

**MINISTRY OF HOUSING AND LOCAL GOVERNMENT
MALAYSIA**

**THE STUDY ON
NATIONAL WASTE MINIMISATION
IN MALAYSIA**

FINAL REPORT

**Volume II
Guidelines**

JULY 2006

JAPAN INTERNATIONAL COOPERATION AGENCY

YACHIYO ENGINEERING CO., LTD.

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The Study on National Waste Minimisation in Malaysia

Final Report

FINAL REPORT COMPOSITION

The Final Report is composed of the following:

1. Summary
2. Volume I – Main Report
3. **Volume II – Guidelines**
4. Volume III – Pilot Projects
5. Supporting Report – 1 Additional Information
6. Supporting Report – 2 Local Action Plans

This Report is “Volume II Guidelines”.

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Part IV 3Rs Action Guide

Abbreviations

AFSB	Alam Flora Sdn Bhd
A/P	Action Plan
CBO	Community Based Organisation
C/P	Counterpart
DB	Dewan Bandaraya (City Hall)
DBKL	Dewan Bandaraya Kuala Lumpur (Kuala Lumpur City Hall)
DBKU	Dewan Bandaraya Kuching Utara (Kuching North City Hall)
DSWM	Division of Solid Waste Management
EPU	Economic Planning Unit
GOM	Government of Malaysia
G3RS	Guidelines for Enhancement of 3Rs Activities in School
IEC	Information, Education and Communication
IMS	Information Management System
JICA	Japan International Cooperation Agency
LA	Local Authority
LAP-WM	Local Action Plan on Waste Minimisation
LGD	Local Government Department
MB	Majlis Bandaraya (City Council)
MBJB	Majlis Bandaraya Johor Bahru (Johor Bahru City Council)
MBKS	Majlis Bandaraya Kuching Selatan (Kuching South City Council)
MBM	Majlis Bandaraya Miri (Miri City Council)
MBMB	Majlis Bandaraya Melaka Bersejarah (Melaka City Council)
MD	Majlis Daerah (District Council)
MDK	Majlis Daerah Kerian
MDKS	Majlis Daerah Kinta Selatan (South Kinta District Council)
MHLG	Ministry of Housing and Local Government
MIDA	Malaysian Industrial Development Authority
MITI	Ministry of International Trade and Industry
MOE	Ministry of Education
MONRE	Ministry of Natural Resources and Environment
MP	Majlis Pernadaran (Municipal Council)
M/P	Master Plan
MPK	Majlis Perbandaran Kuantan (Kuantan Municipal Council)
MPPP	Majlis Perbandaran Pulau Pinang (Penang Island Municipal Council)
MPPJ	Majlis Perbandaran Petaling Jaya (Petaling Jaya Municipal Council)
MPSJ	Majlis Perbandaran Subang Jaya (Subang Jaya Municipal Council)
MRF	Material Recovery Facility
MSW	Municipal Solid Waste
NCP3R	National Children's Programme on 3Rs
NGO	Non Governmental Organisation
NRD	National Recycling Day
NREB	National Resources and Environment Board
NRP	National Recycling Programme
NSP	National Strategic Plan on Solid Waste Management
OECD	Organisation for Economic Co-operation and Development
OPP3	Third Outline Perspective Plan
PDM	Project Design Matrix
PP	Pilot Project
PR	Public Relations
PWD	Public Works Department
RA	Residents Association
R&D	Research and Development

RIC	Recycling Information Centre
RM-8	Eighth Malaysian Plan
RM-9	Ninth Malaysian Plan
RNU	Recycling Networking Unit
SND	Stakeholders' Networking Database
SS	Source Separation
SW	Solid Waste
SWM	Solid Waste Management
SWM Act	Solid Waste Management Act
SWMD	Solid Waste Management Department
SWMSB	Southern Waste Management Sdn Bhd
TWG	Technical Working Group
WM	Waste Minimisation
WMU	Waste Minimisation Unit
WM-M/P	Waste Minimisation Master Plan
3RAG	3Rs Action Guide

INTRODUCTION

Introduction

Based on the experience and output of the Study on National Waste Minimisation in Malaysia, including pilot projects activities, four (4) Guidelines have been prepared to assist target stakeholders to initiate waste minimisation activities. The Guidelines formulated are;

- 1. Guidelines for Enhancement of 3Rs Activities in Schools**
- 2. Guidelines for Formulation of Local Action Plan (LAP-WM) on Waste Minimisation**
- 3. Guidelines for Source Separation of Municipal Solid Waste (MSW)**
- 4. 3Rs Action Guide (3RAG)**

Outlines of the guidelines are shown in the following Table. The Guidelines are detailed in Parts I, II, III and IV of this report, respectively.

Item	Guidelines for Enhancement of 3Rs Activities in Schools	Guidelines for Formulation of LAP on Waste Minimisation	Guidelines for Source Separation of MSW	3Rs Action Guide (3RAG)
Objectives	To assist schools to initiate, improve and sustain a waste minimisation programme.	To guide LAs in formulating and implementing the LAP-WM on waste minimisation on their own initiatives and contribute to the waste reduction.	To guide LAs and their 3Rs partners on planning, implementing and improving source separation activities in partnership among the various stakeholders.	To guide the key waste generators on how to practise 3Rs activities in their daily lives.
Target group	Teachers in primary and secondary schools	LAs	LAs (Concessionaires)	Various stakeholders
Players	Students, teachers, clubs, school principals, PTAs, communities, NGOs, concessionaires, recyclers, District education officer, LAs, MOE, MHLG	LAs, concessionaires, recyclers, NGOs/CBOs, business entities/institutions, general public	LAs, concessionaires, waste generators (Households, business entities, governmental offices), recycling players (Collectors, recycling centres, NGOs/CBOs)	Waste generators; (Households, offices, schools, restaurants, hotels, shopping malls etc.)
Contents	<ol style="list-style-type: none"> 1. What are the 3Rs? 2. Why have a 3Rs programme 3. Plan-Do-Check-Act cycle approach 4. Where do I start? 5. STEP 1: Planning (PLAN) 6. STEP 2: Implementation (DO) 7. STEP 3: Monitoring & measurement (CHECK) 8. STEP 4: Review & Improvement (ACT) 9. 3Rs PDCA for beginners (LEVEL1) 	<ol style="list-style-type: none"> 1. Introduction 2. Establishment of institutional framework 3. Identification of current SWM and recycling scenarios 4. Determination of scope of LAP-WM 5. Projection of future waste stream 6. Setting the targets of waste minimisation 7. Determination of actions to achieve the targets 8. Monitoring and evaluation 	<p>Following steps are provided;</p> <p>STEP 1: Formulating a source separation plan for LAs</p> <p>STEP 2: Planning source separation programme in target area</p> <p>STEP 3: Awareness and communication</p> <p>STEP 4: Implementation & monitoring</p> <p>STEP 5: Review & improvement</p>	<p>Following tips of 3Rs activities are provided;</p> <ol style="list-style-type: none"> 1. General tips 2. Tips for households 3. Tips for offices 4. Tips for schools 5. Tips for restaurants, canteen & bar 6. Tips for hotels 7. Tips for supermarket 8. Tips for malls 9. Composting tips

PART I

GUIDELINES FOR ENHANCEMENT OF 3Rs ACTIVITIES IN SCHOOLS



**Guidelines
for
Enhancement of 3Rs Activities
in
Schools**



JULY 2006

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List of Abbreviations

A/P	Action Plan
CBO	Community-Based Organisation
DOE	Department of Environment
JICA	Japan International Cooperation Agency
LA	Local Authority
LA 21	Local Agenda 21
LGD	Local Government Department
MHLG	Ministry of Housing & Local Government
MOE	Ministry of Education
MSW	Municipal Solid Waste
NGO	Non-Governmental Organisation
NREB	Natural Resources & Environment Board, Sarawak
ONP	Old Newspapers
PDCA	Plan-Do-Check-Act
PET	Polyethylene Terephthalate
PTA	Parent-Teacher Association
RA	Residents Association
SWMB	Southern Waste Management Sdn Bhd
UNDP	United Nations Development Programme
WM-M/P	Waste Minimisation Master Plan

PREAMBLE

This set of “**Guidelines for Enhancement of 3Rs Activities in Schools**” has been prepared in support of the “*National Strategic Plan for Solid Waste Management*” approved by the Government of Malaysia in July 2005. It complements the “*Waste Minimisation Master Plan*” prepared for the Ministry of Housing and Local Government (MHLG) under the “Study on National Waste Minimisation in Malaysia”, which is the lead implementing agency for waste minimisation.

The guidelines are intended to assist schools to initiate, improve and sustain a waste minimisation programme. The guidelines will assist schools engaged in various levels of 3Rs-related activities: -

- Level 1: Without a Waste Minimisation Programme or With a Basic One
- Level 2: With a Relatively Active Waste Minimisation Programme
- Level 3: With a Very Active Waste Minimisation Programme

The guidelines include a format for monitoring the performance of 3Rs activities, and for reporting to the MHLG. Such information will be a useful tool for inclusion in the website managed by MHLG. The guidelines are also posted on the MHLG website. The process for planning and implementing a school’s 3Rs programme will be based on the PDCA (Plan-Do-Check-Act) concept. This Waste Minimisation programme is **VOLUNTARY** and intended for schools that are interested in implementing such programmes, as part of **co-curricular activities**.

The target group or primary end-users are teachers in primary and secondary schools through out the country who are interested in initiating, improving and sustaining a waste minimisation programme.

These guidelines are designed with the ultimate aim of minimising waste generation and disposal, and thereby reducing impacts on our environment. At the school and community levels, the guidelines are aimed at: -

- STREAMLINING 3Rs ACTIVITIES IN SCHOOLS
- ENCOURAGING PARTICIPATORY APPROACH
- RECOGNISING EFFORTS IN THE 3Rs
- ENSURING SUSTAINABILITY OF 3Rs PROGRAMMES IN SCHOOLS

HOW TO USE THE GUIDELINES

This set of guidelines comprises nine (9) chapters. They are modelled on the PDCA (Plan-Do-Check-Act) Cycle Approach. You may go chapter by chapter to guide you to establish or improve upon an existing 3Rs programme. There are ATTACHMENTS with sample formats for surveys and recording/ reporting. The guidance given may be modified according to your school's needs and expectations. Chapter 9 provides a summary and example for beginner schools (Level 1).

There are TIPS given in the guidelines and a list of Frequently Asked Questions (FAQ) for your reference.

There is also a LIST OF CONTACTS, which lists out the names of organisations that can provide useful information to you. Contact numbers, names of personnel (where available), websites and e-mail addresses are provided.

To assist you further, EXAMPLES OF 3Rs PROGRAMME IN SCHOOLS are provided.

Your feedback is IMPORTANT to MHLG. Please complete the Questionnaire at the end of the Guidelines and return it to:

**Solid Waste Management Unit
Ministry of Housing & Local Government
Local Government Department
Environmental Health & Engineering Division**

**Level 4, Block K
Pusat Bandar Damansara
50782 KUALA LUMPUR**

TIP



IN A NUTSHELL

BE CREATIVE and ENCOURAGE your PUPILS to Come Up With Their Own IDEAS

CHAPTER 1

WHAT ARE THE 3Rs (REDUCE, REUSE & RECYCLE)?

REDUCE

This refers to the reduction at source of the quantity of waste that is generated. It means cutting down the amount of products and types of products that we use and consume so that we generate less waste. This may also refer to the reduction of use of natural resources.

It means paying attention to the things that we buy, consume and discard.

REUSE

This refers to us making use of items again and again, and by doing so we create less waste and therefore discard less waste.

RECYCLE

The prefix “re” means “to do again” and “cycle” means “to go around”. So “Recycle” refers to us putting things in a cycle or loop. We recycle by separating wastes, and then channelling them to organisations or manufacturing plants, which can re-process them into new products for our consumption. The international symbol for recycling is the Mobius Loop, a special circle that suggests a continuous cycle.



The Mobius Loop indicates that the item is made of recyclables or that the item may be recycled.

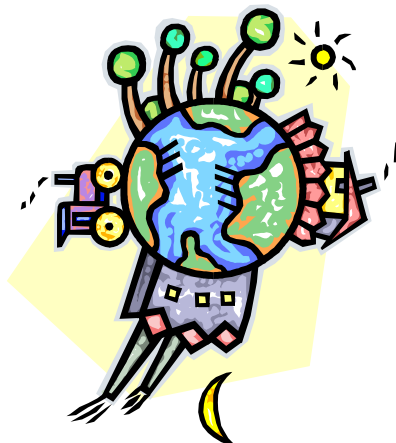
CHAPTER 2

WHY HAVE A 3Rs PROGRAMME?

Why should a school have a 3Rs programme?

There are several reasons why your school should have a 3Rs Programme or improve on the one that you already have. The main reasons are: -

- To **increase awareness** of school children on the importance of good waste management and practices;
- To **instil a sense of responsibility** in school children and other school personnel so that good waste management practice becomes a habit and is practised not only in the school but everywhere;
- To **educate children** so that the next generation becomes a 3Rs-based society
- To **contribute** towards the nation's Waste Management Policy & Plans by minimising wastes discharged from the school;
- To **minimise risks and hazards** to health and safety in schools; and
- To **enhance your school's image**.



"Growing quantities of garbage and sewage from our cities pose threats...quantities could increase four to fivefold by the year 2025"

"The best way to cope with waste problems is through a waste prevention approach"

"Development plans should ensure young people of a secure future"



Agenda 21, Rio de Janeiro, 1992

"...Our land must remain productive and fertile, our atmosphere clear and clean, our water unpolluted, our forest resources capable of regeneration, able to yield the needs of our national development. The beauty of our land must not be desecrated-for its own sake and for our economic development"

Vision 2020, 1991

"Realisation of Environmentally Sustainable Society" in the Whole of Malaysia

Master Plan for Waste Minimisation in Malaysia, 2005

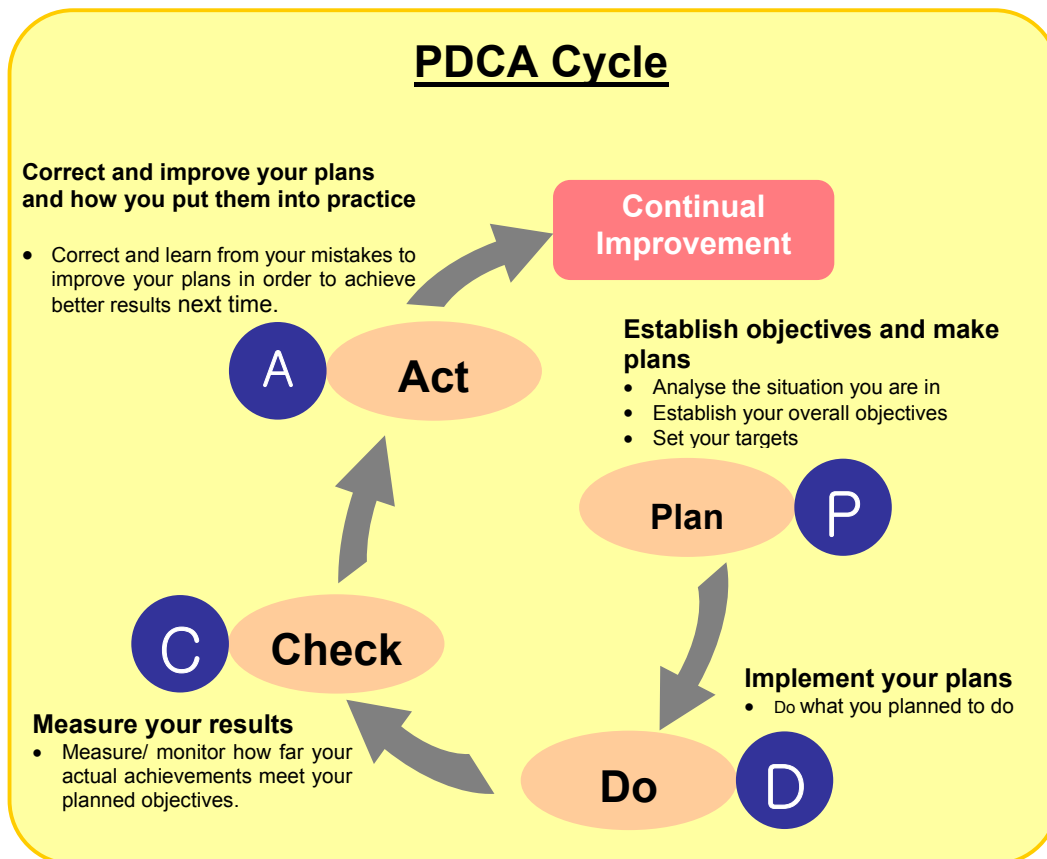
CHAPTER 3

PLAN, DO, CHECK & ACT CYCLE APPROACH

3Rs and Waste Minimisation in Schools may be modelled on the PDCA Cycle.

1. **PLAN:** Establish Objectives & Targets, and **Prepare Action Plan**
2. **DO:** **Implement** your Action Plan
3. **CHECK:** Monitor the implementation of Action Plan & Measure your Results
4. **ACT:** **Improve** your plans and results

PDCA is based on the concept of **CONTINUAL IMPROVEMENT**



CHAPTER 4

WHERE DO I START?

Answer these QUESTIONS

- Where are you now?
- Where do you want to go?
- What is the gap between where you are and where you want to go?
- How do you get to where you want to go?
- What do you need in order to get where you want to go?
- How do you know you have arrived?

Where are you now?

To help you answer this question you may ask “Does my school already have some form of 3Rs Programme?”

You may use the Criteria for Evaluation of Level of School 3Rs Activity (see **ATTACHMENT 1** on next page). Tick the activities that are already being carried out in the school. Count the number of ticks and find out where your school stands: -

<u>Number of Ticks</u>	<u>Level</u>
0-6	Basic
7-11	Intermediate
12-17	Advanced

ATTACHMENT 1

Criteria for Evaluation of Level of School 3Rs Activity

ACTIVITY	Please Tick	Comments
<i>Policy</i>		
1) School has own policy/ mission statement for 3R activities		
2) School has 3Rs Team/ Club involved in 3Rs.		
3) School sets target for 3R activities		
4) School sets plan for 3R activities		
<i>Reduce</i>		
1) Teachers/pupils have waste reduction programmes e.g. use food containers instead of plastic bags.		
2) Staff photocopy on both sides of paper.		
3) School conserves electricity & water		
<i>Reuse</i>		
1) Teachers/pupils reuse paper for art & notes.		
2) School sends empty toner cartridge to recycler/maker for recycling.		
3) Teachers/pupils repair and reuse old items		
<i>Recycle</i>		
1) School/ Class has boxes, bins etc., to collect recyclables.		
2) Teachers/pupils sell recyclables/ used items		
3) Teacher/pupils make handicrafts from recyclables		
4) School practices composting of green wastes		
<i>Others</i>		
1) School has 3Rs Awareness Programme		
2) School participates in State/ MHLG 3Rs programme		
3) School has monitoring system for 3Rs activities		
TOTAL		

GRADE OF YOUR SCHOOL

Number of Ticks:

- 0-6: Level 1 (Basic)
 7-11: Level 2 (Intermediate)
 12-17: Level 3 (Active)

Where do you want to go?

What is your Vision for the school?

Look at the list of activities again and think about what activities you would like to see the school children and other personnel at your school be engaged in. List other activities that you would like to see carried out.

What about the pupils?

You may want to organise a **Rapid Survey** among the pupils to gauge their awareness about the 3Rs and their willingness to participate in a school programme. You may use the sample survey format in **ATTACHMENT 2**. Make copies and distribute to class teachers and find out if the pupils are willing to participate.

Collect the answers sheets and analyse them. Look at the **Survey Findings** for use in the **PLANNING** of the A/P (Chapter 5)

What is the gap between where you are and where you want to go?

Look at the list of activities that you have written and think about the *Gap*. Is the gap

KNOWLEDGE?
BEHAVIOUR?
EQUIPMENT?
FUNDS?
PERSONNEL?
TIME?

Classroom Activity

ATTACHMENT 2

Rapid Survey for 3Rs in School (For Pupils)



Please answer the following questions so that the school 3Rs Team can find out about the level of awareness about "Reduce, Reuse & Recycle" and your interest in participating in a 3Rs Programme in School.

1. Do you think it is important to take care of our ENVIRONMENT?

Yes No

If **yes**, please provide your reason (you may select more than one):

To save our natural resources To prevent pollution

To keep our environment clean To keep us healthy

2. Do you know if your SCHOOL has a Waste Recycling Programme?

Yes No

If **yes**, please answer questions 3 & 4. If **No**, go to questions 5, 6 & 7.

3. In school, what is practised? (You may select more than one)

Collect paper Collect plastic bottles Collect newspapers

Recycle Paper Collect Aluminium drinks cans

4. Do you participate in Recycling activities in School? Yes No

If **No**, why?

Not interested No time Do not know what to do

5. If there were incentives (gifts, prizes, parties, excursions), would you want to participate in recycling? Yes No

6. Do you and your family recycle at home? Yes No

If **yes**, what do you recycle?

Newspapers Plastic Bottles Aluminium drinks cans Glass bottles

7. Would you be willing to help your school, the 3Rs Team, and the environment by participating in recycling programmes? Yes No

How do you get to where you want to go?

Looking at the GAPS that you have identified, you may have some ideas and may also like to have some help. You will have some idea for example, about the level of awareness at your school, willingness to separate wastes that are recyclable and to bring recyclables from home, how much time can be set aside for the programme, and what clubs are best suitable to lead the 3Rs programme. The following chapters will help you get to where you want to go. The key words are a **PLAN** and **GOALS & TARGETS**.

What do you need in order to get to where you want to go?

Again, you may have some ideas and may also like to get some help. The following chapters will help you consider and decide what you need to get to where you want to go. The key word is **TOOLS**.

How do you know you have arrived?

When you have set your Plan, Goals & Targets, and you have acquired the Tools, you are ready to close the gap. You need to **MONITOR** and **MEASURE** so that you know you are on track. You may want to make changes, go faster or slow down. You may decide to change the route or the vehicle that you have chosen earlier.

Are you READY?

If you are, then go to the next Chapter to begin the 4 STEPS TOWARDS ENHANCING 3RS IN YOUR SCHOOL.

The 4 steps are as follows: -

Step 1	PLAN: PLANNING
Step 2	DO: IMPLEMENTATION
Step 3	CHECK: MONITORING & MEASUREMENT
Step 4	ACT: REVIEW & IMPROVEMENT



TIP

The School 3Rs Programme is a co-curricular activity. Make it a FUN activity for your pupils and yourself. Combine learning, actions and service with FUN activities. Create games, competitions, invite speakers and personalities within your community, give recognition to the pupils for creativity and effort, and arrange visits to relevant organisations and sites e.g. the landfill serving your area to see where your wastes land up, and what is done with the wastes, and appreciate first hand what environmental problems may arise.

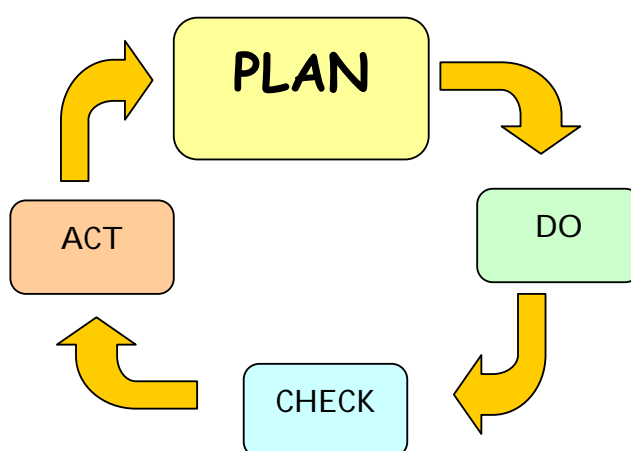
REMEMBER!

You may model your school's 3Rs programme after the ones described in these guidelines or modify it to suit your school's needs and aspiration. The success of your school's programme will depend on the level of interest, enthusiasm and passion for establishing a programme, improving it and sustaining it in the long term.

CHAPTER 5

STEP 1: PLANNING (PLAN)

You are now ready to proceed with the “**PLAN**” part of the **PDCA Cycle**.



The key elements of PLANNING are:

- (1) Top Management Commitment
- (2) Establishment of 3Rs Team in the School
- (3) Formulation of School Policy on 3Rs
- (4) Assessment of Current Situation
- (5) Identification of Key Waste Issues
- (6) Definition of Objectives And Targets
- (7) Development of A/P To Achieve the Objectives and Targets

(1) Top Management Commitment

The School Principal has an important role to initiate and support school co-curricular activities. Therefore, commitment of the principal should be obtained in order to facilitate promotion of 3Rs in schools before implementation. The School Principal may be the **CHAMPION** for 3Rs in the school or designate someone else as the champion.

What is the role of "CHAMPION"?

- Provide the impetus, leadership and creativity to drive the 3Rs programme.
- Motivate and get as many pupils to participate in implementing the 3Rs Plan.

Who can be a CHAMPION?

Anyone who is interested in protecting the environment and who is committed to waste minimisation can be a Champion.

(2) Establishment of 3Rs Team in the School

It is necessary to set up a simple organisation structure to manage the 3Rs in the school. This group of people, whom we shall refer to as the **3Rs TEAM** may be established at the school level for example via Student Affairs (Hal Ehwat Murid or HEM) or Co-curricular (KOKO). The school may also decide to use existing clubs e.g. the Environment Club or the Environment Brigade.

3Rs TEAM:

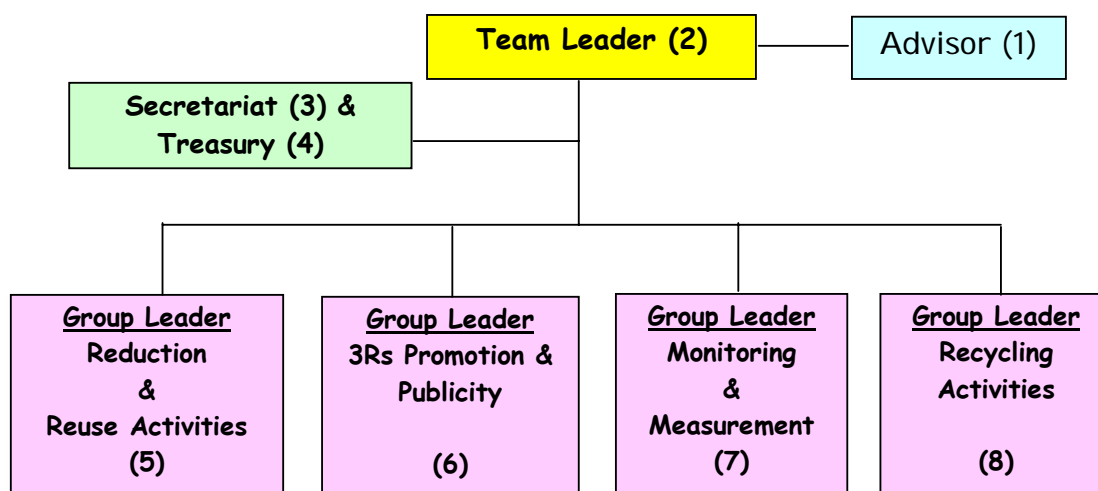
- 3Rs Team will ensure that the 3Rs programme is set up and run in a smooth manner.
- Each member of the team will understand his responsibilities, which may be related to planning, networking, public relations, or data gathering and reporting.
- The Champion will lead this team and it is important other teachers in the school support him in making the 3Rs initiatives a success.

A sample organisation structure, role and responsibilities are shown in **ATTACHMENT 3**.

Depending on the level of 3Rs Activity, the 3Rs Team may want to co-opt as advisors, representatives from e.g. Parent-Teachers Association (PTA), the Local Authority (LA), the local Community or community-based organisation (CBO) or the solid waste management concessionaire operating in the area.

ATTACHMENT 3

Organisational Structure, Role & Responsibility of School 3Rs Team (Sample)



No	Role/Position	Responsibilities
1	Advisor	<ul style="list-style-type: none"> • Advise team on policy direction and priorities • Liaise with regulatory agencies
2	3Rs Team Leader	<ul style="list-style-type: none"> • Coordinate all programmes & activities • Motivate & drive members • Chair team meetings • Network with key players & partners
3	Secretary	<ul style="list-style-type: none"> • Coordinate all programmes & activities • Keep records of meeting • Keep & update records • Prepare reports
4	Treasurer	<ul style="list-style-type: none"> • Formulate budget • Keep accounts • Seek funding
5	Reduction & Reuse Group Leader	<ul style="list-style-type: none"> • Coordinate reduction & reuse programmes & activities
6	Recycling Group Leader	<ul style="list-style-type: none"> • Coordinate recycling programmes & activities
7	Monitoring & Measurement Group Leader	<ul style="list-style-type: none"> • Plan & implement monitoring programmes • Collect, collate & analyse data • Present findings of monitoring
8	Publicity/Promotion Group Leader	<ul style="list-style-type: none"> • Coordinate all promotional programmes • Arrange liaison with interested parties

TIP



For a school at "Basic Level", a simpler Organisational Structure may be established. Some functions can be combined, e.g. one person may take on combined responsibilities of Secretary & Treasurer.

(3) Formulation of School Policy on the 3Rs

You do not have to have one but it is always a good idea to have a **POLICY** on the school's 3Rs. Why? It is because the policy serves as a statement of the school's commitment towards reducing, reusing and recycling wastes.

A 3Rs Policy:

- Provides direction for the school
- Establishes a framework for teachers, pupils and others involved
- Demonstrates to the public the school's commitment towards the 3Rs and preservation of the environment
- Demonstrates top management support of 3Rs initiatives

Developing a policy sounds like a big task?

No, it need not be so. It is a simple exercise and the teachers will have the major responsibility here. 3Rs Policy need to be;

- Concise (one-page)
- Written for a wide audience
- Written in plain language
- Open to review in the future (Remember the concept of Continual Improvement?)

What do you do with the POLICY?

- 1) Ensure wide distribution throughout the school
 - Frame it and put it on the wall at strategic locations
 - Make it into a Poster and put it up in every classroom
 - Distribute copies to parents/PTA
- 2) Explain to all teachers, pupils and staff
 - Include it during school assembly
 - Discuss it at staff meetings

A sample 3Rs Policy for a school is shown on the next page (**ATTACHMENT 4**).

ATTACHMENT 4

3Rs POLICY

Recognising the importance of a safe, healthy and clean environment for the pupils, teachers and other personnel of the school, Sekolah Indah Permai is committed towards taking reasonable measures to REDUCE, REUSE and RECYCLE wastes.

It is the policy of Sekolah Indah Permai to:

- **Provide adequate resources for the enhancement of awareness about good waste minimisation practices to its pupils, teachers and other employees.**
- **Ensure that its waste management and minimisation practices conform to and are in compliance with the laws and regulations, standards and best practices.**
- **Review its 3Rs policy, plan and programmes periodically and make improvements, as part of the continual improvement process.**

Sekolah Indah Permai's pupils and teachers are expected to be actively involved in 3Rs plan and programmes implemented in connection with this policy.

(Signature)

.....

Principal

Sekolah Indah Permai

Date:



TIP

The message about the 3Rs and the Policy cannot be instilled in one mention. The message **MUST BE REPEATED** and the school community reminded about it throughout the school year,

(4) Assessment of Current Situation

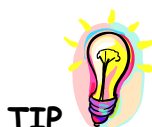
After the setting up of a 3Rs Team, it is advised that a quick and simple **WASTE AUDIT** be carried out.

Why do you need a WASTE AUDIT?

You need to know what wastes and where they are produced as a starting point in planning your 3Rs programme. Waste Audit will tell you:

- What TYPES of wastes are generated in the school
- Which AREA GENERATE THE MOST TYPES OF WASTE
- What wastes could be reduced, reused or recycled
- HOW MUCH waste is generated PER PERSON
(recommended for Advanced level)
- HOW MUCH waste is generated PER WEEK/ MONTH/ TERM/ YEAR
(recommended for Advanced level)

The finding of this exercise can be used in the Planning of the A/P (Chapter 5).



TIP

To assist you with the waste audit, you may contact the waste service provider (the Local Authority or a Waste Contractor), which collects wastes from your school. They may be able to provide you with information on the quantity of waste collected from your school.

If you are lucky enough, you may also be able to obtain information about the types and quantities of recyclables that are recovered from the school's waste before they are disposed.

PUPIL INVOLVEMENT

Get the pupils involved in the Waste Audit exercise. This exercise may be coordinated by the 3Rs Team and for a start, involve the members of the team or the members of the Club, which has been selected to lead the 3Rs Programme. You may use the Eco-Review Sheet in ATTACHMENT 9.

How to do the Waste Audit?

For Waste Audit, you may use the **Waste Audit Check List** to help you (ATTACHMENT 5).

1. Make a list of waste generating areas

Take a walk around the school and note the main waste generating areas in your school. They may include: -

- | | |
|--|---|
| <ul style="list-style-type: none">• Classrooms• Library• Resource Rooms• Canteen• Office• Teachers' Common Room | <ul style="list-style-type: none">• Laboratory• Computer Room• Copy Machine Room• Storeroom• Book shop• Lavatories |
|--|---|

2. Check out wastes

Check out what materials are in the bins, and fill up the Waste Audit Check List.

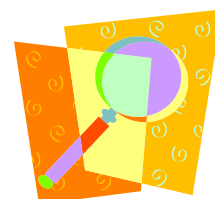
- Types of waste disposed in the bins
- Quantity of different types of waste identified (If necessary, you may need to spend a week or so.)

3. Analyse the Data (For Advanced Level)

For Advanced Level schools or those that would like to apply mathematical formulae to daily lives, the pupils may want to calculate: -

- How much waste is generated per person in the school
- How much waste is generated in a week/ month/year
- What is the Recyclable Recovery Ratio

Fill in the information in ATTACHEMENT 6, and collect the sheets and analyse the data. You may refer to the example given in the second half of the ATTACHMENT 6.



ATTACHMENT 5

Waste Audit Check List (SAMPLE)

No.	Materials Found in Waste Bins	Where did the waste Materials Come From?	Could the Materials have been Reused?		Could the Materials have been Recycled?		What is the Quantity of the Waste Materials Produced Per Week?
			Yes	No	Yes	No	
1	White paper	Classrooms Office	√		√		50 kg
2	Computer paper	Classrooms Office			√		10 kg
3	Exercise Books	Classrooms Office			√		5 kg
4	Books & magazines	Classrooms Office	√		√		25 kg
5	PET Mineral Water bottles	Canteen Office	√		√		500 bottles
6	Aluminium cans	Canteen		√	√		200 cans
7	Glass bottles	Canteen	√		√		200 kg
8	Cardboard cartons/boxes	Canteen Office	√		√		
9	Toner cartridges	Office		√	√		
10	Food	Canteen			√		

Caution:
 Please wear gloves and exercise caution when checking out bins and handling waste materials. This will prevent injury or contamination. Do not handle toxic and hazardous materials from laboratories including broken glassware and containers of corrosive materials e.g. acids.

ATTACHMENT 6

Number of People Generating Wastes in the School¹

No.	Waste Generators	Number
1	Pupils	
2	Teachers	
3	Office staff	
4	Canteen staff	
5	Cleaning & maintenance staff	
6	Bookshop staff	
7		
TOTAL		

Exercise (For Advanced Level)

How do you calculate the quantity of waste generated per person in a school?

Population of School	500
Daily Rate of:	
(a) Generation of Wastes (kg)	250 kg
(b) Recovery of Recyclables	25 kg
(c) Disposal (a-b) = 250-25	225 kg
Recovery Ratio	
(b/a) = 25/250 x 100	10%
Unit Daily Rate (kg/capita/day)	
Waste Generation (Daily rate/Population) = 250/500	0.5 kg/capita/day
Recovery of Recyclables (Daily rate/Population) = 25/500	0.05 kg/capita/day
Disposal of Wastes (Daily rate/Population) = 225/500	0.45 kg/capita/day

¹ This number represents the number of people normally found studying and working in the school. It does not include additional people at special events e.g. sports day.

Classroom Activity

WHAT WASTES DO MY SCHOOL PRODUCE?

Take a walk around the school.



1. What wastes can be found within the school compound?

2. What are the areas in the school where wastes are found?

3. What waste items can be REDUCED?

4. What waste items can be REUSED?

5. What wastes can be RECYCLED?

(5) Identification of Key Waste Issues

Before you proceed to the next step, it is good if you could walk around the school and note down the key issues regarding waste management in your school. You may use the simple **CHECK LIST** on the next page (**ATTACHMENT 8**).

Why do you need to list down the **KEY WASTE MANAGEMENT ISSUES**?

Because it will indicate what are the most **significant problems**².

Remember the **GAPS** you identified earlier? Together with the issues identified, they will help you formulate your school's **OBJECTIVES** and **TARGETS**.

TIP



You may want to bring a **CAMERA** with you. Take photographs. They will not only provide a good picture of the conditions in your school but will also be very useful when you compare the **BEFORE** and **AFTER** conditions i.e. after your 3Rs Plan & programmes are implemented.

PUPIL INVOLVEMENT

Get the pupils involved in the **PHOTOGRAPHY** session. See **ATTACHMENT 9** for School Waste Photographer.

² Significance may be determined in connection with of pupils' health and safety.

Key Waste Issues Check List (SAMPLE)

No.	Waste Management Issues	Yes	No
1	Littering		
2	Inadequate number of Bins		
3	Bins poorly located		
4	Bin size is inappropriate		
5	Litter in drains		
6	Recyclables are being discarded into bins.		
7	Not enough storage space for recyclables		
8	Recyclable collector does not come to collect on a regular basis		
9	Some items e.g. books can be recovered for reuse e.g. given to those who need them in your school or elsewhere.		
10	School grounds may benefit from better landscaping		
11	Noise & dust pollution from road may benefit from planting trees on frontage.		
12	There are rats and other pests e.g. cockroaches and crows on the school grounds.		

Note:

These issues pertain to normal operations at the school. The situation may be different during special events e.g. Sports Day and Prize-giving Day.

For **Level 3 schools**, you may want to also list down issues during such special events so that you can make plans for dealing with the issues.

ATTACHMENT 9

Classroom Activity

School Waste Photographer



1. Divide Participants into Groups.
2. Assign each Group a Specific Area of the School.
3. Equip each Group with a Camera.
4. Ask each Group to Take Photographs at Assigned Area.
5. Prepare a Map of the School (a large one).
6. Put Photographs on the School Map.
7. Display this Map.
8. Get Pupils' Reactions to this Waste Map.
9. Get Pupils' **IDEAS** About What They Would Like To See in Each Area.

Note:

Recommended for Level 3 Schools

(6) Definition of Objectives And Targets

Based on the results of the **WASTE AUDIT** and identification of **KEY WASTE MANAGEMENT ISSUES**, identify specific objectives which are within your control and are measurable.

3Rs OBJECTIVES:

Overall goal, which the school sets itself to achieve, which is quantified where practicable, and arising from the school's 3Rs Policy

TARGETS:

A statement of performance requirement, which is quantifiable where practicable

The targets shall be applicable to the school or parts of the school, and arise from the 3Rs Objectives. The targets need to be set and met in order to achieve those objectives.

Objectives and Targets should be: -

- Specific
- Quantitative (if possible) & measurable
- Clear
- Periodically reviewed and revised

After you have discussed and set your objectives and targets, you need to identify Performance Indicators.

What are PERFORMANCE INDICATORS?

These are indicators you use to measure the level of achievement of the objectives and targets that you have set for the school. Some examples are given below.

- Quantity of waste collected by Solid Waste Concessionaire/Contractor
- Quantity of recyclables collected and separated
- Quantity of books recovered for reuse
- Level of littering

- Percentage of paper recycled
- Number or Percentage of Pupils Participating in 3Rs Activities
- Quantity of Electricity & Water Used per month (Refer to Bills)

To assist you, look at the example given below: -

Sekolah Indah Permai, January 2006

Waste Audit/ Waste Issues Identification	100 kg of waste paper is generated in a month and most end up in bins for disposal at landfill by Waste Contractor. Some of the paper can be reused or recovered for recycling.
3Rs Policy	Establish procedures for paper reuse and recovery for recycling.
Objectives	<ul style="list-style-type: none">• Quantity of paper in waste bins is reduced.• Paper is reused and recovered for recycling.
Targets	<ul style="list-style-type: none">• Reduce Quantity of paper in waste bins to 50 kg/month by October 2006.• Increase quantity of paper (& newspapers) recovered and collected for recycling to 300 kg/month by October 2006.

(7) Development of A/P To Achieve The Objectives and Targets

You have formulated the school's Objectives and Targets for the year. Now you need to put together your **ACTION PLAN**.

The ACTION PLAN:

- Sets the Schedule of Implementation
- Allocates responsibilities
- Identifies options for 3Rs Programmes & Activities
- Allocates Budget for equipment and operations
- Establishes Review and Reporting system

Key considerations for A/P are: -

- Is the school able & capable of carrying out the plan i.e. is the plan feasible?
- Is the school likely to see results within the time frame?
- Have the priority issues been addressed?
- Is the plan compatible with other school strategies and programmes?

1) Setting the Schedule of Implementation

The 3Rs Team may brainstorm and decide on an A/P. The schedule selected may be for the whole school year or a part of it. For ease of reference, the A/P may be tabulated in an Implementation Schedule format as shown in **ATTACHMENT 10**.

REMEMBER!

You may put together a SIMPLE A/P for your school's 3Rs programme. The Tasks described in ATTACHMENT 10 are only there as a guide. Select the ones that are appropriate to the level of your school and the pupils' readiness for such a programme. You may add other tasks, as Pupils become more aware and level of enthusiasm about 3Rs activities increases.

Implementation Schedule of 3Rs A/P (SAMPLE)

Programme/Activities/Tasks	2006											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1. PLANNING (Plan)												
-Set up 3Rs Team	X											
-Formulate 3Rs Policy	X											
-Assess current situation	X											
-Identify key issues	X											
-Define objectives & targets	X											
-Select performance indicators	X											
-Develop 3Rs A/P	X											
-Prepare budget	X											
2. IMPLEMENTATION (Do)												
-Assign tasks to 3Rs Team		X										
-Prepare infrastructure & schedules for 3Rs duties		X										
-Prepare & circulate instructions for 3Rs tasks												
-Contact 3Rs partners e.g. LA, recyclable collector		X										
-Organise & carry out awareness programmes & training		X	X	X	X	X	X	X				
-Organisation documentation needs		X										
-Carry out activities (e.g. site visit, waste reduction practices, recyclable collection, competition, prepare posters, 3Rs promotion)			X	X	X	X	X	X	X	X		
3. MONITORING & MEASUREMENT (Check)												
-Decide on parameters for monitoring & measurement			X									
-Carry out regular measurement			X	X	X	X	X	X				
-Record & analyse data			X	X	X	X	X	X				
-Present 3Rs performance data				X	X	X	X	X	X	X		
-Take corrective measures				X	X	X	X	X	X	X		
4. REVIEW & IMPROVEMENT (Act)												
-Review performance											X	
-Prepare report											X	
-Review report											X	
-Decide on improvement measures											X	
-Send 3Rs report card				X	X	X	X	X	X	X	X	
-Communicate with 3Rs partners											X	X

2) Identifying 3Rs Partners

Apart from the 3Rs Team, which comprises teachers and pupils (and any other member of the school staff e.g. the Canteen Operator), it is a good idea if the team engages other organisations as **PARTNERS** in the school's 3Rs Plan and programmes. They may be the Parent-Teachers Association (PTA), the LA, a representative of the local Community or community-based association (CBO) for example the Residents Association or Rukun Tetangga, or the solid waste management concessionaire operating in the area. You may also invite as partners Recycling Agents or relevant Non-governmental organisation (NGO) actively involved in recycling activities in your area.

The 3Rs Team cannot work on their own. To be successful involvement from other parties is very important. The box below shows example of collaboration work between SMK Sungai Ara, Penang and their 3Rs partners for your reference.

Example of collaboration with 3Rs Partners (SMK Sungai Ara, Penang)

a. Co-Partners in school:

- Work with the classes to collect Recyclables Materials
- Work with the Co-curriculum Unit / Coordinators of school buildings and gardens for example like garden beautification programme
- Work with School Resource Centre to prepare and distribute flyers on activities, documentation
- Work with the Audio-Visual Unit / Computer Laboratory for organising talks and trainings (technical needs / equipments/ ICT/ etc)
- Work with the committee of school canteen and canteen operators for organic waste and composting needs
- Work with the science teachers / science labs assistants on chemical waste disposal

b. Co-Partners from outside:

- Advice, talks and sponsorship from Socio-Economic & Environmental Research Institute (SERI) for our pilot project on composting
- Assistance and advice from Penang Environment Working Group (PEWOG) on Recycling Programme
- Talks, expertise, hands-on training on preparation of microbe solution for making compost, from Agriculture Centre, Penang
- Getting advice and assessment on landscaping from Pejabat Pertanian Daerah Timur Laut, Bayan Lepas, Penang and also seek help from the city council staff on various types of plants
- Extension programme / community service to Kulit Lembu Residents' Association and the Nam Hooi Clan Association on 3Rs Programme.

ATTACHMENT 11 shows how your school can cooperate with the 3Rs partners.

ATTACHMENT 11

How to Cooperate with Your Partners

Partners	What They Are Doing For 3Rs?	What They Can Do For School?
PTAs	<ol style="list-style-type: none"> 1. Solicit funds/sponsors for schools 2. Take part/support 3Rs activities 3. Participate in community programme with schools 	<ol style="list-style-type: none"> 1. Take part/support 3Rs activities 2. Participate in community programme with schools
Communities	<ol style="list-style-type: none"> 1. Solicit funds/sponsors for schools 2. Take part/support 3Rs activities 3. Participate in community programme with schools 	<ol style="list-style-type: none"> 1. Take part/support 3Rs activities 2. Participate in community programme with schools
Concessionaires	<ol style="list-style-type: none"> 1. Provide collection services 2. Support MHLG's/State's/LAs's initiatives for 3Rs. 3. Submit information on recyclables collected to the Government/ LAs 	<ol style="list-style-type: none"> 1. Provide awareness talks/ demonstrations 2. Provide collection services
NGOs/ CBOs	<ol style="list-style-type: none"> 1. Formulate and implement 3Rs awareness activities for communities 2. Provide collection services 	<ol style="list-style-type: none"> 1. Provide awareness talks/ demonstrations. 2. Provide infrastructure e.g. bins.
Private Companies	<ol style="list-style-type: none"> 1. Formulate and implement 3Rs activities in their own companies. 2. Submit information on recyclables collected to the LAs 	<ol style="list-style-type: none"> 1. Provide awareness talks 2. Arrange site visit to waste facilities e.g. landfill 3. Provide collection services and infrastructure
LAs	<ol style="list-style-type: none"> 1. Formulate and implement local policies and plans for establishing a recycling-based society within the LA's administrative area. 2. Network the players within LA 3. Submit recyclables collection data from schools to MHLG. 	<ol style="list-style-type: none"> 1. Provide awareness talks/ demonstrations. 2. Provide infrastructure e.g. bins. 3. Coordinate 3R activities in schools.
State Government	<ol style="list-style-type: none"> 1. Formulate and implement State policies and plans for establishing a recycling-based society. 2. Establish State Level Award Programme for School Environmental/3Rs Programme. 	<ol style="list-style-type: none"> 1. Provide special grants or incentives for 3Rs in Schools. 2. Establish State Level Award Programme for School Environmental/3Rs Programme (for those without one).
MOE	<ol style="list-style-type: none"> 1. Issue directive to State Education Dept./ schools to support schools 3Rs programmes 2. Issue guidelines to schools & update as appropriate. 3. Organise waste minimisation camps/events for schools (with relevant partners). 	<ol style="list-style-type: none"> 1. Provide education materials. 2. Provide training courses for teachers on 3Rs 3. Provide waste minimisation camps/ events for schools.
MHLG	<ol style="list-style-type: none"> 1. Formulate and implement the National Policies and Plans for establishing a recycling-based society. 2. Maintain Network with all the players. 3. Include schools in National Recycling Day Programmes 4. Allocate sufficient funds to support 3Rs Programmes. 5. Maintain website on 3Rs. 	<ol style="list-style-type: none"> 1. Provide awareness talks/ demonstrations. 2. Provide infrastructure e.g. bins, collection stations. 3. Provide Guidelines (update) on 3Rs activities 4. Provide 3Rs educational materials /related data (via internet) 5. Support 3Rs Initiatives for schools by other partners e.g. Concessionaires, NGOS/CBOs. 6. Include information on 3Rs in schools in Website. 7. Organise an Annual Children's Conference & Award Scheme.

3) Identifying Options for 3Rs Activities

Now you have to decide which activities the school would like to carry out.

Look at **ATTACHMENT 13**. It lists out programmes and activities that could be carried out in a school according to its level. Note that the activities in a higher level may be considered if the school is prepared to carry them out.

ACTIVITIES:

- Reduce
- Reuse
- Recycle
- Communication
- Recognition
- Others

REMEMBER!

REDUCE First
Then REUSE
Then RECYCLE

Need more ideas about quizzes and exercises? Look at the examples in the next page and in **ATTACHMENT 12**. You may modify the examples to suit your pupils' level of knowledge.

TIP



For level 1 school, it is suggested to try to focus on one theme and later expand the scope so that the programme is manageable and feasible for a small team to work with.

3Rs PROGRAMMES & ACTIVITIES

Some of the tasks that need to be considered during this planning stage are listed below.

Reduce, Reuse & Recycle

1. Decide what Material You Want to Handle
2. Identify the ways the selected materials may be reduced.
3. Identify End-uses and Markets for the Materials selected (for recycling)
4. Contact Your LA For Assistance
5. Establish a System for Collecting, Storing and Transferring the Materials
6. Plan Awareness Programmes
7. Plan Training Programmes
8. Work out a Budget

Competition/Exhibition

1. Look around for Competitions/Exhibitions & Decide Which One You would like to Participate in.
2. Make Preparations for Competitions/Exhibitions
3. Work out a Budget

Communication

1. Decide what Communication Modes You Would Like to Use
2. Make Preparations for the Mode of Communication You have Selected
3. Work out a Budget

Recognition

1. Decide what Type of Recognition You Would like to Establish Within the School
2. Decide what Type of Recognition/Award Scheme (District/State/National Levels) that Your School Would like to Participate
3. Work out a Budget

Others

1. Brainstorm and Decide what Other Activities are Appropriate
2. Make Preparations for the Mode of Communication You have Selected
3. Work out a Budget

PUPIL INVOLVEMENT

Get the pupils involved in the PLANNING exercise. Explain to them some of the activities that could be organised. Get their IDEAS. You may use the Eco-Planning Sheet in ATTACHMENT 13.

Create PUPIL-OWNERSHIP of 3Rs Programmes by Encouraging Brainstorming, Decision-making & Allowing Pupils to Lead Programmes, where appropriate.

Programmes & Activities for 3Rs

No.	Programmes/Activities	Level ³		
		Basic	Intermediate	Advanced
1.0	REDUCE			
1.1	Encourage pupils to bring food in reusable containers	*	*	*
1.2	Purchase Environment-friendly Products		*	*
1.3	Use electronic mail to send messages (Do not Print them out)	*	*	*
1.4	Avoid Cover Sheets when transmitting faxes	*	*	*
1.5	Use rechargeable batteries & solar-powered calculators	*	*	*
1.6	Print documents on both sides	*	*	*
1.7	Reduce electricity & water use	*	*	*
2.0	REUSE			
2.1	Reuse paper & monitor purchase	*	*	*
2.2	Use refillable toner cartridges	*	*	*
2.3	Save envelopes for reuse	*	*	*
2.4	Keep supply of mugs & glasses in common areas	*	*	*
2.5	Donate old books, furniture etc to NGOs or charity	*	*	*
2.6	Save boxes for use as recyclable collection receptacles	*	*	*
3.0	RECYCLE			
3.1	Recyclables Collection	*	*	*
3.2	Sale of Recyclables/Used Items	*	*	*
3.3	Community Project with Proceeds from Recyclables Sale		*	*
3.4	Gotong Royong (within school)	*	*	*
3.5	Gotong Royong (outside school)		*	*
3.6	Making handicrafts from recyclables		*	*
3.7	Sale of Recyclable Handicraft		*	*
3.8	Composting of Green Waste			*
3.9	Use of Compost for Landscaping			*
4.0	COMMUNICATION			
4.1	Newsletter/magazine/newspapers		*	*
4.2	Input to MHLG Website	*	*	*
4.3	Waste Minimisation Mascot	*	*	*
4.4	Produce posters, banners, T-shirts etc	*	*	*
4.5	Set up 3Rs Corner/Bulletin Board	*	*	*
4.6	Organise games, quizzes,	*	*	*

³ The level may be determined using the Criteria recommended.

4.7	Organise Pledging of 3Rs Policy	*	*	*
4.8	Appoint Pupil 3Rs Ambassadors		*	*
4.9	Exhibitions/Demonstrations/Talks	*	*	*
5.0	RECOGNITION			
5.1	School Recycling Champion	*	*	*
5.2	Compete in LA/State Award Programme	*	*	*
5.3	Compete in National 3Rs/Environmental Award Programme		*	*
5.4	Compete in NGO Award Programme		*	*
5.5	Participate in LA/ State 3Rs Programmes	*	*	*
5.6	Participate in National 3Rs Programme		*	*
5.7	Submit 3Rs Report Card to LA/MHLG	*	*	*
6.0	OTHERS			
6.1	<u>Energy</u> - Convert to energy-saving bulbs - Turn off lights in rooms and machines when not in use	*	*	*
6.2	<u>Air Quality</u> - Request parents and school buses to turn off engines while idling.	*	*	*
6.3	<u>Hazardous Substances</u> - Do not mix with other wastes - Collect fluorescent tubes, batteries for transfer to LA (if they have a collection programme) -Return expired chemicals to suppliers	*	*	*
6.4	<u>Water</u> -Encourage pupils & staff to report leaks -Fix leaks immediately -Collect rain water for cleaning and watering of plants (ensure protected against mosquito breeding)	*	*	*
6.5	<u>Building/Renovation</u> -Preserve existing vegetation -Use permeable surfacing for pavements, car parks etc -Allocate proper area for waste & recyclable collection and storage	*	*	*
6.6	<u>Upkeep of School Grounds</u> -Consider mulching of grass clippings and other green wastes -Plant suitable trees/shrubs on road frontage to reduce noise and dust.	*	*	*

Classroom Activity

What Would You Like To Do?



1. Targets

2. Actions (What you do to achieve your TARGETS)

Which Recyclable Materials Would the School Wish To Handle?

THE COMMON RECYCLABLE MATERIALS are:

- PAPER (Newspapers & other types of paper e.g. cardboard)
- ALUMINIUM CANS (and other metal cans)
- PET Mineral Water Bottles
- GLASS bottles
- OLD CLOTHING (REUSE)

Old newspapers, cardboard and aluminium cans normally have a good market price. In some areas PET bottles are in demand. So the best thing to do is to **CONSULT** your LA or Solid Waste Concessionaire for advice.

TIP



Your WASTE AUDIT (Chapter 5) would indicate which are the materials your school would like you handle. You may start with one item first e.g. old newspapers and then add other materials after you are satisfied with the performance and the PUPILS and 3Rs Partners are READY.

4) Preparing A Budget

You need a **BUDGET** to implement your **A/P**. Now that you know what you want to do, you can work out a budget for the year or for the duration of the A/P. The budget will include main items such as: -

MAIN BUDGET ITEMS

- Equipment & Supplies (including Stationery)
- Documents (reference, magazines)
- Printing & Copying
- Awards
- Food & Beverage
- Utilities (Electricity, water)
- Transportation/travel
- Honorarium for Resource Persons

Worried about the Budget?

Actually, the items required may be sourced at no cost or at very minimum cost to the school.

i) Knowledge

Talks and demonstration e.g. on waste separation may be given by LA, Solid Waste Concessionaire, and NGO/CBOs. Information materials may be sourced from them. Existing clubs e.g. Scouts, Girl Guides, Environment Brigade may be used as vehicle for waste minimisation programmes. Exhibits (posters and other materials) may be prepared by pupils and/or sourced from MHLG/Concessionaire/recyclers/NGOs etc. Other information materials may be sourced free of charge from NGOs, multilateral aid organisations e.g. JICA and UNDP. Awards/prizes may be requested from the PTA or other generous personalities from the local community.

ii) Infrastructure

Bins for Recyclables can be requested from the LA or Solid Waste Concessionaire. Cardboard boxes for waste paper may be requested from Paper Re-processing plants (See List of Contacts). In the event that a school requires a Recyclables Storage Station, funds may be requested from the LA, which gets allocations from the MHLG (subject to availability of funds from the Annual Budget).

You may need some **Seed Money** to start up your A/P. Once the activities are running, the programme is likely to be self-sustaining. Schools that have planned and implemented their 3Rs Programme in a sustainable manner have proved this.

REMEMBER

You have OPTIONS of what to do with the recyclables that you collect:

- Donate
- Sell
- Reuse Within the School
- Recycle Within the School

ATTACHMENT 14 shows a typical **Budget**. Your Budget will depend on the Level of 3Rs Activity (Level 1, 2 or 3), the Programmes & Activities selected for implementation, and the level of support that you get from your 3Rs Partners.

5) Establishing a Review and Reporting System

You need to find out what are the **Reporting Needs**. The 3Rs Team may need to prepare and send periodic reports to:

- The School's Top Management
- The LA

Check out if there are pro-forma Reports and use them. If you have the facilities, report in **Electronic** form (**it saves Paper**). Reporting will be described further in Chapter 8.

Budget for 3Rs Sekolah Indah Pemail for Year 2006

Item	Description	RM
1.0	EXPENDITURE	
1.1	<u>Equipment & Supplies</u> -Weighing Scale -Plastic Bags -Stationery	
1.2	<u>Documents</u> -Reference Books -Magazines -Reports	
1.3	<u>Printing & Copying</u> -Printing Annual Report of 3Rs Programme -Photocopying charges -Film & Developing charges -3Rs Promotional Items	
1.4	<u>Awards</u> -Trophy -Cash Prizes -Certificate of Appreciation	
1.5	<u>Food & Beverage</u>	
1.6	<u>Utilities</u>	
1.7	<u>Transportation</u> -Excursion/Site Visit -Participation in Competition (Travel, Accommodation & Allowance)	
1.8	<u>Others</u> -Honorarium for Speakers -Tokens of Appreciation	
1.9	Sub-total	
2.0	Income	
2.1	Sale of Recyclables	
2.2	Sponsorship/Grants/Donations	
2.3	Special Events	
2.4	Sub-total	
TOTAL (Item 2.4-1.9)		

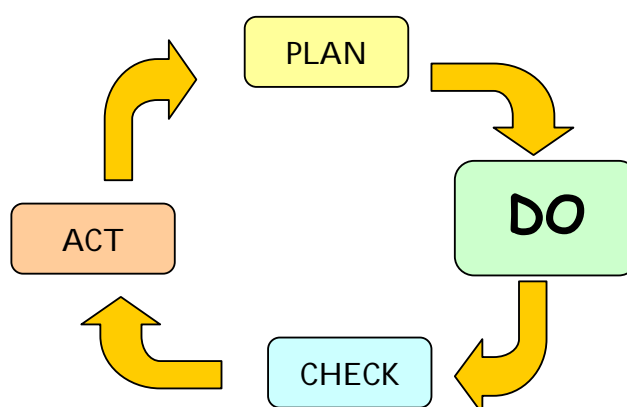
PROFIT:

DEFICIT:

CHAPTER 6

STEP 2: IMPLEMENTATION (DO)

You are now ready to proceed with the “**DO**” or **IMPLEMENTATION** part of the **PDCA Cycle** by putting into action your **A/P** for 3Rs in the school.



The key elements of IMPLEMENTATION are:

- (1) Responsibility & Resources
- (2) Awareness & Training
- (3) Documentation
- (4) Emergency Response

(1) Responsibility & Resources

Responsibilities of the 3Rs Team and the schools 3Rs Partners have been assigned (Chapter 5). Based on the activities selected, specific tasks may be added to the list of responsibilities.

Depending on the programme and activities selected, a proper system must be established. For example in the case of Recyclable Collection, a simple and organised Programme is established. This includes:

- Designation & preparation of a Collection & Storage Area
- Acquire, label and locate storage receptacles appropriate for each type of recyclable
- Establish Schedules for collection from pupils
- Establish Schedules for Collection & Sale to Recyclable Collector
- Establish schedules for Waste Separation (if included)
- Establish schedules for Duty (weighing, logging quantities & receipts of payment) during Collection days

Clear instructions must be made available to participants in the programme for e.g. WHICH ITEMS TO RECYCLE & HOW TO SEPARATE?

REMEMBER

3Rs Participants need to know: -

- What they are to do
- How they are to do it
- When they are to do it
- Where they are to do it

The 3Rs Team should have obtained the necessary funds to start the activities. The equipment and supplies should also be in place.

(2) Awareness & Training

Awareness programmes and Training need to be identified. Awareness materials may be sought from your LA. You may also obtain materials from the Solid Waste Concessionaire and from other sources e.g. the NGOs.

1) Awareness Programmes

The programmes should include:-

- Basic understanding of importance of waste management
- Waste management Conditions in the school
- Appreciation of their individual actions could contribute towards enhancing the school environment and the environment outside the school

Do you need Ideas for Increasing Awareness?

You may create exercises, games & quizzes to increase awareness. Check out the examples in **ATTACHMENTS 15** (recommended for Level 1 Schools) and **16 & 17** (recommended for Level 2 & Level 3 Schools).

Your pupils are musically inclined? Have them come up with a **Theme Song** for 3Rs for the school. They may select a song and replace the lyrics with 3Rs-related lines. Better, some pupils may get together and compose their own song. Play this Theme Song at the start of every meeting of the 3Rs Team and at other events e.g. Recyclables Collection Day.

There are budding **actors** among the pupils? Organise a group to write a sketch and have them perform in conjunction with a school event e.g. Annual Recycling Day.

TIP



Awareness Programmes should be Practical & Encourage Participation.
Allow for Pupil-led Activities & sharing of ideas. Include FUN & Games.
Awareness Programmes will vary according to the pupils' level of education and enthusiasm, and the school's level of 3Rs activity.

Classroom Activity



Break Time Waste Worksheet

Name: _____

Date: _____

Class: _____

Write or Draw **everything that you have eaten**. Include all FOOD, CONTAINERS & WRAPPING.

Write or Draw everything that is **LEFT** after you have eaten. Include all FOOD, CONTAINERS & WRAPPING.

Write or Draw any **IDEAS** that you have to **REDUCE** the amount of Waste left after you have eaten.






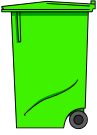
For Levels 2 & 3 School

ATTACHMENT 16

Classroom Activity

Follow Your Wastes

Do You Know What Happens To The Garbage After You Put It In The Bins?

	Who collects?	Where does it go?	How will it be treated?
<p>Paper</p>  <p>From:</p>			
<p>PET Bottles</p>  <p>From:</p>			
<p>Cans</p>  <p>From:</p>			
<p>Food wastes</p>  <p>From:</p>			

Classroom Activity

Fast Food Waste Detective

1. Ask Pupils what are their Favourite Fast Foods.
2. Discuss the Types of Packaging Used in Fast Food Outlets. What purpose does the packaging serve? Is it for keeping food warm, take away, easy to stack? Do different food outlets use the same type of packaging?
3. Ask pupils to visit the food outlets and take photographs (where possible) of wastes from food packaging. They may also list down wastes other than from packaging.
4. Ask the pupils to list down the types of packaging used for different types of food at different outlets. Ask them to note if there is any difference in the type used for in-dining and for take-away.
5. Discuss the pupils findings: -
6. Discuss how fast food outlets and their customers can **REDUCE** and **RECYCLE** wastes.

Note:

- i) This exercise is recommended for Levels 2 & 3 Schools.
- ii) Packaging includes foam, plastic, waxed paper, napkins, straws, bags, trays.

2) Training Programmes

The programmes should include:-

- Identification of Recyclables
- Waste Separation
- Preparation of Recyclables before Storage
- Measuring quantity of Recyclables
- Monitoring 3Rs Activities
- Documentation of 3Rs Programme Performance

For training on waste separation, again contact your LA Solid Waste Concessionaire and NGOs operating recycling programmes in your area.

Refer to **LIST OF CONTACTS** for addresses, telephone numbers, website and email.

3) Preparation of Recyclables

Your pupils may ask, “**What do we do with the recyclables that we collect?**” Different materials are treated differently. Look at the pictures and instructions in **APPENDIX 18** for preparing and storing the common recyclables.

Take a look at the attached brochure (*Courtesy of Majlis Perbandaran Pulau Pinang⁴*).

IMPLEMENTATION

For effective implementation, a school should consider its capabilities and develop support mechanisms to achieve its 3Rs Policy, Objectives and Targets.

REMEMBER

- Awareness leads to Motivation
- Motivation leads to Commitment
- Increased awareness and training leads to Better Performance
- Better Performance leads to a cleaner & Healthy Environment

⁴ Prepared in conjunction with the Pilot Project on Recycling Network and Source Separation, Study on National Waste Minimisation, August 2005

How to Separate Recyclables



NEWSPAPERS

1. Tie into bundles (3-4 kg).
2. Stack & store in a dry place.



CARDBOARD CARTONS/BOXES

1. Flatten boxes.
2. Tie into bundles.
3. Store in a dry place.



GLASS BOTTLES

1. Rinse the bottles & dry them.
2. Store.



PET BOTTLES

1. Rinse the bottles & dry them
2. Flatten bottles
3. Store.



OTHER PLASTIC CONTAINERS

1. Rinse the cans & dry them.
2. Store.



ALUMINIUM & TIN CANS

1. Rinse the cans & dry them.
2. Flatten Al cans (where possible to save space).
3. Store.



OLD CLOTHING

1. Make sure they are clean & dry.
2. Separate torn items (They fetch lower price)
3. Store in a dry place.

MPPP 3Rs Brochure

Simple 3Rs

REDUCE

REUSE

RECYCLE

CONSERVE ENERGY
Switch off all electrical and electronic appliances when not in use

WHEN BUYING
Bring along
- own bags when shopping
- tiffin carriers for takeaway food

SAVE WATER
Turn off the tap properly after use
Repair all leaks

AVOID OVER-PACKAGING
Is it necessary to have so many packages?
Give a thought to how items are over packaged

For further enquiries, please contact:
Recycling Network Unit
c/o Majlis Perbandaran Pulau Pinang
Jalan Padang Kota Lama, 10200 Penang
Tel: 04-263 3000 Fax: 04-263 3036
E-mail: rnmppp@gmail.com
Website: www.rnmuonline.net



PAPER

- Tie into bundles
- Put loose paper into plastic bags

PLASTIC - Drinking Bottles

- Remove cap
- Empty bottle
- Rinse
- Crush and store for recycling

OTHER PLASTIC CONTAINERS

- Empty contents
- Clean
- Store for recycling

ALUMINIUM CANS

- Empty contents
- Rinse
- Dry
- Crush and store for recycling

OTHER METAL CONTAINERS

- Empty contents
- Clean
- Store for recycling

GLASS

- Empty contents
- Clean
- Store for recycling

Prepared by: SAPHIRE GOR & KISHI BOND TEEK Illustrated by: SYED ALWIN SYED OMAR

(3) Documentation

The 3Rs Team should document on paper (or in electronic form): -

- The Key Findings about the School's Existing Waste Management Status
- The School's Policy (if one is formulated) & the A/P
- Records of Results of Monitoring & Measurement

Other documentation may include: -

- The 3Rs Organisational Structure
- 3Rs Operational Procedures Employed in the School

(4) Emergency Response

Accidents may occur during 3Rs activity implementation. These may be minor incidents such as

- Cuts when handling recyclables
- Contact with materials that are contaminated by corrosive materials

Ensure that teachers and pupils practise good hygiene by washing their hands after handling recyclables. Remind everyone of the Emergency Response Procedures practised in the school, and ensure Medical Kit (e.g. antiseptic, plasters) is available for use.

REMEMBER

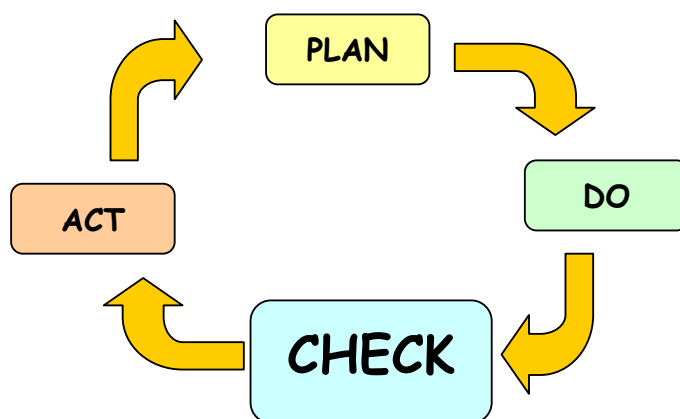
In Implementation, try to ensure the pupils:

- Observe set procedures
- Are not Bored
- Are not unduly tired
- Take proper precautions to avoid accidents

CHAPTER 7

STEP 3: MONITORING & MEASUREMENT (CHECK)

You are now ready to proceed with the “**CHECK**” part of the **PDCA Cycle** by monitoring and measuring the progress and performance of activities in your **A/P** for 3Rs in the school.



The key elements of MONITORING & MEASUREMENT are: -

- (1) Monitoring & Measurement
- (2) Corrective Actions
- (3) Records

(1) Monitoring & Measurement

This task refers to the monitoring, measurement and evaluation of data once the A/P is implemented.

MONITORING & MEASUREMENT:

The school's 3Rs Team should measure on a regular basis the key characteristics of its 3Rs activities. This should include recording of information on 3Rs Indicators selected and other parameters in conformance with the Objectives and Targets

What is to be monitored?

The 3Rs Team will decide what to monitor and measure. In selecting what to measure, the following factors may be considered: -

- What are the significant waste management issues or 3Rs Activities?
- What are their characteristics?
- How can they be measured?
- How is data & information collected?
- How is data recorded?
- How to analyse and present collected data?




PUPILS INVOLVEMENT

Get the pupils involved in the Monitoring & Measurement exercise. You may use the Eco-Monitoring sheets in ATTACHMENTS 19 & 20.




Classroom Activity

How Much Waste Do We Generate?

Week 1: Beginning

	Paper 	PET Bottles 	Aluminium Cans 	Others
Monday	kg	bottles	cans	kg
Tuesday	kg	bottles	cans	kg
Wednesday	kg	bottles	cans	kg
Thursday	kg	bottles	cans	kg
Friday	kg	bottles	cans	kg
Total	kg	bottles	cans	kg

Week 2

	Paper 	PET Bottles 	Aluminium Cans 	Others
Monday	kg	bottles	cans	kg
Tuesday	kg	bottles	cans	kg
Wednesday	kg	bottles	cans	kg
Thursday	kg	bottles	cans	kg
Friday	kg	bottles	cans	kg
Total	kg	bottles	cans	kg

Classroom Activity

How Much Did You Achieve?

1. Review your activities in the past (4 weeks), and enter your findings in the following table.

	Week 1	Week 2	Week 3	Week 4

2. What can you do next? Write down your IDEAS.



Remember the PERFORMANCE INDICATORS from Chapter 5?

The data that has been evaluated may be presented to show the following: -

- Reduction in Quantity of waste collected by Solid Waste Concessionaire/Contractor
- Increase in Quantity of recyclables collected and separated
- Increase in Quantity of books recovered for reuse
- Improvement in Level of littering
- Increase in Percentage of paper recycled

Compare your Results with the Targets that you have set.

Remember the example of **Targets** set in Chapter 5?

TARGETS

1. **Reduce** quantity of paper in waste bins **to 50 kg/month by October 2006.**
2. **Increase** quantity of paper (& newspapers) recovered and collected for recycling **to 300 kg/month by October 2006.**

Check the results of your monitoring and evaluation.

Did you achieve your Targets? Within the specified Time Frame?

REMEMBER

- Choose simple measurement methods
- Keep good records of measurements
- Use flow charts, histograms, bar charts, pie charts etc.

(2) Corrective Actions

Now you have found out whether you have achieved your Targets or not. If you have, you are in a position to decide to compete for that National Award Programme or reward the 3Rs Team or even the whole school for an excellent job. If you **have not achieved the Targets**, then actions should be taken to correct or remedy the situation.

CORRECTIVE ACTIONS

The School should establish a process for evaluating achievements, and for taking Corrective or if appropriate Preventive Actions.

Look at the findings. Find out the causes of failure to achieve targets. Look at **Options** for correction and select the most appropriate or a combination of actions. Look at the example below.

Example of Results & Options for Corrective Actions

	Targets	Achievement
1	Reduce quantity of paper in waste bins to 50 kg/month by October 2006.	Quantity of paper in waste bins reduced to 80 kg/month from 100 kg/month by October 2006.
2	Increase quantity of paper (& newspapers) recovered and collected for recycling to 300 kg/month by October 2006.	Quantity of paper (& newspapers) recovered and collected for recycling increased to 100 kg/month by October 2006.

Options for Corrective Actions

- Review Number and location of boxes for recyclable paper. Add and/or relocate.
- Remind Pupils about Reducing paper use and Reusing at every school assembly.
- Put up more posters about Paper Reduction, Reuse & Recycling.
- Introduce incentives for each classroom that achieves specified target.
- Invite Resource Person from a Paper Recycling Plant for Talks & Demonstration

(3) Records

Records must be kept and maintained, and be made available for checking when required. The school's 3Rs Team should establish procedures for recording the findings of Monitoring, Measurement and Evaluation.

RECORDS

Records must be kept and maintained in order to demonstrate the school's commitment and achievements, in comparison with the Objectives and Targets that had been set.

In managing records, consider: -

- Means of Identification
- Collection & Filing
- Storage & Maintenance
- Updates
- Ease of Retrieval
- Availability to interested parties e.g. the LA

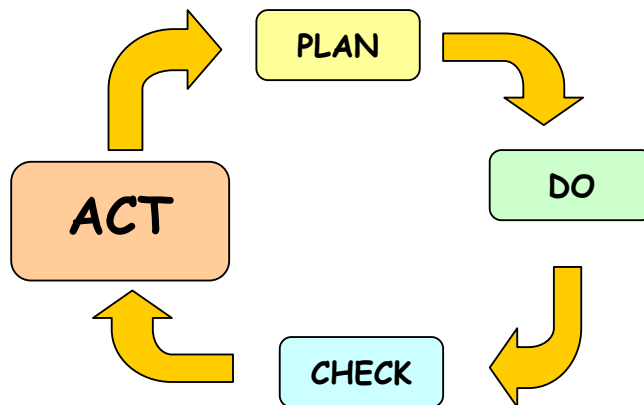
EXAMPLES OF RECORDS

- Report of Waste Audit
- Report of Awareness Survey
- Monitoring Data: Quantities of Recyclables Collected/Sold/Donated, Costs, Revenue
- Corrective Actions
- List of Buyers of Recyclables
- Awareness & Training Programmes
- Community Programmes
- Awards

CHAPTER 8

STEP 4: REVIEW & IMPROVEMENT (ACT)

You are now ready to proceed with the “**ACT**” or **REVIEW & IMPROVEMENT** part of the **PDCA Cycle** by improving your **A/P** for 3Rs in the school, and the results of activities.



The key elements of REVIEW & IMPROVEMENT are: -

- (1) Management Review
- (2) Communication

(1) Management Review

The school management **Review** will address the need for changes to the: -

- Policy
- Objectives & Targets
- Performance Indicators
- Any Other Element of the PDCA Cycle

MANAGEMENT REVIEW

The school's management should review the results of Implementation of the A/P, so that improvements can be made to increase efficiency and effectiveness of programmes and activities, to cater to changes and prevailing conditions and to ensure sustainability of the 3Rs Programme.

(2) Communication

The school management should decide on communicating **INFORMATION** about 3Rs Activities: -

- Internally: Within the School
- Externally: Outside the School

1) Internally: Within the School

This refers to informing the pupils and other members of the school staff about progress, events and achievements.

2) Externally: Outside the School

This refers to sharing of information about progress, events and achievements of the 3Rs A/P with interested parties. This may also refer to making a decision about responding to requests for information from interested parties.

COMMUNICATION may involve:

- Distribution of reports & results of performance evaluation (use lots of photographs & charts)
- Dialogues with Interested Parties
- Participation in Exhibitions/ Conferences/Award Programmes
- Reports in the Media

Who are interested parties?

They may be other schools, regulatory authorities e.g. the MHLG, the MOE, and the LA, the Solid Waste Concessionaire, researchers from universities and groups of people involved in studies for the Government via bilateral or multi-lateral organisations. Other interested parties may be the media and the local community.

As you can see most of the interested parties have been listed down as potential **Partners** in your A/P.

3Rs Report Card

The primary interested party in this 3Rs Programme for schools is the MHLG. To assist the ministry monitor the progress and success of the nationwide promotion of the 3Rs, and to be able to update data on recyclables recovery (also for inclusion in its website www.kitarsemula.com) it is recommended that all participating schools send regular reports to their LA. The LA will prepare a full report of quantities recovered in their area for submission to the MHLG. A proposed format is shown in **ATTACHMENT 21**.

3Rs REPORT CARD

Collection, analysis and reporting of up-to-date data are critical to good decision-making.

Why Communicate?

The School should communicate in order to:

- Share Experience; Success, Failures & Lessons Learned
- Demonstrate the School's Commitment towards 3Rs
- Motivate Pupils to do better.
- Get Recognition of the School's Efforts
- Use it as an Opportunity to Get Feedback for Improvement

REMEMBER

As a CONTINUAL IMPROVEMENT process, 3Rs Plan & Programmes in Schools present an opportunity for systematic planning, action, checking and improvement of performance, and the communication of information. This process contributes toward the establishment of a recycling-based society and in the long term, towards Environmental Preservation and Enhancement.

ATTACHMENT 22

Proposed 3Rs Report Card for School

For: March (Month) 2006 (Year)

Name of School: Sekolah Indah Permai

LA: Majlis Bandaraya Miri State: Sarawak

No.	Type of Recyclable	Quantity /Month										Total Quantity To Date (cumulative)
		1	2	3	4	5	6	7	8	9	10	
1.0	PAPER											
1.1	Newspapers (kg)											
1.0	Other papers (kg)											
	Sub-total											
2.0	GLASS											
2.1	Glass bottles (bottles)											
	Sub-total											
3.0	PLASTICS											
3.1	PET mineral Water Bottles											
3.1	Other plastic containers (kg)											
	Sub-total											
4.0	METALS											
4.1	Tin /steel cans (kg)											
4.2	Aluminium cans (cans)											
	Sub-total											
5.0	CLOTHING/TEXTILE											
	Sub-total											
6.0	OTHERS (Specify Unit)											
6.1												
6.2												
	Sub-total											

Reported by: Ms. Agnes Joseph

Designation: 3Rs Team Leader **Contact No.:** 085-888 888

Date: 08 (Day) April (Month) 2006 (Year)

CHAPTER 9

3Rs PDCA FOR BEGINNERS (LEVEL 1)

Summary of PDCA Cycle & Key Elements

For a school just embarking on 3Rs Plan and programmes, the elements and processes described in Chapters 5, 6, 7 and 8 may appear daunting. However, remember that these guidelines define the basic processes but the school (and the 3Rs Team) will consider and decide on the number, scope, frequency, complexity and coverage of 3Rs activities.

To aid beginner schools, a **summary of the PDCA Cycle** and the **Key Elements** are shown on the next page.

Example of 3Rs Programme for Beginners

To further aid the planning, implementation, monitoring and review process of a beginner's 3Rs Programme, an example is provided in ATTACHMENT 23. This example is based on one activity i.e. 3Rs **Awareness Campaign**. Note that the Key Elements are included.

Basic Concept of example programme is as follows;

Objective :	“To increase pupils’ awareness about the 3Rs” within a specified time (two months in Phase 1)
Action	Awareness Campaign
Monitoring & Measurement	<ul style="list-style-type: none">• Awareness Survey administered at the beginning and the end of the two months.• Monitoring of level of littering (visual observation)• Measurement of quantity of recyclable items in tri-colour bins (sensitisation period)
	Corrective action is to be taken during the 2-month period
Review Report	<ul style="list-style-type: none">• Report is prepared for the Principal at the end of the two months• The Principal then reviews the report in particular the recommendations made for improving the 3Rs programme in Phase 2.

3Rs Programme for Primary & Secondary Schools (Level 1): Summary

PLANNING (PLAN)

1. Set up **3Rs Team** (Principal as Advisor and a Teacher as Team Leader).
2. Find out what are the **existing problems concerning waste** in the school (Measure where possible).
3. Decide which **problem you would like to tackle**.
4. Set **Objectives & Targets**.
5. **Select activities** for pupils.
6. Make a **Timetable & allocate tasks**.
7. Contact **3Rs Partners** for help.

IMPLEMENTATION (DO)

1. Get **equipment, materials** for selected 3Rs Activities.
2. **Promote** Activities (posters).
3. **Educate** pupils (demonstrate, talks).
4. **Carry out** Activities (Choose from **ATTACHMENT 14**) - work with 3Rs Partners

MONITORING & MEASUREMENT (CHECK)

1. **Measure & record results** of activities.
2. **Evaluate** results (weekly or fortnightly).
3. **Make some changes/additions** to tasks or activities if needed.

REVIEW & IMPROVEMENT (ACT)

1. Prepare a **monthly report**.
2. **Review** Objectives & Targets; are they met?
3. Think **how to improve** and meet Objectives & Targets.
4. **Revise 3Rs Programme** for Next Year (e.g. increase activities).
5. **Communicate** to interested parties.

ACTIVITY: 3Rs AWARENESS CAMPAIGN⁵

PLANNING (PLAN)	
Waste Issues Identification	Pupils know very little about waste and pollution problems. Results of first Awareness survey (e.g. "Eco-Exercise: How Green Am I?") show that more than 80 % of pupils surveyed do not know enough about pollution & waste reduction.
Objectives	Pupils' awareness about the 3Rs is Increased.
Targets	After two months, results of second survey show that percentage of pupils who know about pollution & waste reduction increases from 20 % to more than 50 %.
3Rs Plan	Increase awareness through Posters, Flyers, Message at school assembly, talks by invited speakers & a 3Rs poster painting competition.
3Rs Partners	LA (Tri-colour bins) Solid Waste Concessionaire (talks & demonstration) MLHG (posters & flyers) PTA (Prizes for Poster Competition winners)
3Rs Team	HEM Teacher is 3Rs Team Leader: coordinator of 3Rs Plan with assistance of two other teachers (Art & Science).

⁵ Recommended for Level 1 Schools

IMPLEMENTATION (DO)

<p>Posters & flyers (3Rs information)</p>	<p>Write to MHLG to request for posters & flyers/leaflets (and any other sources locally). Put up posters in strategic locations.</p>
<p>Tri-colour bins for recyclables</p>	<p>Request from LA. Place in strategic location.</p>
<p>Talks & demonstration about recycling</p>	<p>Request Solid Waste Concessionaire to deliver. Also talk by the DOE or NGO, where available locally. Arrange date & time, and pupil attendance.</p>
<p>Poster Competition</p>	<p>Organise 3Rs poster painting competition:</p> <ul style="list-style-type: none"> • Decide categories & theme • Set date, time. • Seek sponsors from PTA etc • Advertise • Appoint judges • Put up winning posters • Announce winners at assembly
<p>Promotion</p>	<p>Include in school assembly speech. Insert during other co-curricular activities or in class (where relevant). "LEADERSHIP BY EXAMPLE"- demonstrate commitment to 3Rs by using tri-colour bins, be more conscientious about turning off lights and ensuring taps are properly turned off. Encourage reuse of writing paper for notes or rough paper.</p>

MONITORING & MEASUREMENT (CHECK)

<p>Check effectiveness</p> <ul style="list-style-type: none"> • Posters & Flyers • Tri-colour bins 	<p>Are pupils aware of posters? Do Pupils understand information in flyers? <u>Method:</u></p> <ul style="list-style-type: none"> • Random interview • Visual observation • 3Rs Team record weekly quantity of recyclables in each bin
<p>Findings after 1st session</p>	<p>Example of finding;</p> <ol style="list-style-type: none"> 1. Flyers are too complicated; pupils do not understand. 2. Bin location is not suitable,
<p>Corrective Action</p>	<ol style="list-style-type: none"> 1. 3Rs team design own flyers appropriate to the school's information needs and pupils' level of education. 2. Distribute new flyers. 3. Re-locate bins nearer to canteen.
<p>Check effectiveness-</p>	<p>Repeat Awareness survey. Analyse findings & compare with 1st survey (when only 20% know enough about pollution & waste reduction). Check weekly quantity of items in tri-colour bins.</p>
<p>Findings after 2nd session</p>	<p>Results of second survey show that percentage of pupils who know about pollution & waste reduction increases from 20% to more than 75% (exceed target of 50%). Quantity of recyclables in 3 bins increases from zero (0) to an average of:</p> <ul style="list-style-type: none"> • 10 kg/paper/week • 50 PET bottles/week • 30 Al cans per week

REVIEW & IMPROVEMENT (ACT)

Report	Prepare Report.
Objectives & Targets	Objective is met and exceeds Target by 25 % .
Communicate	Request Solid Waste Concessionaire to deliver. Also talk by the DOE or NGO, where available locally. Arrange date & time, and pupil attendance.
Improvement	Endorse 3Rs Team Recommendation to expand 3Rs Programme for next school term to include: <ul style="list-style-type: none">• Prepare School 3Rs Policy• Set up a 3Rs Bulletin Board• Arrange site visit to a Paper Recycling Plant• Begin a proper old newspaper collection programme.

APPENDICES

Appendix-1

FREQUENTLY ASKED QUESTIONS (FAQ)

1. Where can we obtain information regarding recycling and 3Rs?

You may contact the Ministry of Housing and Local Government, your LA or the Solid Waste Management Concessionaire⁶. For listing of contacts, refer to LIST OF CONTACTS for addresses, telephone numbers, website and email.

2. Who can we get to brief the school staff and pupils on how to carry out recycling programmes?

You may contact your LA or the Solid Waste Management Concessionaire. For listing of other organisations that can assist you, refer to LIST OF CONTACTS for addresses, telephone numbers, website and email.

3. Who can show us how to sort and prepare the recyclables for collection?

You may contact your LA or the Solid Waste Management Concessionaire. You may also get assistance from non-governmental organisations (NGOs) and community-based organisations (CBOs) operating recycling programmes in your area. Refer to LIST OF CONTACTS for addresses, telephone numbers, website and email.

4. What do we need to get started on a recycling programme?

You need Knowledge, Equipment, Resources and a good dose of Commitment and Enthusiasm. You may contact your LA or the Solid Waste Management Concessionaire, and other organisations in the LIST OF CONTACTS.

⁶ Alam Flora Sdn Bhd is the concessionaire for Wilayah Persekutuan Kuala Lumpur, Selangor and Pahang. Southern Waste Management Sdn Bhd is the concessionaire for Negeri Sembilan, Melaka and Johor.

5. Do we need the coloured bins for my school's recycling programme?

NO. You may use any type of container or receptacle. You may reuse cardboard boxes or old wooden or plastic containers. You need to LABEL the containers to separate different types of recyclables; paper, plastics, glass and metals. Be Creative.

6. What are the items that can be recycled and what items cannot be recycled?

The main items that can be recycled are PAPER, PLASTICS, METALS and GLASS. Items that are currently collected for recycling and that which are not collected may vary from one LA to another, and may also change according to market demand.

Some LAs have also begun collecting Hazardous Household Wastes e.g. fluorescent tubes and e-waste including mobile phone batteries and computers.

7. Do we recycle our school waste only or also request pupils to bring recyclables from home?

It is up to you and your 3Rs Team. You have to consider the pupils' and parents willingness and preparedness to participate. You also have to consider the capabilities for COLLECTING, STORING, and TRANSFER of the recyclables from your school.

8. Do we need a large storage room for our recycling programme?

Again this depends on the types and quantities of recyclables that you decide to collect and separate. You should consider the space available, and its location for safety and ease of collection and transfer. This will also determine the duration of storage and frequency of transfer/collection from the school premises. Consult your LA or the Solid Waste Concessionaire/Contractor.

Another way is to have the staff and pupils bring recyclable items on a fixed day e.g the last Friday of every month. The Solid Waste Concessionaire/Contractor can pick up the recyclables on the same day. In this case, you do not need a large storage space.

9. Who can we sell our recyclables to?

You may sell your recyclables to the Solid Waste Concessionaire/Contractor. Consult your LA or the Solid Waste Concessionaire/Contractor for companies operating in your area.

10. What do we do with our school canteen and garden wastes?

At the moment, your LA or the Solid Waste Concessionaire/Contractor operating in your area collects garden waste (grass cuttings, twigs, leaves), which are supposed to be bagged separately from canteen waste.

Canteen wastes are currently collected for disposal on landfills and in certain areas e.g. Pulau Langkawi and Pulau Tioman, for incineration. Wastes from canteen, which are mainly food and garden wastes, may be COMPOSTED. However food wastes are usually mixed together with contaminated plastic and paper. This may present problems to certain types of composting process. Composting is not widely practised now, and only a few places e.g. resort, factory, housing area and schools practise this method of waste treatment. Also they are mainly on a 'Pilot' or 'Testing' level.

It is suggested that you defer handling of canteen and garden wastes until proper guidelines and standards are issued by the relevant authorities.

11. Are there any current examples of schools we can follow?

Examples are provided in these Guidelines.

It is up to you and your 3Rs Team. You have to consider the pupils' and parents' preparedness to participate. You also have to consider the capabilities for COLLECTING, STORING, and TRANSFER of the recyclables from your school.

Appendix-2

EXAMPLES OF SCHOOL 3Rs PROGRAMMES

- RECYCLING PAPER IN SMK PUTRAJAYA 1
- DEVELOPING A FEASIBLE 3Rs PROGRAMME IN SMK SUNGAI ARA, PENANG
- EXAMPLE OF SCHOOL PROJECT IN JAPAN

RECYCLING PAPER IN SMK PUTRAJAYA 1

1.0 INTRODUCTION

The Recycling Project in SMK Putrajaya 1 started rather early, in fact since the school began in the year 2000. At that time, the Senior Assistant in charge of Student Affairs, Mr. Mahmudi, organised a Recycling Campaign. The classes were asked to bring various recyclable materials like paper, plastic and tins and the class with the largest amount received a prize. The paper was sold to Alam Flora which also came to give a talk and display about Recycling and the Environment. Thereafter students were told to become more conscious about recycling and to practise it.

In 2002, we had a Recycling Campaign in cooperation with Alam Flora. Alam Flora gave a presentation to the students and held an exhibition. We also applied for and were given the 3-coloured bins by Alam Flora. Basically the 3Rs is an ongoing activity in the school to “**instill cleanliness, love for the environment and avoiding wastage**”.

2.0 THE RECYCLING OF PAPER PROJECT

2.1 Beginning

In 2005, the school was informed of the Recycle Boxes In Schools Program by Alam Flora Sdn Bhd.

2.2 Champion

The programme was handled by the Senior Assistant (Co-Curriculum). With the help of some teachers in the Cleanliness Committee and cooperation of class monitors, it was soon underway.

2.3 Boxes

We applied for the boxes: 12 large boxes (383 x 383 x 838) and 60 small boxes (305 x 255 x 305) and were given free of charge because of the campaign in Putrajaya.

During the Monday morning Assembly, we invited Alam Flora to give a short talk and presentation after which the small boxes were distributed to all the classrooms for collecting paper for recycling. Other boxes were distributed to the office, Staff Room, Laboratories, Library, Self-Access Rooms, etc. Students were told to use the boxes only for paper and that every week the boxes were to be emptied into a storage area for collection by the vendor at a specified date.



In the Staff Room where a lot of paper is used, boxes were placed in strategic places for convenience of the teachers.



2.4 Monitoring.

The Senior Assistants on their rounds would check that the boxes were not misused and that they would contain nothing but paper.



2.5 Emptying.

The class monitors or cleanliness committee are in charge of emptying the boxes regularly. Sometimes, as a penalty for coming to school late, students were told to collect the paper from the boxes in the classrooms. The main bulk of the paper was kept in a bigger box in a store room before the vendor is contacted for sale.

2.6 Performance

There has been no proper plan for measurement for the moment. The programme was run mainly to encourage students to separate the recyclables in their throw-away garbage. However the first sale in this project produced:

- a. Black and White Paper 8 kg @ 0.30 sen = RM2.40
- b. Mixed Paper 156 kg @ 0.12 sen = RM18.72

2.7 Review

The first sale brought in a total of RM21.12 for the school. The vendors told us that if we had separated our paper in a more systematic way, instead of mixing it, we could have obtained a larger amount. Paper can be classified into 4 types: newspapers & magazines,

Black & White Paper, boxes/cardboard, Mixed Paper and they fetch different prices. This will be considered in the next collection.

On the whole, students, teachers and office staff have participated quite well in this first round. Now instead of throwing in the normal baskets or bins, they throw paper and cardboard into the Recycling Bins. They have realised that it is not just waste but valuable things. The money from paper sold is used for school activities like decoration or landscaping. However, there are still few students who throw other litter like plastic, tissue, etc into the Recycle bins, they must be educated further not to mix plastic in, or crush the paper and of course to separate the types of paper.

3.0 FURTHER PARTICIPATION

Other recyclable materials are being collected by different groups of people. The cleaners and janitors play a major role in collecting plastic bottles. They accumulate and sell to the vendors themselves. The security guards have also played a part in this Environment Awareness programme. The 3-coloured bins are placed near the guard house. They ensure that the right materials go in and sell at the appropriate time. The school administration staff cooperates too and make their own sales directly with the vendor.

It is our hope that if this present target group can practise the 3Rs consciously, then their families and friends and the community around will also catch the habit and make the world a little better to live in.

Reported by:

Tay Choon Neo
Senior Assistant (Co-Curriculum)
SMK Putrajaya 1

29 August 2005

Developing a feasible 3 Rs programme in SMK Sungai Ara, Penang

1.0 INTRODUCTION

1.1 Background of the 3Rs Team

Sekolah Menengah Kebangsaan Sungai Ara is a rural secondary school situated in south east corner of Penang Island, Malaysia. The 3Rs programme was initiated by the school science teacher, Mr. Chew Yoon Seng, who is interested in creating awareness among the school students on the need to conserve natural resources and continues efforts for a recycling campaign. Originally in 1999, the recycling exercises were carried out on a semester basis, but the enthusiasm generated had convinced the school principal to properly organise and to institutionalise the 3Rs programme starting from year 2000. Since then, the efforts have moved from recycling to a full-fledged 3Rs (Reduce, Reuse, and Recycle) programme, and later on the scope expanded to include “school in a garden” using the inherent benefits from the 3Rs.

1.2 The Objectives, Targets and Duration of the 3Rs Plan / Projects

The environmental issues in school were identified, after consideration of the school capability in terms of human resources and constraints, a feasible 3Rs programme was designed and improvement plan was formulated. We started with formulation of our vision, mission, objectives and targets.



Meeting with teachers and committee members

The committee began the third “two-year 3Rs project” i.e. from 2004 to 2005 to make 3Rs (Reduce, Reuse, Recycle) a culture among the school students and all school staff. A detailed action plan based on 5 themes was prepared based on the objectives and targets set after discussions and meetings of the Chief Minister’s Green Award Team. We also sought advice from experts in the field of 3Rs to assist during the various stages of 3Rs implementation, development, monitoring and measurement.

Vision

To transform our school into a beautiful Garden School and to keep the environment clean and beautiful by practising 3Rs (Reduce, Reuse & Recycle)

Mission

1. To transform SMK Sungai Ara into a Garden School in response to the country's inspiration of becoming a Garden Nation 2005.
2. To carry out activities for the 3Rs Programmes (Reduce, Reuse & Recycle).
3. To keep our school clean, green and beautiful
4. To take care of the school environment by practising 3Rs
5. To win the Chief Minister's Green Award.

OBJECTIVES

1. Successfully implement 3Rs in SMK Sungai Ara
2. Participate at the State level competition on 3Rs and "school in the garden" campaigns
3. Becoming a school in the garden
4. Increase awareness amongst student in 3Rs and contribute towards environmental conservation

TARGETS

1. To carry out 3Rs in the school at minimal costs
2. To convert the school into a garden school through participation of other clubs to involve other students in appreciating the philosophy of 3Rs
3. To attain 400 kg by weight of recyclable materials per month
4. To compete successfully in the Chief Minister's Green Award competition
5. To reduce wastes in the school canteen, and
6. To inculcate awareness of reducing waste of natural resources in the school within the prescribed 2 year 3Rs programme

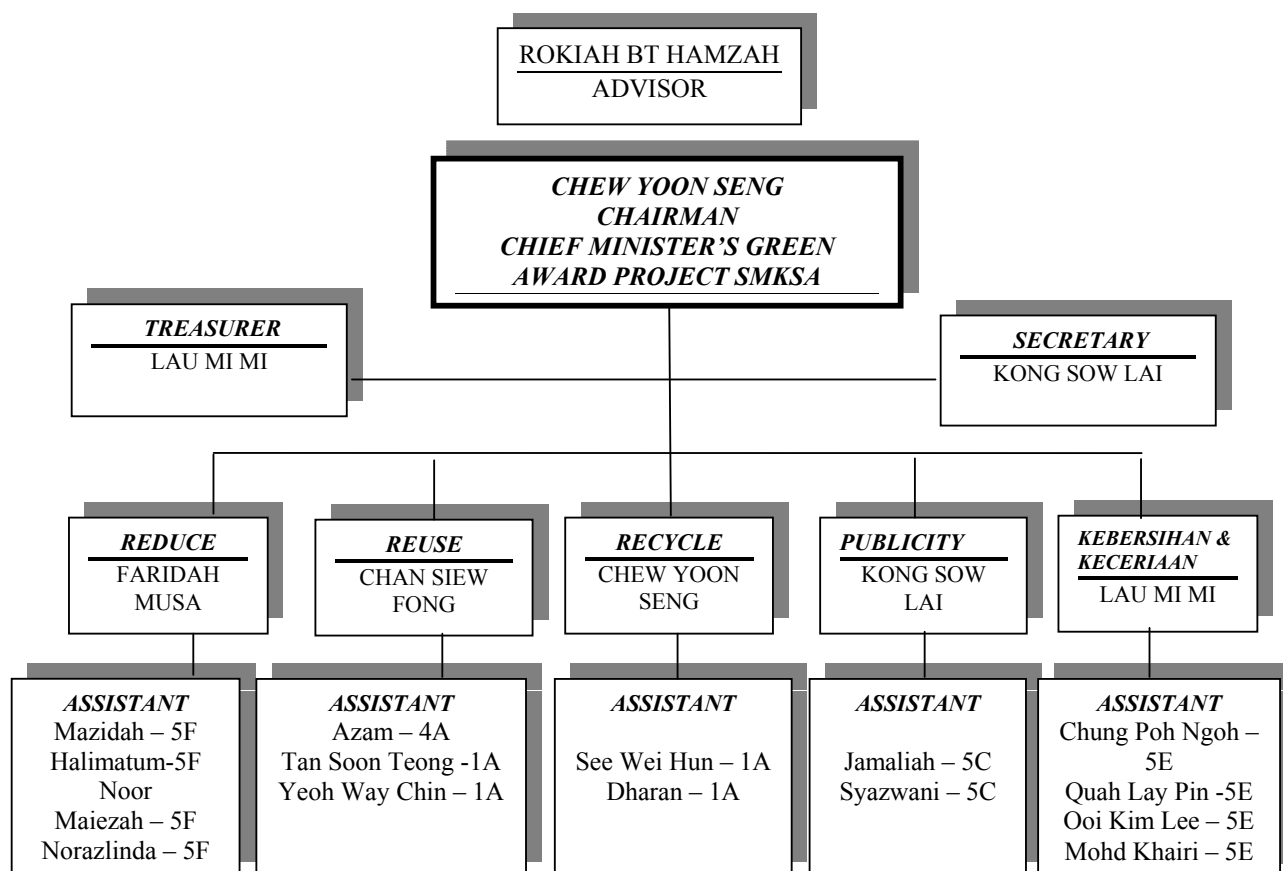
2.0 ACTIVITIES

2.1 PLANNING

(a) Organisational Chart

Based on the action plan, the committee developed the project calendar and work schedule of each unit for the 2 year duration to attain the planned objectives. The responsibilities of each team member and expectation from the participants and the targeted attainments are made known to all.

Organisational Chart of 3Rs Team of SMK Sungai Ara – The Green Award Team is as shown below.



(b) Budget

In SMK Sungai Ara, the 3Rs programme is conducted intricately to ensure that it is self-supporting and what ever profit gained from the recyclables materials are used to sponsor other 3Rs activities in school. The Green Award Team also works closely with the school administration and School Resource Centre for documentation needs.

The school is grateful to SERI (the Socio- Economic & Environmental Research Institute, a “think tank” of the state government) for the sponsorship of composting cubicles for allowing us to start on the pilot project of making compost from food and garden waste.

2.2 IMPLEMENTATION

(a) Communication and publicity

Communication and publicity are established through various strategies – banners, flyers / posters, making announcements during school assemblies from time to time to promote and enhance the awareness on 3Rs and active participation of all members of the schools in all of our activities.

(b) Various Types of Activities

Competition on Garden Beautification twice a year, Classroom Cleanliness Contest and also Competition of Collection of Recyclables Materials were conducted regularly on a monthly basis. The school also organises *Gotong-Royong* regularly to clean the school compound and get help from the students and teachers to paint the classrooms and special rooms.

Talks on environmental conservation, trainings and demonstrations of composting, awareness of the importance of embarking on issues of 3Rs were planned and conducted from time to time. We also organised field trips to recycling collection centres, garbage transfer centres and garbage disposal centres to gain first hand experience and knowledge on 3Rs.

To broaden our scope, we also extended 3Rs programme to local community and participated actively in State Recycling Events / 3Rs co-partner activities.

2.3 MONITORING & MEASUREMENT

For the recycling to be sustainable, it was planned that for every two months, the amount of collected recycled materials (into various categories) must meet a minimum weight or “value”. This is important as the committee has to ensure that some amounts of expenses are recovered to enlarge the 3Rs campaign and to get more participants into the programme. In other words, the planned activities should result in “snowballing” of efforts so that a meaningful 3Rs programme can be realised.

All activities are documented (letters, meetings, records, projects calendars & others) and photographs are taken throughout the year for our 3Rs programme.

In addition, we also use the CM’s Green Award Progress Checklist and CM’s Green Award Assessment Questionnaire for monitoring and assessment.

2.4 REVIEW

(a) Review and improvement plan

Plans are useless if not implemented and the committee can see for itself the efficacy or suitability of the plan and its objectives. So as a result of the evaluation or review at various stages of the 3Rs programme, there are adjustments to the implementation as well as improvements in procedures, e.g. the types of plants and their arrangement in the garden.

(b) Problems / Issues faced and how they were overcome

Our team meets regularly on a biweekly basis and reviews the progress of the 3Rs programme. It also takes into considerations students’ views; a result of the appointments of student leaders to assist in the programme. All issues are discussed and appropriate solution is identified. For example, to overcome untidiness at the recycle site (staff-room or common area), recyclables are cleared weekly and packed systematically and transfer to the recycle room. To encourage recycling (collection of recycles), we arrange for lucky draw for the participants of recycling.

For problems of a technical nature, the committee will seek help and advice from experts outside the school, e.g. rat nuisance for our composting project.

3.0 PERFORMANCE

3.1 The Performance Indicators

Some of the performance indicators of 3Rs attainments are based on the following:

- a. Number of participants should increase as the programme proceeds
- b. Types and weight of recyclable materials are being monitored
- c. Weight of organic food waste used in composting and weight of the final product
- d. Reduction (e.g. set target of 10% reduction) in the usage of water and electricity in school for the 2 years duration
- e. Number and type of plants planted in the garden

3.2 The results at the end of the monitoring period

- a. The classrooms are free of recyclables and clean without rubbish
- b. No recyclables are scattered in the school compound
- c. Compost produced are used as fertiliser for the school garden
- d. Achieved targeted reduction in usage of water, however did not achieve targeted reduction of usage in electricity (because of installation of new air-conditioner in the office)
- e. More plants are grown, pleasant sight and more beautiful gardens in school

3.3 The level of PUPIL Participation

- a. Competition of Recyclable Materials for the whole school (all levels – From Form One to Form Six), records indicating more participants.
- b. Reduction of usage of water and electricity for all members of the school
- c. Garden Beautification Contest – among Clubs and Uniform Bodies – practically everyone contributed towards the beautification efforts.

4.0 LESSONS

4.1 The Lessons learnt

- a. 3Rs can be carried out successfully with the participation of dedicated staff and enthusiastic students. These people will become the **catalyst** of 3Rs programme in bringing awareness of environmental issues and conservation of natural resources. Their actions can influence others and hence bring about positive response on 3Rs.
- b. Effective communication is needed to spread the 3Rs programme in school so that other partners in school (clubs and uniform bodies, units/ organisations) are well informed of the 3Rs efforts to enable them to play an effective part in the 3Rs programme while attending to their own needs e.g., the garden beautification in

school involved all members of clubs and uniform bodies).

- c. Even the school canteen operators also contribute to the renewal of resources and reduction of different types of wastes as they too see the positive effects of their 3Rs actions to the environment. Also there are less flies infestations and pests, less bad odours from rubbish dumps and all these contribute to a better school environment.
- d. The 3Rs team should provide collection bins / boxes at strategic places (in the staffroom for teachers and common areas for students) for those who bring recyclables materials during non-collection dates. This will encourage more collection (informal participation) for those who are not so active.

4.2 Experience in Motivating Participation by Pupils/ Teachers/ Parents

- a. In the beginning a number of students are hesitant in bringing in “wastes” or recyclables to school as part of the 3Rs. However, as the campaign proceeds and when “in-school” competitions are started to see which class / form are diligent in getting the most amounts of recyclable and when some of the “profits” are shared amongst the class, more students come forward to do their part. In fact we see students competing to see if they are the “champions” of recyclables!
- b. There is a specific strategy required here when we run the monthly Contest of Collection of Recyclables Materials Between Classes. To have active participation in collecting recyclables materials from each class, it is important to convince the form teachers and the class monitors first. As the form teachers have great influence on the students, he or she will motivate and encourage the students and thus the class can become active in the recyclables collection.
- c. Parents are invaluable partners / resources in the 3Rs campaigns. During the Parent-Teacher Association meetings and PTA Annual General Meeting, the principal & committee also brief the parents about the school effort on 3Rs, and also to convince them of the advantages of 3Rs. Thus when they go back home, they will look for recyclables (from home & neighbourhood) to “donate” to the school. Also their children will feel the need to preserve their environments and at the same time they can compete in the contest to see which class gets the most rewards in the collections campaign.

<Sample of the “Recycle Programme”/ A/P in SMK Sungai Ara>

- Slogan & Commitment : Recycle to Keep the Environment / School clean, Green and Beautiful
- Environmental Effect : Rubbish will pollute the environment
- Objectives : To keep the environment clean and hygienic
- A/P : Time Frame – collection of recyclables once a month (every last Friday of the month – Recycle Day)
- Action – Clear all recyclables from the staff room, classrooms, office, library and all other places.
- Responsibility – Teachers and students are responsible for the cleanliness.
- Data – Record all data (types and amount) in a table.
- Monitoring – Less paper in the room to keep it clean and no wastage. To cut down the amount of rubbish in the school compound.
- Resources – from staff room, office, library, canteen, discipline room , School Resource Centre.
- Operation Control – Clear all recyclables and rubbish once a month to keep the school area clean.
- Monitoring & Improvement : No waste paper in the room in order to keep it clean and no wastage by recycling them.

Note: During the Recycle Day, there will be competition of the Collection of Recyclables between classes or individuals. The winner will receive the Recycle Challenge Trophy (Piala Pusingan Kitar Semula). All winners will receive cash awards and the Challenge Trophy at the school assembly. Flyers for “Hari Kitar Semula” are placed on major notice boards in school.



Monthly Recycling Collection

Reported by: Ms. Kong Sow Lai, Secretary of the Green Award Team of SMK Sungai Ara

EXAMPLE OF SCHOOL PROJECT IN JAPAN

Reduction of Plastic Bags-Use “My Bags”

1.0 INTRODUCTION

This project was carried out by Students of a secondary school in Suginami-ku, Tokyo, Japan. The component of 3Rs selected was **REDUCE**. The target waste generator was a **Supermarket**. The Objectives and target were as follows:

OBJECTIVES

To reduce use of throw away plastic carrier bags at a supermarket.

To raise Public Awareness on the environment.

TARGETS

To Increase level of use of reusable “My Bags” at the supermarket to up to 60 %.

The duration of the project was one (1) year from August 2003 to 2004 September

2.0 ACTIVITIES

Through a series of discussions on environmental issues at the school, the students realised that there were insufficient activities for the reduction of plastic bags in their city. So, they set up an Activity Plan focusing on the reduction of plastic bags, and carried out the plan for one year. The details of their activities are presented below.



Two Students in front of target Supermarket

**Overall goal: Reduction of plastic bags use at the supermarket
(To increase My Bag use rate up to 60 % at the target supermarket)**

1st PDCA



(Duration: approx. one month)

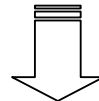
Plan: Plan poster campaign as the first activity
Do : Conduct a poster campaign
Check: Conduct interview/ questionnaire survey on awareness of customer
Action: My bag use rate: below 40 %, consider new activities

2nd PDCA



(Duration: approx. one month)

Plan: Plan a flier campaign
Do : Prepare/ print a flier, and distribute to the customers
Check: Conduct interview/ questionnaire survey on awareness of customer
Action: My bag use rate: 46 %, consider new activities



6th PDCA

(Duration: approx. one month)

Plan: Plan a seminar for residents / Ask women committee for cooperation
Do : Conduct a seminar, distribute more flier
Check: Conduct interview/ questionnaire survey on awareness of customer
Action: My bag use rate: 47%, continue the activities

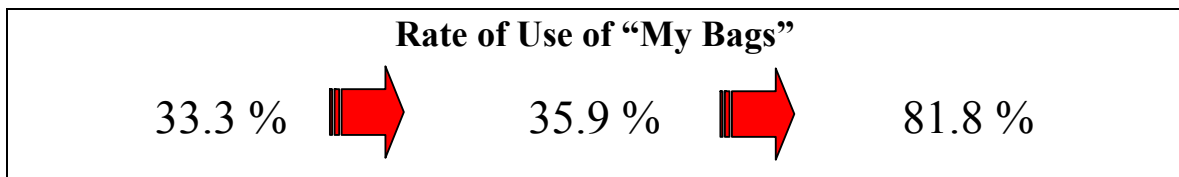


Accomplishment of the Goal!

3.0 PERFORMANCE

If Rate of Use of “My Bags” is used as the **Performance Indicator**, then this project was a complete success. The project observed the Plan-Do-Check-Act Cycle throughout its planning and implementation stages and reviewed its performance at regular intervals. After such reviews and survey of “My Bags” use, the students were able to make decisions about the next stage of the project.

At the end of the project period, the Questionnaire Survey showed the following results:



4.0 LESSONS

Among the lessons learnt from the project are: -

1. **Support by the Local Community** is important. In this case the students received support from:

- Town Council of Women
- Local Government
- School Teachers
- Community

2. The choice of **Design** of “My Bags” is a critical factor in persuading the community to use them instead of plastic bags. In this connection, the colour, size and functional aspects must be considered before they are made and distributed.

Appendix-3

LIST OF CONTACTS

(NOTE: To be expanded.)

No.	NAME	ADDRESS	CONTACT NO.
1.0	GOVERNMENT AGENCIES		
1.1	Ministry of Housing & Local Government	Level 3-7, Block K Pusat Bandar Damansara 50782 KUALA LUMPUR	TEL: 03-2094 7381 FAX:03-2093 3529 www.kitarsemula.com
1.2	Department of Environment	DOE Johor Level 3, Bangunan Timjaya Km 7, JALAN Skudai 81200 JOHOR BAHRU	TEL: 07-235 6041 FAX:07-235 6071
2.0	LOCAL AUTHORITIES (WITH RECYCLING NETWORK UNIT)		
2.1	Majlis Perbandaran Pulau Pinang	Recycling Network Unit, Urban Services Department, Jalan Padang Kota Lama, 10200 PULAU PINANG	TEL: 04-263 3000 FAX: 04-263 3036 www.rnumppp.net/
2.2	Majlis Bandaraya Miri	Miri City Council Public Services Section/Recycling Network Unit, Majlis Bandaraya Miri Jalan Kingsway 98000 MIRI	TEL: 085-426 984 TEL/FAX: 085-415 486 E-mail: rnu.mbm@gmail.com www.rnu.mbm.com
2.3	Majlis Perbandaran Subang Jaya	Recycling Network Unit, Majlis Perbandaran Subang Jaya Persiaran Perpaduan Jalan USJ 5 47610 SUBANG JAYA	TEL: 03-8026 3161 FAX: 03-8024 5235 www.rnumpsj.net/
3.0	LOCAL AUTHORITIES (WITHOUT RECYCLING NETWORK UNIT)		
3.1	Majlis Bandaraya Johor Bahru	Jalan Dato' Onn, Peti Surat 232, 80720 JOHOR BAHRU	TEL: 07-228 2525 FAX: 07-2230619
3.2	Majlis Perbandaran Muar	Karung Berkunci No. 516, 84009 MUAR	TEL: 07-952 1204 HOTLINE: 07-952 2207 Fax: 07-952 2691
3.2	Majlis Daerah Pontian	Bangunan Majlis Daerah, 82000 PONTIAN	TEL: 07- FAX: 07-

4.0 SOLID WASTE CONCESSIONAIRE			
4.1	Alam Flora Sdn Bhd	Level 4, Wisma DRB-HICOM, No. 2, Jalan Usahawan U1/8, Seksyen U1, 40150 SHAH ALAM	TEL: 03-2052 7922 FAX: 03-2052 8144 Toll free: 1-800-880-880 E-mail: feedback@alamflora.com.my www.alamflora.com.my
4.2	Southern Waste Management Sdn Bhd	No. 20, Jalan Wan Kadir 1 Taman Tun Dr Ismail 60000 KUALA LUMPUR	TEL: 03-7726 9619 FAX: 03-7726 9062 E-mail: info@swmsb.com www.swmsb.com
5.0 NON-GOVERNMENTAL ORGANISATIONS			
5.1	Socio-Economic & Environmental Research Institute (SERI)	10, Jalan Brown, 10350 PULAU PINANG	TEL: 604-228 3306 FAX: 604-226 7042 E-mail: seripg@tm.net.my www.seri.com.my
5.2	Persatuan Kebajikan Xim Phou Moon	No. 11, Jalan Taming 12, 43300 BALAKONG SELANGOR D.E.	TEL: 03-8962 3745 FAX: 03-8962 3748 www.ximphoumoon.org
6.0 RECYCLING AGENTS /CONTRACTORS			
6.1	Landcarve Enterprise (Paper, Aluminium, plastics & Glass)	610-P, Tanjung Bunga, 11200 PULAU PINANG	TEL: 04-890 4845 MOBILE: 012-433 0632
6.2	LHT Kitarsemula Sdn Bhd	Tgkt 1, Jalan Batu Maung, 10960 PULAU PINANG	TEL: 04-626 2737 FAX: 04-626 5306 www.lhtenvironment.com
6.3	Greentown Enterprise (M) Sdn Bhd (Plastics)	9 & 11 Jalan Mahsyur 6, Taman Perisi Cemerlang Ulu Tiram 81800 JOHOR	TEL: 07-861 7267/9761 FAX: 07-861 0763
6.4	Soon Ye Plastic Resin Mfg Sdn Bhd (Plastics, materials form printer etc)	1, Jalan Bukit 7, Kawasan Perindustrian MIEL, Seri Alam (Phase 3) Masai 81750 JOHOR	TEL: 07-387 3163 FAX: 07-387 5163
6.5	Kilang Plastik We Yip (Plastics)	1 Jalan Sri Purnama 2/2 Kangkar Teberau 81100 JOHOR BAHRU	TEL: 07-331 7813 FAX: 07-335 0686

6.6	Kian Hock Trading Co	No. 30 KB Jalan Dato Haji Hassan, 84000 MUAR	TEL: 07-951 5137
6.7	Puan Jamaliah binti Abong	No. 73 Batu 15, Ayer Hitam, 84000 MUAR	TEL: 07-421 2376
6.8	Sim Ah Enterprise	No. 19 D KB Jalan Dato Haji Hassan, 84000 MUAR	TEL: 07-952 2641
7.0	RECYCLABLE RE-PROCESSING PLANTS		
7.1	Malaysian Newsprint Industries Sdn Bhd (MNI)- Paper	Lot A43 &44, Lorong Kuang Bulan, Kepong Garden Industrial Estate, 52100 KEPONG SELANGOR D.E. <u>Factory:</u> Mentakab PAHANG	TEL: 03-6277 8898 FAX: 03-6273 4943 Toll Free: 1800 88 1195 www.letsrecyclepaper.com.my
7.2	Kuala Lumpur Glass Manufacturers Company Sdn Bhd-Glass bottles Malaya Glass (Johor)	Lot 5, Jalan Kilang, 46050 PETALING JAYA SELANGOR D.E.	TEL: 03-7787 2888 FAX: 03-7785 5804
7.3	Kian Joo Can Factory Bhd- Aluminium cans	Lot3, Jalan Waja, Bulit Raja Industrial Estate, 41050 KELANG SELANGOR D.E.	TEL: 03-6189 6322 FAX: 6189 8185
7.4	Intraco Holdings Sdn Bhd- Plastic/Metals	No. 80, Jalan Pahang, 53000 KUALA LUMPUR	TEL: 03-4042 1355 FAX: 03-4042 5667 E-mail: intraco@intraco.com.my www.intraco.com.my
8.0	OTHERS		
8.1	Midori Resources Sdn Bhd (Manufacturer of Biological/Photo Double Degradable Plastic Products)	Lot 1187A, Jalan Sungai Buaya, Kampung Hilir, Sungai Choh, 48000 RAWANG SELANGOR D.E.	TEL: 03-6092 6855 FAX: 03-6093 7435 www.midori.com.my

Appendix-4

USEFUL TERMS & DEFINITIONS

Household Waste

Waste generated from household, including hazardous household wastes such as fluorescent tubes, batteries, etc.

Institutional Waste

Waste generated from public services, religious facilities, schools, public hospitals (excluding “clinical waste”), etc.

Commercial Waste

Waste generated from supermarkets, shops, offices, hotels, restaurants, etc.

Remark: Waste generated from non-processed sources of industry is categorised as MSW in the Waste Minimisation Master Plan (WM-M/P).

Industrial Solid Wastes (ISW)

Any solid waste generated by reason of /or in the course of the production processes taking place at any industrial premises.

Construction & Demolition Waste (C&DW)

Any solid waste generated from any construction or demolition activity, including improvement, preparatory, repair or alteration work.

Remark: Scheduled waste under EQA is excluded from the subject of WM-M/P.

Recycling-Based Society

A society, which will embrace a reduction in consumption of natural resources as well as environmental burden through;

- Preventing waste generation
- Promoting reduction, reuse, material recovery, energy recovery of recyclable resources
- Ensuring proper disposal of waste

Reduction at Source

To reduce the amount of waste that will be put into waste stream through the changes of lifestyle and/or manner of consumption, improvement of manufacturing processes, reuse, and so on.

Reduction of the Amount of Waste Disposal

To reduce the amount of waste ultimately disposed into the natural environment, in order to conserve our natural resources and reduce the burden to the natural environment, through material recycling, energy recovery, reduction of amount by intermediate treatment, etc.

Recycling

To utilise the waste by processing it accompanying with changes to their characteristics (physically, chemically, or biologically)

It will not include reuse, which is defined as “To use a waste for other purposes without any change to their characteristics (physically, chemically, or biologically), e.g. reuse of glass bottles for milk containers, tin cans for biscuits containers, provision of used clothes to others or for charitable purpose.”

“Recycling” may be divided into “material recycling” and “energy recovery”.

However, “energy recovery” will not be regarded as “Recycling” in the Master Plan.

Material Recycling

To utilise a waste for other purposes by processing (including segregation, washing, melting, transforming, etc.), but most of the fractions of waste shall be utilised as materials for other purposes.

cf. Definition of Energy Recovery

To utilise a waste for generation of energy, this will not be used for treatment of the waste itself but for other purposes.

Note:

Taken from the Draft Master Plan for National Waste Minimisation, JICA Study Team, August 2005

Appendix-5

**WORK PLAN PREPARED FOR
IMPLEMENTATION OF THE PILOT
PROJECT UNDER THE STUDY**

1 INTRODUCTION

Schools provide good opportunities to educate children on the urgent need to preserve the environment, to inculcate the habit of reducing waste generation and build up an environmentally conscious generation. Though 3Rs activities in schools have been conducted through their co-curriculum programme, it is apparent that these 3Rs activities are either insufficient or non-sustainable - the primary reason being that teachers do not have adequate capability and facilities to initiate and conduct such activities.

The “Guidelines for the Enhancement of 3Rs Activities in Schools” prepared by the JICA Study Team on behalf of the Ministry of Housing and Local Government and the Ministry of Education outline the minimum day-to-day practices and behaviour that schools are encouraged to adopt and support. Aimed at assisting schools to initiate, implement and sustain a waste minimisation programme, these guidelines may be implemented in stages according to the various levels of 3Rs-related programmes in each school – Level 1 schools do not have a waste minimisation programme, Level 2 schools have a basic waste minimisation programme, whilst Level 3 schools have an active waste minimisation programme.

How well these guidelines can be used by schools in the country will be tested in 6 schools in Johor with different levels of 3Rs awareness over a period of 6 weeks from September to end October 2005.

Using the Guidelines as a basis, the ensuing sections outline 3 programmes designed to help the 6 schools in this pilot project take an organised approach to initiate a 3Rs programme or improve their environmental performance.

The 3 programmes in Johor illustrate the use of the “Plan-Do-Check-Act (PDCA)” method advocated in the Guidelines. It is a 4-step process providing a systematic way for schools to implement the 3Rs activities and make them sustainable. The 4 steps involve:

- | | | |
|--------|-------|--|
| Step 1 | PLAN | - How to set up a team responsible for spearheading the 3Rs programme, assess the current situation in school, set up objectives, establish targets, and develop an Action Plan and a timeline or time schedule for each activity. |
| Step 2 | DO | - How to implement plans identified in the Action Plan. |
| Step 3 | CHECK | - How to measure and monitor performance and results. |
| Step 4 | ACT | - How to improve on-going plans and actions to achieve better results. |

2 PROGRAMME FOR 3Rs ACTIVITIES FOR LEVEL 1 SCHOOLS

This chapter outlines a simple 3Rs programme to help schools without a waste minimisation programme to start a 3Rs programme in an organised way. Due to time constraint in this pilot project, the target areas are limited to the classrooms, staff room and the administrative office.

The lessons to be learnt from this programme are:

- i) Discover how much waste we produce in the classroom, staff room and office each day/week.
- ii) Understand the type of materials we throw away.
- iii) Understand what to do (reduce or reuse) before we recycle.
- iv) Practise source separation before throwing.

The following steps and actions are suggested to assist the 3Rs Team Leader draft and implement an Action Plan over the 6-week period between September and October 2005.

Step 1 PLAN

1. Set up a 3Rs Team involving the School Principal as the advisor, Head of the Co-curriculum Unit or the Student Affairs Unit (*Hal Ehwal Murid*) as the 3Rs Team Leader and teachers as heads of the various sub-units within the 3Rs Team.
2. Conduct a waste survey to assess existing waste situation in the classrooms, staff room and office and identify key waste management issues. (Use Attachments 6, 7, 8, 9 and 10 of the Guidelines for a sample of the waste survey checklist. Try to complete the survey within a short time and involve as many classes as possible in the survey).
3. Based on the results of the waste survey, establish objectives and set waste minimisation targets to achieve.
4. Draft a School Action Plan identifying key activities/actions, role and responsibility of teachers and students in each activity and the human, material and financial resources required to carry out the activities. (Table 1 attached may be used as a template for the Action Plan upon which changes and/or improvements can be made to accommodate the needs and circumstances of the pilot school).
5. Establish a schedule or timeline for each activity.

Table 1: TEMPLATE FOR ACTION PLAN IN LEVEL 1 SCHOOLS

School: _____						
Target: Waste minimisation in the classroom, staff room and office						
Actions	Performance Indicators	Resources Required			Timeline/ Schedule	
		Human	Material	Quantity		RM
1. Set up a 3Rs Team involving the School Principal as the advisor, Head of the Co-curriculum Unit or Student Affairs Unit (<i>Hal Ehwal Murid</i>) as the 3Rs Team Leader and teachers as heads of the various sub-units within the 3Rs Team to oversee the 3Rs programme in the classroom, staff room and office.		Principal and nominated teachers				3Rs Team to be in place by 12/09/05
2. Conduct a waste audit in the classroom, staff room and office to identify the type and amount of waste generated.	Weight and type of waste in classrooms, staff room and office are identified.	Teachers and students (exclude students taking exams)	Weighing scale	1 no.	250.00	12 & 13/09/05
3. Set waste minimisation objectives and targets.		Principal and 3Rs Team Leader				14/09/05

Actions	Performance Indicators	Resources Required				Timeline/ Schedule
		Human	Material	Quantity	RM	
<p>4. <u>Reduce</u></p> <p>i) Train teachers and office staff to photocopy on both sides of the paper, whenever possible (in the office or copy room).</p>	Reduction in paper consumed and therefore, reduction in school's paper cost.	All teachers and admin. staff	Large recycling boxes	To be advised (TBA)	TBA	19/09/05 – end Oct
<p>5. <u>Reuse</u></p> <p>i) Place a box in the office or copy room for one-side photocopying mistakes so that teachers can reuse them.</p> <p>ii) Put a box in each classroom for paper, pencils, colour pencil, crayons, half-used exercise books, etc with instructions to reuse them for maths problems, doodles, etc.</p>	Reduction in school's purchase of paper (either volume or cost savings). Reduction in recyclable materials found in bins in classrooms.	All teachers and admin staff All students	Large recycling boxes Reuse boxes – one per classroom	TBA TBA	TBA TBA	19/09/05 – end Oct 19/09/05 – end Oct
<p>iii) Assign a cleanliness monitor in each classroom to ensure that the box remains neat and that students reuse the materials.</p>		Nominated students				19/09/05 – end Oct
<p>6. <u>Recycle</u></p> <p>i) Set up paper recycling boxes in classrooms and staff room, and a central collection bin in a non-classroom location.</p> <p>ii) Place stickers or signs on all boxes to remind students what can be recycled.</p>	Quantity (weight) of paper that can be recycled are reduced	All staff and students	Recycling boxes – one per classroom, staff room and 1 big container at central collection point.	TBA	TBA	19/09/05 – end Oct

Actions	Performance Indicators	Resources Required				Timeline/ Schedule
		Human	Material	Quantity	RM	
iii) Assign a cleanliness monitor in each classroom to make sure the box contains only paper. iv) Assign another cleanliness monitor in each classroom to weigh, record and deposit the paper into the designated central collection bin once a week. v) Arrange with the LA, contracted collector or Southern Waste to collect paper from the school once a week or fortnightly.	Weight of paper from each classroom is recorded once a week.	Nominated students	Weighing scale	Refer above	Refer above	19/09/05 – end Oct
7. <u>Information and Communication</u> i) Brief and remind teachers and students at assembly on waste minimisation strategy and target. ii) Arrange with Southern Waste to give a talk during World Environment Week (October 21-27). iii) Set up an Environmental Corner on the school bulletin board.		3Rs Team Leader or nominated teacher Principal and 3Rs Team Leader 3Rs Team Leader Publicity Group (nominated teacher and students)				September – September – October 21-27 By end Sept 05

Step 2 DO

1. Identify, acquire and locate the materials required to implement the actions.
2. Identify the key people responsible for certain actions, determine their duties and implement the actions according to the Action Plan.
3. Brief teachers and students in an assembly.

Step 3 CHECK

1. Require students to measure and record the results of the activities once a week.
2. Request the contracted collector or Southern Waste to weigh the amount of paper collected in the central collection bin and record.
3. Evaluate and chart the results fortnightly to ascertain if there is any reduction in the school's purchase of paper (either volume or cost savings) and in the quantity of recycled paper collected in the central collection bin.
4. Attachment 20 in the Guidelines may be used and/or modified to aid the 3Rs Team in monitoring and measuring the school's progress.

Step 4 ACT

1. Prepare a monthly report for the purpose of the pilot project and a bi-monthly report subsequently.
2. Review whether the waste minimisation target has been met. If not, review the response and cooperation from teachers and students. Set new targets and strategies for waste minimisation if the result is affirmative.
3. Identify another activity to embark on for the new academic year.

3 PROGRAMME FOR 3Rs ACTIVITIES FOR LEVEL 2 SCHOOLS

Progressing from Level 1, activities for schools with a basic knowledge of 3Rs should extend to cover more activities and areas of the school, in particular, the major waste generating areas like the canteen. Due to time constraint in this pilot project, it is suggested that Level 2 schools adopt the Action Plan proposed for Level 1 schools, and also include **an additional activity involving the reduction of plastic bags used in the canteen**

The lessons to be learnt from this programme are:

- i) Discover how much waste we produce in the classroom, staff room and office each day/week.
- ii) **Discover how we can reduce the quantity of throwaway plastic bags used in the canteen.**
- iii) Understand the type of materials we throw away.
- iv) Understand what to do (reduce or reuse) before we recycle.
- v) Practise source separation before throwing.

The following steps and actions are suggested to assist the 3Rs Team Leader draft and implement an Action Plan over the 6-week period between September and October 2005.

Step 1 PLAN

1. Set up a 3Rs Team involving the School Principal as the advisor, Head of the Co-curriculum Unit or the Student Affairs Unit (Hal Ehwal Murid) as the 3Rs Team Leader and teachers as heads of the various sub-units within the 3Rs Team, **if the school does not already have such a team or environmental club.**
2. Conduct a waste survey in the classrooms, staff room and office to assess existing waste situation in these areas **and in the canteen to assess the quantity of throw away plastic bags used for drinks.** Identify key waste management issues, **if the school has not conducted such an assessment and review previously.** (Use Attachments 6, 7, 8, 9 and 10 of the Guidelines for a sample of the waste survey checklist. Try to complete the survey within a short time and involve as many classes as possible in the survey).
3. Based on the results of the waste survey, establish objectives and set waste minimisation targets to achieve. **If the school has an existing objective and target, it is suggested that the school review them.**
4. Draft a School Action Plan identifying key activities/actions, role and responsibility of teachers and students in each activity and the human, material and financial resources required to achieve the targets, **if the school does not already have one.** **Alternatively, the school may use this pilot project to**

review its existing Action Plan. (Table 2 attached may be used as a template for the Action Plan upon which changes and/or improvements can be made to accommodate the needs and circumstances of the pilot school).

5. Establish a schedule or timeline for each activity.

Step 2 DO

1. Identify, acquire and locate the materials required to implement the actions in the Action Plan.
2. Identify the key people responsible for certain actions, determine their duties and implement the actions according to the Action Plan.
3. Brief and remind teachers and students in the assembly on the on-going 3Rs activities, **including the instruction to bring their own containers for drinks.**

Step 3 CHECK

1. Require students to measure and record the results of the activities once a week.
2. Request the contracted collector or Southern Waste to weigh the amount of paper collected in the central collection bin and record.
3. Nominate students (on a rotational basis) to count the number of plastic bags thrown into the designated bin on a daily basis.
4. Chart and evaluate the results fortnightly to ascertain if there is any reduction in school's purchase of paper (either volume or cost savings), quantity of recycled paper in the central collection bin **and reduction in the quantity of throw away plastic bags used in the canteen.**
5. Attachment 20 in the Guidelines may be used and/or modified to aid the 3Rs Team in monitoring and measuring the school's progress.

Step 4 ACT

1. Prepare a monthly report for the purpose of the pilot project and bi-monthly report subsequently.
2. Review whether waste minimisation aim has been met. If not, review response and cooperation from teachers and students. Set new targets and strategies for waste minimisation if the result is affirmative.

Table 2: TEMPLATE FOR ACTION PLAN IN LEVEL 2 SCHOOLS

School: _____						
Target: Waste minimisation in the classroom, staff room, office and canteen						
Actions	Performance Indicators	Resources Required			Timeline/ Schedule	
		Human	Material	Quantity		RM
1. Set up a 3Rs Team involving the School Principal as the advisor, Head of the Co-curriculum Unit or Student Affairs Unit (<i>Hal Ehwal Murid</i>) as the 3Rs Team Leader and teachers as heads of the various sub-units within the 3Rs Team to oversee the 3Rs programme		Principal and nominated teachers				3Rs Team to be in place by 12/09/05
2. Conduct a waste audit in the classroom, staff room and office to identify the type and amount of waste generated.	Weight and type of waste in classrooms, staff room and office are identified.	Teachers and students (excl students taking exams)	Weighing scale	1 no.	250.00	12 & 13/09/05
3. <u>Conduct a survey to assess the quantity of throwaway plastic bags used for drinks in canteen.</u>	<u>Quantity of plastic bags identified</u>	<u>3Rs Team Leader</u>				<u>14/09/05</u>
4. Set waste minimisation objectives and targets.		Principal and 3Rs Team Leader				12 & 13/09/05

Actions	Performance Indicators	Resources Required				Timeline/ Schedule
		Human	Material	Quantity	RM	
5. <u>Reduce</u> i) Train teachers and office staff to photocopy on both sides of the paper, whenever possible (in the office or copy room). ii) <u>Instruct teachers and students to bring their own drink container or tumbler to replace the throw away plastic bags provided by the canteen operator.</u> iii) <u>Assign monitors to count throw away plastic bags collected in the bin daily.</u>	Reduction in paper consumed and therefore, reduction in school's paper cost. <u>Reduction in quantity of plastic bags discarded into the bin.</u>	All teachers and admin. staff <u>All teachers and students</u>	Large recycling boxes <u>Special bin for plastic bags</u>	1 no. <u>1 no.</u>	To be advised ? To be advised	19/09/05 – end Oct <u>19/09/05 – end Oct</u> <u>19/09/05 – end Oct</u>
6. <u>Reuse</u> i) Place a box in the office or copy room for one-side photocopying mistakes for reuse ii) Put a box in each classroom for paper, pencils, colour pencil, crayons, half-used exercise books, etc with instructions to reuse them for maths problems, doodles, etc. iii) Assign a cleanliness monitor in each classroom to ensure that the box remains neat and that students reuse the materials.	Reduction in school's purchase of paper (either volume or cost savings). Reduction in recyclable materials found in bins in classrooms.	All teachers and admin. staff All students Nominated students	Large recycling boxes Reuse boxes – one per classroom	1 no. To be advised	To be advised To be advised	19/09/05 – end Oct 19/09/05 – end Oct

Actions	Performance Indicators	Resources Required				Timeline/ Schedule		
		Human	Material	Quantity	RM			
<p>7. <u>Recycle</u></p> <ul style="list-style-type: none"> i) Set up paper recycling boxes in classrooms and staff room, and a central collection bin in a non-classroom location. ii) Place stickers or signs on all boxes to remind students what can be recycled. iii) Assign a cleanliness monitor in each classroom to make sure the box contains only paper. iv) Assign another cleanliness monitor in each classroom to weigh, record and deposit the paper into the designated central collection bin once a week. v) Arrange with the LA, contracted collector or Southern Waste to collect paper from the school once a week or fortnightly. 	<p>Quantity (weight) of paper that can be recycled are reduced</p> <p>Weight of paper from each classroom is recorded once a week.</p>	<p>All staff and students</p> <p>Selected students</p> <p>3Rs Team Leader</p>	<p>Recycling boxes – one per classroom, staff room and 1 big container at central collection point.</p> <p>Weighing scale</p>	<p>To be advised</p>	<p>To be advised?</p>	<p>19/09/05 – end Oct</p>		
				<p>Refer above</p>	<p>Refer above</p>	<p>Refer above</p>	<p>19/09/05 – end Oct</p>	
								<p>September –</p>
								<p>September -</p>

Actions	Performance Indicators	Resources Required				Timeline/ Schedule
		Human	Material	Quantity	RM	
<p>8. <u>Information and Communication</u></p> <p>i) Brief and remind teachers and students at assembly on waste minimisation strategy and target.</p> <p>ii) Arrange with Southern Waste to give a talk during World Environment Week (October 21-27).</p> <p>iii) Set up an Environmental Corner on the school bulletin board, <u>incorporating a map of the school displaying photographs of key waste generating areas before and after the pilot project.</u> <u>Also display a chart displaying the results of the activities in the classroom and the canteen.</u></p>		<p>Principal and 3Rs Team Leader</p> <p>3Rs Team Leader</p> <p>Publicity Group (nominated teacher and students)</p>				<p>September -</p> <p>October 21-27</p> <p>Mid- Sept (before implementation of activity) and end of pilot project in Oct. (to coincide with World Environment Week).</p>

4 PROGRAMME FOR 3Rs ACTIVITIES FOR LEVEL 3 SCHOOLS

Generally, Level 3 schools already have an active waste minimisation programme. It is not the intention of the pilot project to disrupt the existing 3Rs programme and activities of these schools, but more importantly, to reinforce students' awareness and their understanding of the crucial role they play and the responsibility they have towards conveying the 3Rs message to their family and community.

Some of the activities to consider incorporating within the existing Action Plan of these schools include:

1. Acting as eco-leaders in the community by setting up and managing a collection centre for their community with assistance and participation from the Parents-Teachers Association, the Residents Association, the local authority and the contracted contractor or waste management concessionaire, that is Southern Waste in this instance.
2. Conducting periodic informal surveys within the family to discover the type of waste generated in the household, arouse awareness, monitor as well as advise the family on ways and alternatives to reduce the quantity.
3. Design, plant and maintain a garden on school grounds or local public area (with permission from the local authority of course) by reusing organic waste from the canteen and school open space.

For the purpose of the pilot project in Johor and given the rather limited trial period, it is suggested that the participating Level 3 schools conduct an activity that requires **the students to transfer and share what they have learnt in school to the family**. This activity is intended to encourage students to actively explore the impact of waste and recycling in their own lives, their families, and in the longer term, their community.

The following steps and actions are suggested to assist the 3Rs Team Leader incorporate an activity or project over the next 4 to 6 weeks between September and October 2005, involving the use of students to transfer 3Rs awareness to their family.

Step 1 PLAN

1. Design an eco-review sheet designed to get their families involved in reducing, reuse and recycling at home. (Eco-review Sheet 1, **Applying 3Rs Awareness at Home** is attached to serve as a template for the 3Rs Team Leader).
2. Identify and select the classes or students (preferably senior classes or students) to undertake the activity and hold a briefing session with these students to explain the objective and target of this activity.
3. Set a time schedule for this activity.
4. Prepare an Action Plan. (Refer to Table 3 for a template).

Table 3: TEMPLATE FOR ACTION PLAN IN LEVEL 3 SCHOOLS

School:						
Target: Applying 3Rs Awareness at Home						
Actions	Performance Indicators	Resources Required			Timeline/ Schedule	
		Human	Material	Quantity		RM
1. Identify and select senior classes or senior students to undertake the project.		3Rs Team Leader and nominated teachers.				3Rs Team to be in place by 12/09/05
2. Prepare, print and distribute a home sheet for the survey using Eco-review Sheet 1 as an example or template.			Paper	TBA	TBA	15/09/05
3. Conduct a briefing session to explain the objective and target of the activity, that is, transfer 3Rs awareness to the family..		3Rs Team Leader and nominated teachers.				16/09/05
5. Review results of the activity with the students every fortnightly.	Reduction in waste quantities. Waste is separated before disposal.	3Rs Team Leader, teachers and students.				End Sept, mid Oct. and end Oct.
6. In conjunction with World Environment Week, invite Southern Waste to give a talk, hold a slogan-writing competition and present findings of Applying 3Rs Awareness at Home.		3Rs Team Leader, teachers and students.				Oct 21 – 27.

Step 2 DO

1. Undertake the actions in the Action Plan.

Step 3 CHECK

1. Require students to count and record the results of the activities once a week.
2. Meet and review results with students fortnightly to ascertain if the information is effectively transferred and how well the family is responding.
3. Eco-review Sheet 1, Applying 3Rs Awareness at Home, may be used and/or modified to aid the 3Rs Team and students in monitoring and measuring the activity's progress.

Step 4 ACT

1. Prepare a report at the end of the pilot project and present the findings at a talk during the World Environment Week (October 21 – 27) to be organised jointly with Southern Waste.
2. Review whether students have been successful in getting their families involved in the 3Rs. If not, consider extending the activity to the new academic year and also consider getting the involvement of the Parents-Teachers Association.

Eco Review Sheet 1

APPLYING 3RS AWARENESS AT HOME

1. What wastes is generated in your home? Look around the house and itemise them!

1.
2.
3.
4.

2. How are those wastes disposed?

Type of wastes				
Disposal way				

3. What amount of newspaper, plastic bottles and aluminium cans are generated in your home in a week? Quantify your wastes!

Type of wastes	Newspapers	Plastic bottles	Plastic bags	Aluminium cans
Amount	Kg	Pieces	Pieces	Pieces
Week 1				
Week 2				
Week 3				
Week 4				

3. What you can do to promote 3Rs in your home? How can you encourage members of your family to apply what you have learnt in school? Write down your ideas.

1.
2.
3.

4. Evaluate whether you have succeeded in getting your family to reduce, reuse and recycle at home.

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Appendix-6

**LIST OF ENVIRONMENTAL
CELEBRATIONS**

No.	Event	Date
1	World Forestry Day	21 March
2	World Water Day	22 March
3	Earth Day	22 April
4	Astronomy Day	6 May
5	World Environment Day	5 June
6	World Population Day	12 July
7	Space Week	16-24 July
8	Science & Technology Month	1-31 July
9	World Indigenous Peoples Day	9 August
10	World Cleaning Days	15-17 September
11	International Ozone Day	16 September
12	World Habitat Day	6 October
13	International Eradication of Poverty Day	17 October
14	Malaysian Environment Week	21-27 October
15	National Recycling Day	11 November
16	World Toilet Day	19 November
17	World Biological Diversity Day	29 December

Appendix-7

**LIST OF ENVIRONMENTAL
PROGRAMMES/**

No.	Programme/Project	Responsible Organisation	Contact
1	Sekolah LESTARI - Anugerah Alam Sekitar	DOE	Jabatan Alam Sekitar, Bahagian Komunikasi Strategik, Tingkat 5, Blok C4, Parcel C, Pusat Pentadbiran Kerajaan Persekutuan 62662 PUTRAJAYA Tel:03-8885 8200 Fax: 03-8889 1042 www.jas.sains.my
2	Projek WIRA ALAM	DOE/MOE/ Malaysian Nature Society	Urusetia Projek WIRA ALAM, Jabatan Alam Sekitar, Bahagian Komunikasi Strategik, Tingkat 5, Blok C4, Parcel C, Pusat Pentadbiran Kerajaan Persekutuan 62662 PUTRAJAYA Tel:03-8885 8200 Fax: 03-8889 1042 www.jas.sains.my
3	Program Eco-Youth	MOE/UMW Toyota Motor Sdn Bhd	
4	Program KITs	Alam Flora Sdn Bhd	Chief Executive Officer Alam Flora Sdn Bhd Level 4, Wisma DRB-HI COM, No. 2, Jalan Usahawan U1/8, Seksyen U1, 40150 SHAH ALAM Selangor D.E. Tel:03-2052 7922 Fax: 03-2052 8144 www.alamflora.com.my

No.	Programme/Project	Responsible Organisation	Contact
5	Kuiz Sains Alam Semulajadi	MOE/Universiti Putra Malaysia	
6	School Greening Programme	MOE/Japanese Chamber of Trade & Industry	
7	Renewable Energy & Energy Efficiency Programme (RE& EE)	MOE/Centre for Training on Renewable Energy & Energy Efficiency (CETREE)/USM	
8	Science Research Camp	MOE/Forest Research Institute of Malaysia	
9	3K Programme in Schools (Safety, Cleanliness & Beautification)	MOE/Ministry of Health, Kumpulan Utusan Malaysia & Tetra Pak (M) Sdn Bhd	
10	Penang Chief Minister's Green Award	Penang State Government	

Appendix-8

QUESTIONNAIRE FOR TEACHERS

1. What subjects do you teach?

2. Which class/grade level (s) do you teach?

3. Are you a Member of the School **3Rs Team**? *Yes* *No*

4. Which parts/sections of these Guidelines did you use?

Guidelines (main text)

Exercises/Worksheets

Background Paper

5. Which parts/sections of these Guidelines did you find useful, and Why?

6. Which parts/sections of these Guidelines did you NOT find useful, and Why?

7. What was the **Reaction** of your pupils to the exercises/worksheets (if you used them)? _____

8. Based on their reactions, do you think the materials are **appropriate** for the targeted levels? *Yes* *No*

If No, please explain.

9. Are you satisfied with the guidance provided in the Guidelines?

Yes *No*

If No, what additional materials would you like to suggest to complement the Guidelines?

10. Would you like to offer any **recommendations** for improving the Guidelines?

<p>Name: _____</p> <p>School: _____</p> <p>Address: _____</p> <p>Telephone: _____ Fax: _____</p> <p>E-mail: _____</p>
