and read over them as a group.

- *What do they think? Are any of these ideas new?*
- *What would you add to this? (add some ideas)*
- Split the participants into 4 groups—one for each type of learner

- Have the participants use the handout to decide which type of learning activities would be best for their type of learner.
- Have the participants add their own ideas and methods to the list as well.
- Each group presents what they wrote for each type of learner.

After finishing activity 8, ask the group—*what are the challenges for implementing these different ideas in the classroom?*

Have participants take a coffee break for 15 minutes

Teacher centered teaching vs. child centered teaching
(See Handout 7.1 (This handout is for facilitator reference only) (30 mins)

SLIDE 27: Discuss what Teacher Centered vs. Child Centered instruction is

Teacher-Centered	Child Centered
• Focus is on teacher	• Focus is on both students and teacher
• Teacher talks, students listen	• Teacher models; students interact with teacher and one another
• Students work alone	• Students work in pairs, in groups, or alone depending on the purpose of the activity
• Teacher monitors and corrects students	• Students talk without constant instructor monitoring; instructor provides feedback/correction when questions arise
• Instructor answers students' questions	• Students answer each other's questions, using instructor as an information resource
• Instructor evaluates student learning	• Students evaluate their own learning; instructor also evaluates

ACTIVITY 9 In the same groups, have participants fill out the pros and cons of teacher vs. student centered learning using Hand Out 7.2

- Project the completed version via powerpoint (Handout 7.1)
- Discuss—*what do you think? What would you add to this list?*
 - Emphasize that the vast majority of classes will always have a mix of teacher vs. student centered methods

Basics of CCTM (10mins)

SLIDE 28: Why CCTM?

Making lessons that meet the needs of the different types of learners in your classroom has been proven to help students learn better.

- Explain the following:
 - Student-centered methods have repeatedly been shown to be superior to the traditional teacher-centered approach to instruction, a conclusion that applies whether the assessed outcome is **short-term mastery**, **long-term retention**, or **depth of understanding** of course material, acquisition of **critical thinking** or creative problem-solving skills, formation of **positive attitudes** toward the subject being taught, or **level of confidence** in knowledge or skills.

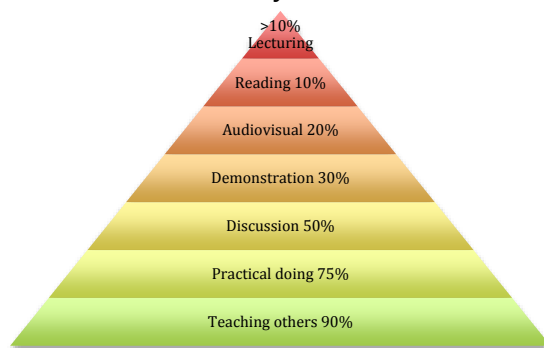
- Tell students: Think for a second about positive attitudes about learning. If a child is bored or doesn't understand because the teacher is only teaching for one of the learning styles—then do you think they would like that subject? If this training as just me reading from a book to you—would you leave this training with a positive view of School Gardens? A variety of methods, that we will talk about more soon, used in the classroom will help students become enthusiastic about the subjects they are being taught—and therefore, they will learn better.

SLIDE 29: Shows chart below—explain that this is based off a study of retention of school lessons given the way the information was delivered.

It is important to note, however, that different types of students will learn better in some ways than other. The graph shows the average for a child.

Give examples from each type of teaching activity:

- Lecturing: Standing in front of the classroom speaking
- Reading: reading from a textbook
- Audiovisual: looking at a powerpoint or watching a movie
- Demonstration: Showing something in front of the entire class (example: dropping a ball to talk about gravity)
- Discussion: Having the students voice their ideas, discussing a certain topic
- Practical doing: hands on learning—for example, a student draws to learn a new art technique
- Teaching others: by far the most retention happens when students are required to teach others what they have learned



Ask: Given the different learning styles we discussed—does this chart make sense? What learning style do you think is MOST common among children?

Answer: Most children are kinesthetic learners and need to learn by doing.

SLIDE 30: “Tell me and I will forget, show me and I may remember, involve me and I will understand”

Tell the participants:

- *you may be asking—why are we talking about CCTM during a School Gardens training? What do you think?*
 - Let participants talk about how one of the benefits of the school gardens identified on the first day was that school gardens help students learn

SLIDE 31: School Gardens provide endless opportunities to make lessons more child-centered by giving students a living laboratory where they can interact physically with their education.

D3S6 Using the School Garden for CCTM (30 min)

Hand Out 8—Ideas for Lessons in the Garden Before Planting Begins

Go through the hand out as a group and discuss what type of learners would benefit from these activities.

Ask participants—what are some other types of activities you may be able to do with students?

Give participants a copy of Annex A with different teaching activities that can be done using the garden, and ask them to take a few minutes to read through during the evening. They don't need to remember everything, but having some familiarity with the activities will help during the session tomorrow morning.

D3S7 Recap

- Thank everyone for their participation
- Ask participants to write on sticky notes something they liked about the day and something they didn't like
- Have participants post the sticky notes on a Smiley Face flip chart and a Sad Face flipchart.
- Tell students that tomorrow you will discuss specifically how to make the most of the garden as a learning tool, and how to plan lessons that use the garden.

After participants leave... someone consolidates the feedback for presentation the next morning.

- Collect flip chart paper and stick them around the training center (not front and center)
- Set up for the next day
- Collect Sticky Notes and get a general idea of what people liked and didn't like

Day 4	
Achievement Based Objective	<ul style="list-style-type: none"> Generated Ideas for Teaching gardening techniques to students using CCTM Created lesson plans that use CCTM and School Gardens Mastered School Garden and CCTM Concepts Prepared plans for rolling-out CCTM and school gardening in their school Demonstrated skills in training other teachers on CCTM/school gardening
Resources/Materials Needed	<ul style="list-style-type: none"> Parking Lot Flip Chart Copies of Hand Out 9 ('making weeding fun') Set of laminated teaching tools GOL School Textbooks for a range of subjects & grades Prepare 1 flipchart with lesson plan template for Activity 11 Prepare 7 flipcharts with subject headings for Activity 11 Printout of Activity 12 (game questions) Copies of Handout 10 (school training calendar) Copies of Handout 1 (pre/post-test)

Detailed Agenda				
Time	Session	Topic	Resources	Facilitator
8:30am-8:45am	D4S1	Welcome/Icebreaker		
8:45am-9:15am	D4S2	Review of previous day		
9:15-9:45am	D4S3	Using the School Garden for CCTM (continued)	Activity, Teaching tools	
9:45-10:00am		Coffee Break		
10:00-12:00am	D4S4	Lesson Planning for CCTM & School Gardens	Activity	
12:00-1:00pm		Lunch		
1:00-1:30pm	D4S5	School Gardens/CCTM Quiz Game	Game	
1:30-2:30pm	D4S6	Planning Roll-Out in Schools	Hand out/activity	
2:30-2:45pm		Coffee Break		
2:45-4:15pm	D4S7	CCTM/School Garden Training Practice	Activity	
4:15-4:45	D4S8	Post Test		
4:45-5:00pm	D4S9	Review remaining parking lots and sticky notes and thank participants		

D4S1 Welcome/Icebreaker (15mins)

As an icebreaker—have a participant share a song or poem that children in Laos really enjoy. Have the whole group sing the song or act it out.

D4S2 Review of Previous Day (30mins)

- Ask a participant to explain something they learned to the entire group (they can use any of the flip charts on the walls)
- Ask another participant to do the same with a different topic
- Ask a third participant to do the same
- Go over some of the sticky notes left the day before—address any concerns (sad face comments) people may have had
- Go over parking lot questions (if there are any)

D4S3 Using the School Garden for CCTM (continued) (30 minutes)

Group work

ACTIVITY 10

Split participants into groups of 4

Ask participants:

- *Using CCTM strategies, how could you incorporate the school garden into lessons?*
- *Hint: Keep in mind, Learning by doing. (Refer to Annex A as needed)*

Have participants share what they came up with

Present teaching tools to participants (pictures of different fruits and vegetables) with the pictures and information on the back. Explain to them that it would not only be fun, but a great learning experience for students to make these tools themselves. Teachers can assign a different vegetables/fruit/livestock to a group of students and have them draw a picture of it and write the nutritional value on the back along with brief directions on how to grow, harvest and preserve it. These students can then use their tools to teach other students.

Give Hand out 9—Making Weeding Fun

Discuss how gardening needs to be educational, but also fun. Discuss specifically how to make the most of the garden as a learning tool.

D4S3 Lesson planning for CCTM & school gardens (2 hours)

Begin by saying that teachers should be encouraged by principals to make maximum use of the school gardens for learning.

- *Now, we are going to show how school gardens can be integrated into a Child-Centered lesson plan.*

Activity 11

Start the activity by doing a lesson plan together as a big group **(30 mins)**

- Ask the group to provide you with a theme—or a lesson that a teacher may have for a certain day. This could be in science, math, art, language studies or any school subject. For example, maybe they will say the skill is long division or learning about colors in Lao language.

- As a group fill out a flip chart with the following information written on it (DO NOT WRITE THE RED INFORMATION—THIS IS FOR GUIDANCE ONLY)
 - 1) Ask one participant to pick the subject and lesson for a day (math, science, art, language...)
 - 2) Ask participants to identify and write what exactly they want each student in their class to learn during that lesson
 - 3) Have participants talk in groups of 3-4 to identify 2-3 activities that they could do within their class period to teach students the lesson. They should focus here on making sure they are choosing child centered learning methods to accommodate different types of learners.
 - 4) Have each group suggest one activity (requesting each group to share something different)
 - After they have finished listing activities and child centered methods, press the participants further to list an activity they can specifically do in the garden.
 - For example:
 - if they are learning multiplication they can count the leaves on one plant and multiply it by all the plants that are that type to get an idea of how many leaves total.
 - if they are learning Lao language, they could make name signs for the different crops in the garden
 - if they are learning science, they could help make compost for the garden
 - 5) With the whole group, go through several examples of how to use the school garden in a lesson plan on a wide variety of subjects. Use the GOL school textbooks for different subjects/grades as prompts if needed.

THEME	<i>(This is whatever skill or knowledge the participants decided)</i>
Learning Objectives (“at the end of the lesson, participants will be able to...”	<i>(these should be three to five objectives)</i>
Activities to reach learning objectives	<i>(These activities should be child-centered—have participants review their forms with child-centered methodologies) (Some activities should be in the garden)</i>
Resources	<i>(One of the resources should be the garden)</i>

GROUP WORK, ACTIVITY 11: (45 mins)

On the walls around the training room, put 7 pieces of flip chart. Write on the top of them:

- “Science (Grade 3-5)”
- “Math (Grade 1-2)”
- “Math (Grade 3-5)”

- “Lao Language (Grade 1-2)”
 - “Lao Language (Grade 3-5)”
 - “Life Skills (Grade 1-2)”
 - “Life Skills (Grade 3-5)”
- Tell participants that they can choose which group they go to—but should be evenly spaced. If a participant has expertise in math or science—they should choose the higher-level group in their subject.
 - Using the same template that the entire group used—have participants come up with a specific skill or set of knowledge within their category and create a lesson plan for it using Child Centered Teaching and the School Garden. Ask participants to refer to Annex A and the GOL school textbooks for ideas.
 - For example, if you want to teach arithmetic to elementary students-then you could go to the garden and estimate how many green beans you would get if you had 6 plants and each plant produced an average of 20 beans.
 - For example, older students could learn about chemistry by testing how quickly different things in the school garden cook and why.
 - Have each group create a lesson plan
 - Each group will then have a representative share their lesson plan and get feedback from the entire group. **(45mins)**
 - Discuss

D4S5 School Gardens/CCTM Review Game (30 min)

Interactive Game

See Activity 12 (Game Questions)

Game rules:

- The facilitator selects a scorekeeper (this person will not play, but keep score. It would be good to select someone especially shy who has had a difficult time participating)
- The participants are split into two teams.
- The two teams pick a team name
- The score keeper draws a score board

Team X	Team Y

- The facilitator places a permanent or white board marker on the table in front of him/her
- The two teams form two lines on either side of the table, so that the permanent marker is exactly halfway between them
- The facilitator has note cards with questions written on them
- The facilitator asks a question and the two participants have to answer it
- The participant who thinks they know the answer will grab the permanent marker
- Who ever grabs the marker fastest gets to try and answer the question. If they answer correctly, their team gets a point and the two participants go to the back of the line.

- If they answer incorrectly, the participant who did not grab the marker quickest gets a chance to answer. If they answer correctly, their team gets a point—if they do not answer correctly, no point is given and they move to the back of the line.
- The next pair of participants then advances to the table to compete for the marker and the question!

D4S6 Training Plan (1 Hour)

Individual Work and Presentation

Explain:

- In addition to the technical plan, everyone here should also plan how they will roll this out in their schools. You will need to train other teachers and VEDC members on what you learned during the last 4 days of this training.
- Explain that everyone in the room will have to be a trainer

ACTIVITY 13 (school training calendar)

Hand out training calendar template (Handout 10).

Participants will have 15 minutes to individually fill in the training calendar with what they think is best at their schools and to take back to the school to review with other teachers.

Ask for 1-2 people to volunteer to present their training plans. Each person that presents should receive 2 pieces of positive feedback and 1 thing that they should consider or could be improved (if applicable). This feedback can come from other participants (if possible) or the trainers.

D4S7 CCTM/School Garden Training Practice (90 min)

Group Activity

Explain that this activity is based on the CCTM idea that by teaching others—you learn best.

We will have the participants here today prepare and teach each other on a topic that they will need to provide training on for other teachers at their school. Participants will design the mini-training using CCTM and will give each other a mini-10 minute training on their topic.

ACTIVITY 14 (CCTM/school garden training practice)

Directions:

Split participants into 5 groups. Give each member of the group a different training topic (the benefits of school gardens, school garden management plans, CCTM and lesson planning, Technical Lesson, and Nutrition)

Have each member of the group individually come up with a 10 minute training on the topic and then each member of the group will present their agenda for the training and give one piece of the training (10mins) to the rest of the group on their topic.

- After the activity—ask participants how they think they would be able to train other teachers on using the school gardens as a learning tool

D4S8 Post Test (30 min)
(use Handout 1)

D4S9 Review Parking Lots, Post It Notes, and thank the participants for their participation.
Make sure to tell participants one last time that you know school gardens will not only make the students healthier, but will contribute greatly to their education.

Activity 1--Getting to know you game

Step 1: Participants fill out their BINGO boards individually

Step 2: Participants walk around the room and ask people what they answered, if they answered the same thing they can CHECK OFF that box

Step 3: The person who checks off 4 boxes in a row first wins!

My Favorite Color Is _____ 	My Favorite Subject in School was/is _____ 	I am from _____ 	I speak _____ languages
My favorite vegetable is _____ 	My favorite food is _____ 	My favorite sport is _____ 	My favorite animal is _____
I have _____ children 	Is there a school garden at your school? (circle one) Yes / No	I was born in _____ (month) 	My goal for this training is _____
I am... (circle one) Married / Single	My lucky number is _____ 	I have _____ brothers and sisters 	Do you have a garden at home? (circle one) Yes / No

Hand Out 1: Pre-Test/Post-Test

1. What is CCTM?

- Teaching methods where the teacher explains all lessons and the student has to copy from the teacher.
- Teaching methods that shift the focus of the activity or lesson from the teacher to the student
- Teaching methods where every single student works independently without support from the teacher

2. For CCTM, the student always...

- Learns from doing activities, discussing with each other, thinking about questions themselves, and getting involved directly in their own learning
- Learns only from what teacher has told.
- Learns through video, game, sport and television

3. Student learn best when...

- They have equipment like TVs, DVD players and iPads in the classroom
- Their teacher has a doctoral degree.
- They have an opportunity to discuss, practice, and teach others about what they have learnt

4. Which of the following is a good teaching method for a visual learner?

- Lectures
- Graphs, diagrams, pictures
- Moving, being active, touching/handling objects

5. Which type of learner would learn best by reading something and then writing a report on it?

- Visual learner
- Auditory learner
- Read/write learner

6. Who is primarily responsible for the school garden?

- Students
- Garden manager
- Principal

7. What should teachers be responsible for in their school garden?

- Digging garden beds, planting, weeding & harvesting
- Incorporating the school garden into lessons to give students an opportunity for practical learning
- Nothing, the school garden is someone else's responsibility

8. What are the benefits of school gardens?

- Good for children’s nutrition
- Good for academic learning
- Improve the environment
- Good at linking parents & schools
- Good at promoting life skills
- All of the above

9. When is appropriate for starting school garden?

- As early as possible after school begins, and continuing through the school year
- Beginning of the rainy season
- Beginning of the dry season

10. What are the necessary criteria for starting a School Garden?

- Land available; water resources nearby; access to tools, fencing, animal manure for compost, and vegetable seed (local is better); someone willing to be in charge
- Large land area; improved seed varieties; modern technology for planting, weeding and harvesting; access to chemical fertilizer, herbicide and insecticide
- Large land area along riverbank, close to school, and next to market

Please review the teaching methods in the table below, and tick the box to indicate which are child-centered teaching methods:

Teaching Technique		Yes (CCTM)	No (Not CCTM)
11	Teacher stands at front of class and reads from a textbook		
12	Students work together in small groups to complete a project		
13	Students and teachers use the school garden for learning about many different subjects		
14	The teacher solves the mathematics quiz and ask students to copy		
15	The students are asked to do small research on vegetable growing and present to the class.		
16	Teachers prepare lessons including a wide range of activities, to be interesting for different types of learners in the class		

Activity 2 – The Importance of School Gardens

Step 1: Write the bolded/underlined (below) titles on flip charts—DO NOT cut them out or hand them out!

Step 2: Cut out the bullet points individually (not including headings) and laminate them before the training

Step 3: Hand laminated papers out to participants

Step 4: Have participants place them where they think they go on the flip charts (using tape)

Step 5: Have participants read each flip chart and discuss.

Step 6: Ask Participants—is there anything to add? Add as necessary.

School gardens are good for children’s nutrition

- Good diet is essential to education. Children who do not eat well do not grow well or learn well. They are often sick, miss lessons and may drop out of school early. They have less of a chance of getting a good job.
- School gardens are not just for food, but for better eating. This means adding nutritional value to meals. Fruits and vegetables rich in vitamins and minerals, which help in growth and overall health. Students also enjoy school meals more when there is variety.
- The garden will not only help children eat better, but teach them how to eat better. The garden is an important source of learning about food and nutrition. School meals can help establish good dietary habits that children may not necessarily get at home.

School gardens are good for academic learning

- School gardens can help improve agricultural knowledge.
- School gardens are a living laboratory for studying environmental and life sciences.
- School Gardens can be linked to school curriculum for experiential (hands on) learning.

School Gardens improve the environment

- School Gardens make school grounds look beautiful and improve the image of the school.
- Safe gardening conserves soil and makes it more productive for longer.
- Safe (organic) gardening techniques help keep water supply pure

School gardens involve parents and the community

- By involving parents and the community, garden can help create stronger links between the school and the community.
- Community members can also learning about gardening from the school garden, helping them appreciate the activity.

School gardens promote life skills

- School Gardens teach young people how to work as members of a team, which will help them in their future.
- School Gardens will help students learn to plan, manage tasks, and take responsibility. “Life Skills” are personal and social capabilities such as managing work, planning, organizing, taking responsibility and working well in a team. Being able to plan and do and then explain what you have done to others is an important learning experience.
- Learning from mistakes in a school garden will help children develop problem solving skills that will help them in their lives.

Hand Out 2—Why School Gardens

School gardens are good for children’s health and education

- Good diet is essential to education. Children who do not eat well do not grow well or learn well. They are often sick, miss lessons and may drop out of school early. They have less of a chance of getting a good job.
- School gardens are not just for food, but for better eating. This means adding nutritional value to food. Fruits and vegetables rich in vitamins and minerals, which help in growth and overall health. Students also enjoy school meals more when there is variety.
- The garden will not only help children eat better, but teach them how to eat better. The garden is an important source of learning about food and nutrition. School meals can help establish good dietary habits that children may not necessarily get at home.

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- Learning from mistakes in a school garden will help children develop problem solving skills that will help them in their lives.

Hand Out 3—School Garden Management Plan Guide

Congratulations! You have decided to start a school garden! The format below will have guide you through the necessary steps to starting and managing a successful School Garden.

Step 1: Train Teachers on the many benefits of school gardens.

Step 2: Choose a “Garden Manager”

Step 3: Train Students on the many benefits of school gardens and get their opinions.

- *This may be a good time to have children vote on what to grow or have competitions for naming the garden. Have younger children draw their “dream gardens” and have a competition for best garden layout!*

Step 4: Choose a School Garden Committee made up of motivated students if this is something your school is interested in doing.

Step 5: Work with students to complete the following table:

	General Goal	Specific Goal
How will we use the garden? (MISSION STATEMENT)		<i>(How many lessons per week should involve the garden?)</i>
How big will our garden be?	<i>(REMEMBER: Start small!)</i>	
What will the garden produce in the first year?	<i>(This should be things you know you can grow, that are nutritious and that the students agree that they like to eat!)</i>	<i>(Number of plants, types, expected production...)</i>
What will we do to get the community involved in contributing to the garden?	<i>(Involving communities and parents!)</i> <i>(This is a good opportunity to talk to students about how to gain community support)</i>	<i>(Specific planned events to involve them—specific contributions that you will need)</i>
What are our long term goals (next 2 years)?		

Step 6: What will we need?

Fill out this “Garden Budget” with students

Item Needed	Number Needed	Who in the community can help?

Step 7: How will the work get done?

Here are some options to discuss with teachers and students—after discussing, decide which one is best for you:

- 1) Everyone in the school contributes
 - a. Classes rotate through different plots and different tasks (ideas for how to rotate?). This way everyone is exposed to the different crops and different aspects of taking care of the plants.
- 2) Each class has its own garden
 - a. They can be divided into teams or work together
 - b. A garden schedule, monitoring and evaluation is kept for the whole class.
 - c. This arrangement can foster class pride
- 3) Groups or teams have their own plots
 - a. Can choose team names
 - b. Encourages ownership and competition
- 4) Individual Plots
 - a. For students or pairs of students who are motivated and maybe want to experiment with different crop methods (learning scientific method)
 - b. Students submit proposals for what they want to experiment in their plot and why and then the best proposals are chosen
- 5) Delegate some garden management to older pupils
 - a. Older students or groups of students can apply to different positions (Pump Engineer, Tool Manager, Security Team, Compost King, etc.). These specialists make sure their areas run smoothly and can train their successors.
- 6) Create a School Garden Club
 - a. Volunteer students can be in charge of an aspect of the garden creating a “club” where they do work in the garden as an extracurricular activity.

Step 7: Scheduling Garden Tasks

Gardens are a lot of work! After the community has contributed to preparing the land for the garden, you will need to work with the Garden Manager and students to find the best way to schedule these WEEKLY garden activities:

- Routine Garden Tasks (daily, watering)
- Communal Tasks (weekly—tool maintenance, fixing fences or hedges)
- Monitoring and evaluation (regular record keeping of what happens to the garden and how much is produced)
- Fun activities/learning opportunities

Work out a plan to decide WHO will do what and when! It is important to plan ahead so that everyone knows who is responsible for each activity!

Step 9: Garden Monitoring

Discuss with students and teachers:

1. How will we monitor the garden to make sure everything is OK? How will we organize this?
2. Suggest setting up a garden file where students can “log” their activities in the garden (for rewards/points or as part of their Garden Club duties).

Step 10: Celebrate!

To get the community involved and to publicize your garden—here are some ideas for celebrations!

Here are some ideas—you can add to it when you discuss with your students and teachers:

- Harvest time is a great opportunity to invite parents to taste school meals with garden produce!
- Put on a Harvest Festival
 - Students Organize games for their families at the school
 - Students put on a play to talk about the garden
 - Guided Garden Tours

Step 9: Enjoy your garden!

School Garden Visit Log

Date	Class or Group	Activities	Notes for Next Group
Example: 4 December 2015	<i>Mrs. Lao 3eme Class</i>	<i>-Measured garden beds to learn about measurement conversions - Weeded Spinach Beds</i>	<i>- Beans still need weeding and please do not step on the carrot beds!</i>

Hand Out 4-- School Garden Success



SUPPORT

- ◇ The local education authority
- ◇ The head teacher/principal
- ◇ All the school
- ◇ The cook
- ◇ The parents and community

Involvement and Contacts

- ◇ Interest the local agriculture and health services
- ◇ Involve the community as experts, advisers, helpers, observers;
- ◇ Link with school meals
- ◇ Set up a support group of interested and active people
- ◇ Keep in touch with other schools that have gardens to learn from them

Sustainability

- ◇ Start small and expand later
- ◇ Establish (and maintain) a good water supply and fencing
- ◇ Know how the garden will be funded
- ◇ Use organic approaches to improve and conserve the soil
- ◇ Choose crops that thrive locally and have good nutritional value and that are also easy to cultivate
- ◇ Make sure that there is a deputy garden manager just in case the garden manager is away
- ◇ Train teachers so that they can pass on the knowledge to students

Motivation

- ◇ Establish clear objectives agreed by all;
- ◇ Choose garden managers who know how to handle people as well as plants
- ◇ Give praise, rewards, prizes and other incentives for children, teachers and helpers
- ◇ Publicize success and make garden activities visible to the public

Educational Value

- ◇ Explore attitudes in the community, families and children and recognize their importance
- ◇ Fully incorporate the garden into a learning tool and experience
- ◇ Involve pupils in planning, decision making, organization and publicity
- ◇ Make sure classroom work and garden work are integrated
- ◇ Link the garden to lesson plans
- ◇ Encourage observation, experimentation and record keeping

Technical support

Try your best to:

- ◇ Get access to information and good technical support
- ◇ Use suitable classroom materials to teach children about gardening

Hand Out 5—School Garden Calendar

School Agriculture Plan

District
Village

#	Items	Unit (# kg seed/ # trees/ # animals)	Size of garden (MxM)	Location (inside/ outside school)	Water source	Distance from garden to water resource	Year 2015			Year 2016									Responsible person	
							10	11	12	1	2	3	4	5	6	7	8	9		
1																				
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				

Date/...../2015

School Principal

Hand Out 6: Child Centered Teaching Methods (examples)

Student Centered Teaching Method	Description	Type of Learner(s)
Small group discussion and peer instruction	Students think about the answer to a question posed by the instructor, and then discuss the question among each other. The instructor selects students to explain the consensus to the class.	
Voting on Answers	Students can anonymously vote on answers (put their heads on their desk and raise their hands). This allows the teacher to assess comprehension anonymously and also engages the students.	
One minute papers	Given an open-ended question, students spend one minute writing their answers on index cards, which are collected by the instructor. Often given at the end of a class, the questions ask students what was the most important concept they learned or what remains unclear.	
Interactive lecture demonstrations	Students make predictions about the outcome of a classroom demonstration. They then observe the experiment or demonstration, describe the results, and discuss and reflect on the observed outcome.	
Case Studies	Use current events or stories to illustrate a lesson	
Concept Mapping	Students create a visual representation of an idea. This could be a chart or a piece of art	
Tutorial Worksheets	Pre-made worksheets where children have to solve problems—this can be done with pictures (for example—a sheet of paper that has questions on one side and answers on the other in a different order and children have to draw a line connecting the questions to the answer)	
Child-to-child teaching	Students are given a problem (for example—why are plants green?) and they have to research it themselves (or in groups) and create their own lessons on how they would teach others	

Pre test/post test	In one classroom session—teacher gives short quiz at the beginning of class and the same one at the end	
Songs	Make a song about a topic using a well known tune	
Games	As related to the topics—could be competitions too!	
Group Tests	A test is given twice to the same students. The first time, students answer the questions individually (as in a normal test) and submit their answer sheets. Then students are allowed to work in groups and re-take the test. The two scores are averaged.	
Random Calling	The instructor informs the class that students will be selected at random to answer questions (perhaps using a shuffle deck index cards of students names). Then, the instructor poses the questions to the class, and remains silent for tens of seconds to allow everyone to think through the answer. After a sufficient pause (or perhaps after peer instruction), the instructor selects a student at random to share thoughts about the answer. Then the instructor calls on another student at random to comment on the first student’s response.	
Writing with peer review	Students evaluate other students’ work using criteria outlined by the teacher.	
Art for learning	Students draw a concept and label the different parts or ideas, they can then share what they did in groups	
Other ideas....		

Handout 7.1 Teacher vs. Child Centered Education

Type	Pros	Cons
<p style="text-align: center;">Teacher Centered Education</p>	<ul style="list-style-type: none"> • Classroom remains orderly and quiet • Teacher retains full control of classroom behavior • Teachers plan all the activities out to the detail, so they don't have to worry that students will miss a point/topic • Teachers can prepare lecture, give the lecture and be done. No surprises. 	<ul style="list-style-type: none"> • When students work alone, they don't learn to collaborate with other students • This type of instruction gets boring for student. Their minds will wander and they may miss important facts. • Teacher-centered instruction doesn't allow students to express themselves, their ideas, ask their own questions or direct their own learning.
<p style="text-align: center;">Child Centered Education</p>	<ul style="list-style-type: none"> • Students learn important communicative and collaborative skills through group work. • Students learn to direct their own learning, ask questions and complete tasks independently • Students are more interested in learning activities when they can interact with other students and participate actively • Students are more interested in learning when they can self-direct their learning 	<ul style="list-style-type: none"> • Because this engages students and gets them talking—classrooms can become noisy and disorderly • Teachers must manage students activities all at once, which can be difficult during group work • Some students prefer to work alone and group work can be difficult for them

Hand Out 7.2 Teacher vs. Child Centered Education

Type	Pros	Cons
Teacher Centered Education		
Child Centered Education		



Hand Out 8--IN THE CLASSROOM

Activities for Students BEFORE the garden work begins

1. **Shall we have a garden?** *Pupils join the debate as to whether or not to have a school garden.*

Objectives: Pupils become aware of the uses of gardens and their positive aspects, recognize their own potential role, discuss reasons for having a school garden and feel motivated to start.

Activities: Pupils discuss gardens they know, posting up words and pictures of the items discussed: what they produce, what happens to the crops, what other things are found in gardens (eg. Taps, fences) and what they are for. They describe gardening jobs they know (eg. Weeding, digging) and discuss what they would like to do in a school garden, either writing or drawing their ideas.

2. **What plants like** A key lesson for all aspects of horticulture and nature study

Objectives: Pupils find ailing and healthy plants, describe them and note differences.

Activities: Pupils identify different plants (both healthy and ailing). They then imagine that they are plants, with roots (legs) and leaves (fingers) and answer questions:

- What do your roots like? Lots of space? Being squashed together?
Being firmly fixed? Wet? Dry?
- What do your leaves like? Dark? Light? Open air? Blowing in the Wind?
- What does your plant like? Lots of space? A lot of big weeds Nearby? Good food? Bugs? Insects?



Children are then allowed to speculate as to why some plants are well while others are not.

3. **Starting with soil** *Children analyze the soil*

Objectives: Pupils learn to distinguish between topsoil and subsoil, recognize good soil by feel and sight, and become aware of the components of soil.

Activities: In the school grounds pupils dig a hole to observe topsoil and subsoil, then inspect samples of good and poor soil, answer questions about them and learn the slogan “Good soil is damp, dark, crumbly and full of life”. One sheet of paper, they sort soil components into four sets: things from plants, things from animals, live things and “other”, and learn to approve of organic content. They also do experiments to establish that soil contains air (put a soil sample in water) and water (cover a sample with a plate and leave it in the sun).



4. **Soil quality** *Simple experiments investigate soil quality and drainage*

Objectives: Pupils have a good understanding of soil structure and its importance.

Activities: Students discuss which soil components contribute to: opening the soil for air, water, roots; keeping the surface soft, essential food for plants, dissolving nutrients, holding soil in place, holding plants firm, allowing animals and bacteria to live, trapping water or helping it to drain. They identify the type of soil in the school garden (clay, silt, sand) by feel. Soil quality is tested by making a “mudshake” with soil and water and letting it stand for two days until the sand/silt/clay/organic material settles out. Ideal portions are clay 1/4, silt 1/4, sand 1/2 and about 5% organic matter.



They can also test soil drainage by digging a hole and putting water in it. If it drains quickly, this can be dangerous, as water will not stay in the soil. Adding compost can help with this.

5. **Growing Plants** *This lesson provides an overview of the plant life cycle in relation to the plants life cycle.*

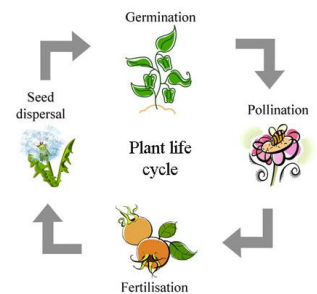
Objectives: Pupils become aware of how plants are grown and their life cycle.

Activities: Students plant something familiar in the garden or in a pot in the classroom and periodically observe and discuss.

6. **The Garden File** *Recording the life of the garden reinforces learning and Heightens motivation.*

Objectives: Pupils are motivated to keep records of gardening events and activities, learn how to make a record and become aware of its value.

Activities: The teachers and students create a garden file and discuss what will go in the file. School work about the garden? Weekly monitoring reports of the garden? Pictures? Students figure out how to arrange the “Garden File” and how often they will review the file. Different groups draw/decorate different parts/dividers of the “Garden File” (place for pictures, reports, activities around the garden, events, etc.)



Hand out 9 –Make Weeding Interesting!

Something to think about...Making weeding interesting!

Before asking children to just remove certain plants, there can be many questions to reflect upon:

- What are the plants that grow near our vegetables?
- How can we distinguish them from our vegetable plants? (Have a close look at the shape of their leaves, □ their colour, etc.)
- Do they appear in our parents' garden?
- Will they cause a problem to our vegetables? How can we find out? (To investigate, leave a square metre of the bed with weeds.)
- Are they useful? Can we eat them? Feed them to animals? Press them?
- Are they beautiful?
- What happens to them after □ they are pulled out
- What happens if we leave them next to our vegetables? (For example, some grasses may root again and □ re-grow.); and
- What happens if we put them in the compost?

By reflecting on these questions, relationships are made to subjects like natural science and ecology, and to less obvious subjects such as:

- health (some weeds may have medicinal □ use);
- arts (looking at colours and shapes, painting and pressing interesting weeds); and
- music, language and local culture (finding songs or sayings about the weeds, writing a small report/story)

Activity 12—Game Questions

(In progress—should overlap with pre-post test questions)

Handout 10—School Teacher Training Calendar

Name:

Name of School:

Date completed:

Training	Goal	Participants	Facilitator	Resources	(Dates)
The Benefits of School Gardens	All the benefits of school gardens are understood and school community is excited about school gardens	Teachers, Students, Community Members	Principal	CRS School Gardens training tools	
School Garden Management Plans Completed					
CCTM and Lesson Planning Using School Gardens as a teaching tool					
Technical Training					
Nutrition					
School Garden Planting Calendar Completed					

ANNEX: CCTM Activities for the School Garden¹

1. Activities for Students BEFORE the garden work begins

Many lessons can be done before the garden work begins. They can open up discussions with pupils about the aims and uses of gardens, give background information about plants, introduce ideas of good gardening, and help children set up a garden record.

A. Shall we have a garden? *Pupils join the debate as to whether or not to have a school garden.*

Objectives: Pupils become aware of the uses of gardens and their positive aspects, recognize their own potential role, discuss reasons for having a school garden and feel motivated to start.

Activities: Pupils discuss gardens they know, posting up words and pictures of the items discussed: what they produce, what happens to the crops, what other things are found in gardens (eg. taps, fences) and what they are for. They describe gardening jobs they know (eg. weeding, digging) and discuss what they would like to do in a school garden, either writing or drawing their ideas.

B. What plants like *A key lesson for all aspects of horticulture and nature study*

Objectives: Pupils find ailing and healthy plants, describe them and note differences.

Activities: Pupils identify different plants (both healthy and ailing). They then imagine that they are plants, with roots (legs) and leaves (fingers) and answer questions:

- What do your roots like? Lots of space? Being squashed together?
Being firmly fixed? Wet? Dry?
- What do your leaves like? Dark? Light? Open air? Blowing in the Wind?
- What does your plant like? Lots of space? A lot of big weeds
Nearby? Good food? Bugs? Insects?

Children are then allowed to speculate as to why some plants are well while others are not.

C. Starting with soil *Children analyze the soil*

Objectives: Pupils learn to distinguish between topsoil and subsoil, recognize good soil by feel and sight, and become aware of the components of soil.

Activities: In the school grounds pupils dig a hole to observe topsoil and subsoil, then inspect samples of good and poor soil, answer questions about them and learn the slogan "Good soil is damp, dark, crumbly and full of life". On sheets of paper, they sort soil components into four sets: things from plants, things from animals, live things and "other", and learn to approve of organic content. They also do experiments to establish that soil contains air (put a soil sample in water) and water (cover a sample with a plate and leave it in the sun).

D. Soil quality *Simple experiments investigate soil quality and drainage*

Objectives: Pupils have a good understanding of soil structure and its importance.

Activities: Students discuss which soil components contribute to: opening the soil for air, water, roots; keeping the surface soft, essential food for plants, dissolving nutrients, holding soil in place, holding plants firm, allowing animals and bacteria to live, trapping water or helping it to drain. They identify the type of soil in the school garden (clay, silt, sand) by feel. Soil quality is tested by making a "mudshake" with soil and water and letting it stand for two days until the sand/silt/clay/organic material settles out. Ideal portions are clay 1/4, silt 1/4, sand 1/2 and about 5% organic matter.

They can also test soil drainage by digging a hole and putting water in it. If it drains quickly, this can be dangerous, as water will not stay in the soil. Adding compost can help with this.

E. Growing Plants *This lesson provides an overview of the plant life cycle in relation to the plants life cycle.*

Objectives: Pupils become aware of how plants are grown and their life cycle.

Activities: Students plant something familiar in the garden or in a pot in the classroom and periodically observe and discuss.

¹ Adapted from FAO (2005): *Setting Up and Running a School Garden: A Manual for Teachers, Parents and Communities*, <http://www.fao.org/3/a-a0218e.pdf>.

- F. **The Garden File** *Recording the life of the garden reinforces learning and heightens motivation.*

Objectives: Pupils are motivated to keep records of gardening events and activities, learn how to make a record and become aware of its value.

Activities: The teachers and students create a garden file and discuss what will go in the file (e.g. school work about the garden? Weekly monitoring reports of the garden? Pictures?) Students figure out how to arrange the "Garden File" and how often they will review the file. Different groups draw/decorate different parts/dividers of the "Garden File" (place for pictures, reports, activities around the garden, events, etc.)

2. **Activities for Students to Learn about the Environment**

These lessons aim to raise children's environmental awareness. They look at the existing ecosystem and role of insects, introduce children to the idea of composting and waste recycling, and raise ideas for improving the school grounds.

- A. **Garden citizens** *Agriculture depends on insects.*

Objectives: Pupils recognize that most garden life is friendly, and start the habit of observing insects and other garden creatures.

Activities: Pupils find and observe garden creatures and in class describe what they have seen. The teacher adds live examples or pictures of common "garden citizens". Pupils say how they feel about each, and why. Class groups take on the roles of insects, other animals, plants and soil, and say how they link to other groups (e.g. We're birds; we eat insects). The insects then "die" and the class discusses what would happen if there were no insects (e.g. hungry birds, no fruit, poor soil). Discuss how to have friendly insects in the garden (e.g. by growing flowering plants, including a weed patch, and not using insecticides). Follow with a Bug Hunt or study a clutch of insect eggs hatching on leaves in the classroom.

- B. **Insects and Others** *Less than 1 percent of insects are dangerous to crops and many are beneficial.*

Objectives: Pupils identify particularly beneficial insects and common harmful pests.

Activities: Using real specimens or pictures, pupils identify the most common garden creatures, say what they know about them and speculate which are helpful, harmless or harmful. The teacher presents two "garden enemies" (e.g. slugs, aphids) and discusses what they do (chew or suck leaves or roots) and how we can see this (holes in leaves, plants wilting); then two "garden friends" (e.g. earthworms, ladybugs) which fertilize flowers, catch pests, turn garden waste into nutrients and open up the soil. Follow with a garden walkabout to spot garden friends and enemies or the signs of them; make a "Garden friends" poster or a Bug Book based on observations

- C. **Compost** *Do this lesson in the garden before starting the compost heap.*

Objectives: Pupils learn to recognize compost and appreciate its value.

Activities: The teacher introduces compost as plants' favourite food and distributes handfuls to small groups. Pupils look, smell, feel, squeeze and say what they observe (brown, crumbly, damp, earthy, light). The teacher demonstrates planting a "happy plant", showing how compost is added at various stages for various reasons. At the end, pupils chorus the answers to questions:

- Is this a happy plant? (yes') What makes it grow? (COMPOST')
- What keeps the soil airy? (COMPOST')
- What gives it food? (COMPOST')
- What keeps it damp? (COMPOST').

The teacher reads out a list of compost ingredients and pupils undertake to bring some from home for the compost heap.

- D. **Cooking Compost** *This lesson prepares for compost making.*

Objectives: Pupils appreciate the value of compost, know how to make it and start to use it.

Activities: Pupils recall the virtues of compost (gives nutrients; makes soil roomy and airy for roots to breathe and bacteria to work; holds water but also lets it run through; is natural and cheap). The teacher says making compost is like cooking: you need food, heat, air, water and a pot. S/he demonstrates by making a little compost in a bucket, talking through the process by asking questions about what to do next and why. The class monitors the experimental compost, which will be ready in about two weeks. Fix a date for making the real compost heap, and ask pupils to bring contributions.

3. Activities for Students to Get Involved in Setting Up the School Garden

Children should be involved in choosing, planning and preparing the site, even if they do not do the heavy work themselves. These lessons encourage them to evaluate garden resources, understand site preparation activities, plan garden layout and start creating garden beds.

A. Tools and equipment *Children need good routines for using and storing equipment.*

Objectives: Pupils recognize common gardening tools and how to use them, care for tools properly, can tell others what to do, and decide how to implement garden rules. Older pupils can help with purchasing by researching the market and identifying good quality tools and best buys.

Activities: Pupils handle garden tools, say what they are for and demonstrate how to use them if they can.

For each tool, the teacher calls for ideas on

- a) how to leave it so it won't be dangerous (e.g. hoes with "head in air")
- b) how to prevent it from getting rusty (e.g. buckets upside down, trowels in bucket of sand)
- c) what to do after using it (clean it and put it back).

The class discusses a code of conduct for equipment - e.g. Put it back in the right place! Stand rakes up! and decides if they can remember the rules or need to write them up. Volunteers undertake to brief those who are absent.

B. Water management *For areas where water is a problem*

Objectives: Pupils know the sources of gardening water, appreciate the need to conserve water and have some ideas how to do it.

Activities: Pupils respond to the following questions:

- Where does our school garden water come from? How does it get to the school?
- Could we get water from anywhere else (e.g. rainwater harvesting, making ponds, using "grey water" from washing and cooking)?
- How can we use less water (e.g. mulching, composting)?
- How will we get the water to the plants (e.g. hose, watering can, bucket)?

Older pupils explain and elaborate their suggestions. Pupils follow up by making a map of the water supply or irrigation system, or taking (and then giving) a guided tour of the school water system.

C. Preparing the site *Involve children in site preparation planning and activities.*

Objectives: Pupils have a clear picture of the garden site, recognize what needs doing and are able to interpret site preparation activities.

Activities: Pupils walk round the garden site observing and describing the main features, existing plants, contours (slopes and bumps) and facilities (e.g. tap, shed). They discuss what to do with rubbish; trees, bushes, grass and weeds; bumps, hollows and slopes; rocks and stones. They decide if there is a need for fences, what the soil needs, what to do about water supply and where the garden beds should be. Older students make a map of the garden incorporating proposals and prepare to present ideas to other classes or visitors. To follow up, pupils explain what needs doing to their families, and record site preparation activities in drawing or writing

D. Protecting the garden *The battle against animal predators is an exciting area of action.*

Objectives: Pupils recognize the main predators and know how to protect the garden against them.

Activities: The teacher tells a story about child gardeners and how they frustrated predators, or draws/shows a predator and a plant and asks pupils to explain the danger and how to prevent it. The class collect more examples of local predators from families and local farmers and record what they eat, what they do (e.g. climb, burrow, fly, scratch) and how to stop them. They find signs or threats of predators in the garden and implement practical measures against them such as hedges, walls and fences. Use their findings to build a classroom dramatization of the battle for the crops, or make a poster.

E. Garden layout *Children should be involved in planning beds and paths in a new garden.*

Objectives: Pupils recognize essential elements of garden layout, and contribute to layout planning.

Activities: The class discusses what is needed in their new garden (e.g. plots, paths, signposts, flowers, shed, taps). They inspect the garden, discuss and decide:

- how many beds are needed (one for each class/group?);
- where they should be (near classrooms, across slopes);

- how big they should be (wide enough to reach the centre without standing on the bed - pupils try this out for themselves);
- where the paths should go (all round the beds, along existing paths?);
- how wide they should be (enough for a wheelbarrow or for carrying buckets – pupils try this out for themselves).

Older students mark out the site with pegs and string and make a scale plan. Older students may like to sketch the proposed layout on a garden map (see Part 4).

F. Garden beds *Permanent raised beds are productive, convenient and good for the soil.*

Objectives: Pupils understand how beds provide what plants need, learn not to walk on raised beds, can describe the kind of beds adopted by the school and know how to make them.

Activities: Pupils recall what plants like - no competition, good soil (rich, damp, airy, firm, full of life) and recall what they know about topsoil and subsoil. Using a prepared slice of soil, the teacher demonstrates in miniature how to make raised beds. S/he divides the "bed" from the "path", digs over the bed, adds compost, waters it and lifts the topsoil from the path onto the bed. Pupils discuss how these beds will be full of air and life and should not be disturbed by walking or kneeling. To follow up, pupils help to prepare garden beds, and explain their advantages to visitors.

4. Activities for Students to Get Involved in Selecting Crops

These lessons deal with healthy diets, and what particular foods can contribute, specific food crops and deciding what to grow. They should stimulate children's interest: in homegrown food as an enjoyable experience, a source of health and a personal achievement, and make good eating a point of conversation in the home.

N.B. It will be helpful to use the training tools with pictures of vegetables. Students could also make their own additional cards with pictures of other common local foods on them.

A. What we eat *This lesson raises awareness of variety in the diet.*

Objectives: Children describe their diet, become aware of how many different fruits and vegetables they normally eat and recognize the idea of variety in the diet.

Activities: In class pupils build up a "food plate" with pictures or samples of foods (e.g. grains): the local staple food in the middle, animal foods on the left and plant foods on the right. They count the foods and say how many different kinds they eat in a day. For homework they keep a record of what they eat for a day or a week, and count the number of kinds of food.

B. Good eating (1) *Children and families need positive attitudes toward fruit and vegetables.*

Objectives: Children realize that fruits and vegetables are valuable foods, can express their personal preferences for particular fruits and vegetables, and learn to savour their smell, taste and texture.

Activities: All pupils wash their hands before the lesson. The teacher shows some attractive samples of fresh fruit/vegetables that are available in the local area (e.g. carrot, long bean, cucumber, ripe papaya), as well as pictures and poems about them if available.. Children say which they like best. The teacher praises positive responses and builds up the feeling of enjoyment. With eyes shut, children handle different foods and say how they feel, smell them and guess what they are, "listen" to them (shake them or break them), take a close look and describe them, measure the length/size, then taste and eat them slowly and describe the taste. For homework they draw or describe favourite fruits and vegetables, or guess fruits and vegetables from given descriptions.

C. Good eating (2) *Children act as "food missionaries" to their families.*

Objectives: Pupils should appreciate that fruit and vegetables are essential to health, recognize the special value of dark green leaves and red/orange fruits and vegetables, and be able to express and explain some simple messages for improving the diet.

Activities: Using food pictures or samples, children place common local foods on a "good food ladder", and give reasons. The teacher then helps children adjust these visible "food values", explaining that all foods are good foods, but some are particularly good. Pupils pick out all dark green leaves and red/orange fruits and vegetables and move them two steps up the ladder.

Older children can use the training tools and other research to find what particular foods are good for (from a nutritional perspective). Children follow up by drawing up take-home "food messages" based on lessons so far, or by making a "good food flag" with pictures of appropriate foods on green and orange stripes.

Children can also put on a play about the benefits of growing fruit and vegetables in the garden. One student plays the role of him/herself, and one plays the role of a vegetable (that the first child doesn't like to eat). The first student explains that he doesn't like the vegetable; so the vegetable discusses its health benefits, how it can be cooked to taste good, and so convinces the child to eat him.

D. What shall we grow to eat? *Children should be consulted about what to grow to eat.*

Objectives: Pupils make decisions/suggestions about what food crops to grow based on preference and understanding of nutritional value, and are able to justify their choices.

Activities: Children's suggestions about what to grow to eat are written or pictured on cards. For each card, the class discusses four questions

- Do we like it?
- Is it very good for us?
- Can we grow it?
- How can we eat it - is it delicious and easy to prepare?

If all answers are favourable, the card is displayed and the final selection is made from these. Older pupils check that the selection includes a variety of foods, the necessary ingredients for some good dishes, and foods for snacks and drinks. As follow-up, pupils tell families what foods they have selected and why, compile a snack book, or prepare advertising posters for the selected foods.

E. Crop experts *Becoming "crop experts" gives children motivation and creates "class memory"*

Objectives: Children research the crops they have chosen to grow, using several sources.

Activities: Pupils recall the crops they want to plant and discuss what they need to know about them.

Together the class compiles a factsheet for one crop, using the questions below. Groups then select the crop they want to study, discuss what they already know and plan to find out more from families, neighbours, local gardeners, seed packets, gardening books, etc. students report back and pin up completed factsheets. Older students prepare a presentation or an advertising campaign.

Questions for Crop Factsheet	
<i>For Younger Children, Use Only Underlined Questions</i>	
• <u>Where is it grown in the area?</u>	• How long does it go on producing?
• <u>Is it grown for cash or food?</u>	• How much does it produce?
• Are there different varieties?	• When should we plant it?
• <u>Is it good for us? /What is its food value?</u>	• How do we plant it and where?
• <u>Do people like it and value it?</u>	• Does it need thinning/transplanting?
• What does it cost to buy?	• <u>How should we look after it</u>
• <u>What is the best way to cook and eat it</u> (for taste, for full food value)?	(water/shade/support)?
• Is it easy to grow?	• What attacks it?
• How long does it take?	• <u>How do we harvest and store it?</u>
	• Can we preserve it in some way?

Older students can also calculate the cost of producing a particular crop, using the example below:

Item	Quantity Needed	Price per Unit	Total Cost
Seed	5 packets	10,000 LAK	50,000 LAK
Animal Manure (for compost)	10kg	8,000 LAK	80,000 LAK
Tools	4 pieces	50,000 LAK	200,000 LAK
TOTAL COST OF PRODUCTION			330,000 LAK

5. Activities for Students to Get Involved in Growing Crops

These lessons prepare children directly for gardening tasks and should generally be done in the growing period

A. Sowing seeds *Sowing big seeds directly in the garden is easy for young children.*

Objectives: Pupils get local advice on planting seeds, sow seeds directly in the garden and care for seeds and seedlings correctly.

Activities: Pupils recall what plants like (rich soil, space, no competition, warmth, moisture, light). They look at the seeds to be planted and suggest what dangers they face (e.g. trapped under stones, washed away, waterlogged, eaten by birds/slugs, overgrown, scorched by sun). They decide an appropriate spacing for the seeds based on an estimate of the plant's final size, measure the seeds' diameter and multiply by three to give a rough planting depth, then compare their decisions with seed packet instructions (if any). On site they watch a demonstration of how to plant and then do it themselves. Finally they discuss and decide how to protect the seedlings when they appear. Follow up with a race for the first shoots, the first true leaves, the first seedling to reach 5 cm, etc.

B. Planting and transplanting *This lesson dramatizes the whole process.*

Objectives: Pupils understand the overall process of planting and transplanting.

Activities: Some pupils represent seeds, some the sun, rain and wind, and some the gardeners. The teacher's desk is the "seedbed" and the rest of the room is the "open garden". Pupils walk through the whole process. "Seeds" are "sown" in the "seedbed" (pupils sit on the edge of the desk), then watered regularly by "gardeners" and protected from wind, rain and sun (standing near) by a canopy held by "gardeners". The seedlings come up ("seeds" all stand up), are seen to be overcrowded and are thinned out by gardeners. Gardeners continue to mulch and water, and "seeds" stretch and expand. Sun, rain and wind in turn come to help and hinder the seedlings. To get them used to sun, rain and wind, gardeners lift the canopy a little, then a little more, and a little more. When the "seeds" are strong enough, gardeners gently take them into the "open garden" and "plant" them back in their desks. As pupils carry out the real processes in the garden, the story is recapitulated, and can later be dramatized or contribute to a project on growing up. Older pupils draw up growing schedules for particular crops.

C. Mulching *Economical and effective, mulching is an essential tool of organic gardening.*

Objectives: Pupils recognize the value of mulching, and know how to mulch and when.

Activities: Pupils recall what plants like. They observe some plants which are wilting, diseased or overgrown with weeds, label them with their problems (e.g. no water, competition, poor soil) and suggest how to help them. The teacher proposes mulching (the "soil blanket") and explains what to do. Pupils sort "good mulch" (if possible, light-coloured straw) from "bad mulch" (with weed seeds), then build up mulch round the plant victims until it is about 6 cm thick. They discuss how mulching helps with each problem. As follow-up, pupils give demonstrations of mulching to visitors, families and other pupils (advertise them as "Mulch Magic"), make a routine of collecting and using mulching materials, or practice a mulching chant to a marching tune. Older pupils experiment by developing garden patches with and without mulch and doing weed counts

D. Watering (1) *Watering (1) and Watering (2) should be consecutive lessons.*

Objectives: Pupils appreciate plants' water needs.

Activities: Pupils recall what plants like, and focus on water. They discuss whether plants can have too much water or too little (plants are like people - they can both drown and die of thirst). They speculate on the questions:

- Where is there water/moisture in the garden?
- Where do plants get water from?
- Where is the water in plants?
- How does water get into the plant?

Students then go to the garden to hunt for answers in leaves, stems, fruit, roots and soil. Feedback will reveal that moisture is mostly in the soil and in plant stems, and gets into the plants through roots (not leaves). Pupils guess how much of a plant is water (about 90 percent) and test this by weighing a bottle stuffed with grass, drying the grass for a week, then putting it back in the bottle and weighing it again.

E. Watering (2) *There are seven golden rules for good watering.*

Objective: Pupils know when and how to water plants.

Activities: Pupils recall how important water is for plants. They read out the Seven Golden Rules (see below) one by one and explain them, then try to recite them from memory. The class goes round the garden together, feeling the earth and assessing the need for water with a measuring stick (3 cm of dry soil needs water). Where water is needed, they suggest what to do and take turns at each watering task. As follow-up,

pupils make themselves "moisture measures" and show others how to use them. Older students experiment with over-watering and under-watering parallel rows of plants and recording health and growth over two weeks.

- Golden rules for good watering**
- Measure moisture each day.
 - Water in the evening or morning.
 - Water soil, not plants. Get the water to the roots.
 - Be gentle.
 - Don't over-water or flood.
 - Deep roots don't need more water.
 - Mulch mulch mulch!

F. Weeding *The spirit of battle is good - but not all weeds are harmful.*

Objectives: Pupils recognize common local weeds and their characteristics and learn how to control them easily, cheaply and ecologically.

Activities: Groups each take one of the questions below and search the garden for the answer. They report back, bringing weed samples to illustrate their answers. Older students discuss the survival strategies of sample weeds (e.g. many seeds, deep roots, height, fast life-cycle). Pupils should recognize that weeds can be useful as well as harmful. The class discusses strategies for dealing with weeds and establishes a weeding routine. Relieve the boredom of weeding with weeding parties, competitions, a weeding policy, weed study, dramatizations of the battle and experiments with weeded and un-weeded garden patches.

- Questions**
1. How many different kinds of weeds can you find in the garden? Do you know their names?
 2. Which is the commonest weed? Do you know its name?
 3. Where are the weeds growing? Are there any near the crops?
 4. Where are the weeds growing thickest? Why?
 5. Which is the biggest weed? How big is it? Where is it?
 6. Which weed has the deepest root?
 7. Are any of our crops in danger from weeds? Which?
 8. Where are there no weeds? Why not?
 9. Are there any insects on or around any of the weeds? Are any of the weeds sick?
 10. Do any of the weeds have flowers or seeds? How do they spread themselves/propagate

G. Keeping the garden healthy *A healthy plant can resist attacks by pests and diseases.*

Objectives: Pupils practice healthy gardening as a basis for integrated pest management.

Activities: Pupils revise previous learning by discussing the best ways to keep plants strong and healthy, writing up key words (e.g. good garden beds, rich soil, light and shade, compost, mulching, weeding, watering, beneficial insects, protection against predators). The class goes on a garden patrol with a Plant Patrol Checklist (see below) and reports back with observations and suggestions for action. Follow up with regular weekly patrols, passing the responsibility from team to team

Plant Patrol Checklist	
1. Growth	Have the plants grown? What stage are they at? Any fruit/seeds?
2. Health	Are they looking well? Are there signs of pests or diseases? Are any plants wilting or stunted? Are there fallen leaves, eaten leaves, yellow leaves, fungus?
3. Garden Creatures	What insects/worms/animals are around? Are there plenty of beneficial creatures (e.g. earthworm, ladybug, frogs, lizards)?
4. Soil/water	Is the soil dry? Which plants or beds need water? Is anything too wet?
5. Mulching	Is everything well mulched? Where do we need more mulch?
6. Protection	How good is our protection against predators (e.g. fences, walls, scarecrows)?
7. Wind & Sun	Is anything getting too much wind, sun or shade?
8. Space	Is anything overcrowded? Does anything need thinning/transplanting?
9. Weeds	Are there a lot of weeds near the plants?
10. Support	Does anything need training up, tying up, spreading out?
11. Hygiene	What needs tidying up? Burning? Cutting back? Cutting down?

12. Compost	How good are our supplies of compost and mulch?
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H. Plant doctors This introduces the idea of treatment for specific plant problems.

Objectives: Pupils make a rough diagnosis of a plant problem, choose suitable remedial action, carry it out and monitor the effects.

Activities: Pupils identify "sick plants" in the garden – those which appear to be suffering from pests, diseases or diet problems. They describe each case and give it a name (e.g. Lacy Leaves). Older pupils can try to identify the problem more precisely (see Plant Problems table below) and should recognize that one symptom (e.g. wilting) may mean several different things. If it is a pest, students look around for the culprit. They then discuss how to handle the problems.

With the teacher's guidance they pick up the basic messages (Disease: Destroy. Diet: Feed. Pest: Pick, spray, trap, bring in the Pest Police) and prepare to carry out immediate treatment. As follow up, older pupils maintain case notes for their chosen plants and report on progress.

Plant Problems														
	Symptoms	Remedies												
Disease	mosaic markings soggy rotten flesh rolled-up leaves oozing sap red and yellow streaks spots discoloured leaves black patches with yellow edges - powdery substance on leaves wilting withering	DESTROY Burn infected plants and start again. - Use clean seeds. - Plant in a new place. - Let the bed dry out before replanting												
Diet	<u>Lack of nitrogen</u> - yellow leaf veins - stunted growth - pale leaves - red colour - nearby plants have same problems <u>Lack of potassium.</u> - edges of leaves look scorched - brown patches in leaves between veins <u>Lack of phosphorus</u> - purple in stems or leaves	FEED <u>For all problems</u> , give compost and mulch and rotate crops <u>For nitrogen</u> , give compost, green manure and legumes <u>For potassium</u> , give wood ash or wood bark <u>For phosphorus</u> , add chicken manure or animal bones to compost.												
Water	<table border="0"> <tr> <td><u>Too Little</u></td> <td><u>Too Much</u></td> </tr> <tr> <td>Wilting</td> <td>Wilting</td> </tr> <tr> <td>Leaf tips</td> <td>Yellowing</td> </tr> <tr> <td>burnt/crinkled</td> <td>Root rot</td> </tr> <tr> <td>Stunted</td> <td>Stem rot</td> </tr> <tr> <td>Yellow Leaves</td> <td></td> </tr> </table>	<u>Too Little</u>	<u>Too Much</u>	Wilting	Wilting	Leaf tips	Yellowing	burnt/crinkled	Root rot	Stunted	Stem rot	Yellow Leaves		Water regularly OR drain the bed
<u>Too Little</u>	<u>Too Much</u>													
Wilting	Wilting													
Leaf tips	Yellowing													
burnt/crinkled	Root rot													
Stunted	Stem rot													
Yellow Leaves														
Pests	<u>Sucking insects</u> insects on buds, leaves, stem (aphids, scale) sticky secretions sooty mould on leaves pale, brown, speckled, drying leaves or fruit <u>Chewing insects</u> holes jagged edges	PICK, WIPE, TRAP, SPRAY! <u>Pick</u> Hand pick caterpillars, slugs or snails, beetles - look in possible hiding places and you'll find them. <u>Wipe</u> whitefly, scale, mealybug by hand <u>Trap</u> whitefly with "sticky traps". Smear yellow cardboard with petroleum jelly (Vaseline). Whitefly like yellow things.												

	<p><u>Spray</u> with natural pesticides, or dust with wood ash or flour. Spray under leaves too.</p> <p>Pest police Let in ducks and hens, carry in ladybugs and lacewing, encourage frogs and lizards</p>
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- I. **Harvesting** *Harvesting is best learnt by hands-on demonstration and practice at harvest time. This lesson simply emphasizes principles and reinforces attitudes.*

Objectives: Pupils know which food crops decay rapidly, appreciate the need for careful harvesting, rapid transport and good packaging, and know what to do with plant debris.

Activities: Presented with some rotten and dried-up fruits/vegetables, pupils discuss why foods dry out (too much sun exposure, wind, thin skins), why they rot (bacteria/fungi), when they rot (cut, overripe, bruised, wet, warm) and which foods are "rapid rotters" (those which are ripe, soft and full of water). They hear a role-played interview with a tomato farmer and pick out all his mistakes (harvesting in the heat, collecting cut, bruised, overripe and damaged tomatoes, throwing them into the basket and leaving them in the sun). To follow up, they discuss dos and don'ts for harvesting their own crops, and make up a similar interview highlighting harvesting mistakes.

6. **Activities for Students to Help with School Garden Annual Planning**

These four lessons should be distributed through the school year: The project plan is drawn up when the project begins; publicity work (showing and telling) can be done at any time in the project; Evaluation and Celebrations belong to the final stages.

- A. **Project plan** should be done once the main decisions have been taken.

Objectives: Pupils become aware of their expectations; older students create a summary of the project plan for presentation to the outside world. (Note: The teacher should find someone who is prepared to receive, read and respond to the project summary produced in this lesson.)

Activities: Pupils learn that Mr/Ms X wants to know about the garden project and has asked for information about it. This lesson is to prepare the summary. Pupils discuss a set of questions about the project (adapted from the Project Summary table below) and record their answers. Older pupils work in groups on one section each, appoint a secretary and draft their response. The final version is read out for approval by the whole class. The information is delivered to Mr/Ms X, who should respond to it in writing or in person. To follow up, older students use the information to create a visual summary for display in the form of a flow-diagram, a publicity poster, a crop calendar or a workplan.

Project Summary	
Aims	What are our general aims? What is our mission statement?
Project	What particular project are we going to do this year? What is its name?
Objectives/Targets	What are our practical objectives and targets? What do we want to produce? What are our learning objectives and targets? What do we want to learn?
Partners	Who will help and how? How will family and community be involved? (labor/expertise/contributions/visits) Who else will be involved and how?
Inputs	What inputs will be needed and where will they come from? (seeds, tools etc)
Activities	What will we do in the garden (both work and play)? Who will do it? What will we plant, how much and where? What events are going to be in the garden program? Who will be invited?
Timeframe	How are we going to schedule the activities?
Monitoring	What will we monitor, and how? What records will we keep?
Information	How will we keep people informed (especially parents, helpers, Principal, VEDC)?
Publicity	How will we publicize garden activities and create positive attitudes?
Evaluation	When will we have the evaluation? Who will be involved? What form will it take?
Celebration	When will we celebrate, and how?

B. Showing and telling brings the school closer to the community; and children learn by talking.

Objectives: Pupils appreciate the need to tell people about the garden and choose suitable content and channels for their messages. (Note: The teacher should prepare the ground by finding out who in the school or community will respond positively to hearing from school pupils.)

Activities: Pupils recount what has happened in the garden so far and discuss who would like to know about these things and why (e.g. parents and families, people in the school, garden helpers, the local media, other schools, the general public, local organizations). They stick up paper figures with names on them and discuss what they will tell them or show them (e.g. garden plants or products, the project plan, events, achievements, accounts, funny stories) - and how (see ideas below).

Ways of Showing & Telling		
Personal letters, greetings cards Book of garden stories Samples/free gifts Showing and telling at home Guided garden tours Invitation to the class	Circulars, newsletters Photos, drawings on display Posters, notices, fliers Talks/ presentations Exhibitions, displays	Plays/dramatizations/shows Articles in local newspaper Bring and Buy sales Food tastings Parties

C. Evaluation helps to diagnose problems, plan for the future and involve the community.

Objectives: Pupils recall the year's gardening and reflect on it. They acknowledge others' help and congratulate themselves. (Note: Teachers should ensure that all garden records are available and that all involved contribute to the evaluation and share their impressions.)

Activities: Pupils recall the year's events and activities, triumphs and disasters, and express satisfaction or dissatisfaction. Older students recall the objectives and targets from the project plan, say how far these were achieved, why and why not, and spell out the lessons for the future. Pupils recall all those who have helped and discuss how to thank them. The class chooses the class's three top gardeners and awards them "Great Gardener" rosettes. Finally they award themselves a gardening prize (rosette, cup, shield), choosing between Excellent, Very Good and Not Bad, and finish with a self-congratulatory cheer. Follow-up consists of thank-you notes, cards or gifts.

D. Celebrations There should always be a celebration, and children should help to organize it.

Objectives: Pupils are aware of the need for a celebration, think of who should participate and help to plan and organize the event.

Activities: The teacher announces the celebration and gives date, place, time and the general nature of the event. The class thinks of a name for the event; lists the participants and decides how to invite them; plans the programme; discusses refreshments, gifts, decorations and displays; and organizes the work to be done. For follow-up, students organize their part in the event. Some kinds of celebration are a Food Fair, an Open Day, a harvest festival, a special meal, a party. Some ways to celebrate are competitions, decorations, demonstrations, displays/exhibitions, flags, gift-wrapped produce, guided tours, dramatic performances, presentations, posters, songs and dances, refreshments, special dishes and tasting sessions, storytelling, prize-giving