

支持單位：



教育暨青年局
Direcção dos Serviços de
Educação e Juventude



民政總署
INSTITUTO PARA OS
ASSUNTOS CÍVICOS
E MUNICIPAIS



環境保護局
Direcção dos Serviços
de Protecção Ambiental



能源發展辦公室
Gabinete para o Desenvolvimento
do Sector Energético



主辦單位：



澳門生產力暨科技轉移中心

豐盛人生，由學習開始

Active Learning is the Start of a Fruitful Life

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再造紙 RECYCLE PAPER

兒童環保行動 Envirokids Program

第一階段行動記錄 First Stage Workbook



非賣品 Not for Sale

Environment and Us



The environment in which we are living has been disrupted by us as a result of pollution, e.g. water, air and land pollution. To live in a clean, healthy environment, we have to do something to protect and preserve the natural resources of our environment carefully.

USEFUL TIPS



1 List 3 healthy environmental issues in Macau.

Item	Healthy Environmental Issues	Reasons
1	Greening of Environment	Pleasant to see and absorb carbon dioxide
2		
3		

2 List 3 unhealthy environmental issues in Macau.

Item	Unhealthy Environmental Issues	Reasons
1	Throw rubbish onto the street	It can block drainage and attract flies, rats and cockroaches
2		
3		

環境與我



我們居住的環境正受到不同程度的污染和破壞，如空氣污染、水質污染、陸地污染等。要生活在一個美好、優美的環境，我們必需珍惜和保護地球上珍貴的資源。

有幫助的建議



1 列出3種對環境有益的做法：

項目	對環境有益	原因
1	綠化環境	令我們舒適及植物可吸收二氧化碳
2		
3		

2 列出3種對環境有害的做法：

項目	對環境有害	原因
1	亂拋垃圾	阻塞渠道，會吸引老鼠、蟑螂、蒼蠅
2		
3		

What Can We Do?

Everyone including kids can do something to save the environment. As simple as reducing the amount of waste produced and resources used are already examples of what YOU can DO to save our environment.



USEFUL TIPS

You have to believe that you can improve the environment.

ACTION

Let's work out a plan and do something now to help protect our environment NOW.

USEFUL TIPS



Follow our examples provided:

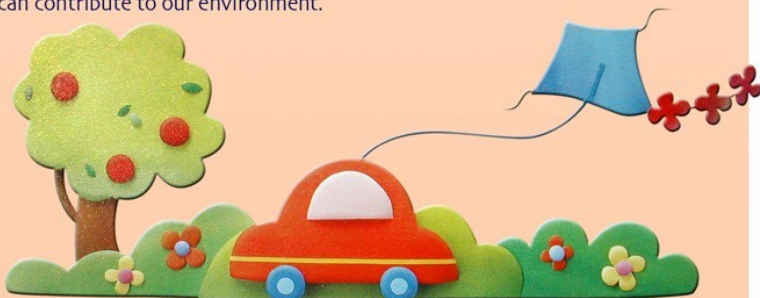
How Can We Make A Difference?

Choose a topic that you are interested in. Then, work out a plan/project that you and your family can contribute in protecting our environment.

USEFUL TIPS



By following our 2 examples provided, at the end of the day you can see how much you can contribute to our environment.



我們可做些甚麼？

每一個人不論大人或小朋友都有能力保護我們的環境。減少廢棄物和資源的濫用便是好例子。



有幫助的建議

你要相信你可以改善環境：

作出行動

立即坐言起行計劃，於日常生活中減少對環境的破壞。

有幫助的建議



參考我們提供的例子：

我們可以怎樣做？

先選擇一個在日常生活中與環保有關的題目，然後就此定出一個你和你的家人可以對環境保護作出貢獻的計劃。

有幫助的建議



當你按照以下的例子採取行動，你可以看到你對環境的貢獻。



Reduce The Use of Plastic Bags

Plan 1

Step 1 Think of an issue in your daily life that upsets our environment.

For Example:

Identified issue / problem: Use and dispose many plastic bags

USEFUL TIPS



Why is this an environmental problem?

- Plastic bags take a very long time to dissolve.
- Some animals wrongly eat plastic bags as food.

Step 2 Based on the problem identified, define what you can do to tackle the issue, which is the aim of this project.

For Example:

Topic: Reduce the use of plastic bags



減少使用膠袋

行動一

步驟 1 試找出日常生活中的一種可破壞環境的做法

例子：

問題：大量使用及棄置膠袋

有幫助的建議



為什麼這樣會破壞環境？

- 膠袋需要很長的時間來溶解。
- 有些動物誤將膠袋當成食物。

步驟 2 根據列出的問題，試想出改善的方法，並定出可達成目標的計劃。

例子：

主題：減少使用膠袋



Reduce The Use of Plastic Bags

Step 3 Define and measure the current situation of the identified issue.

For Example:

What to measure? Measure how many plastic bags do my family and I use every day and week



USEFUL TIPS

- You must know the size of the problem and how much you can improve.

How to measure? Record the amount of plastic bags used or obtained by you and every member of your family every day for a week.

What to do? Whenever you or any member of your family uses plastic bag(s) or brings plastic bag(s) home, jot it down in the Table 1 below:

- a) date when plastic bag(s) were obtained or used,
- b) situation you or your family used or obtained the plastic bag(s),
- c) the person who used or brought these plastic bag(s) home,
- d) amount of plastic bags gained in each situation,
Remarks: If no bag has been used or obtained that day, put down "N/A" under "Situation" and "Qty" columns,
- e) at the end of the week, summarize the total number of plastic bag(s) used,
- f) review each situation and take action to improve.

減少使用膠袋

步驟 3 確定和量度所列出問題的現況。

例子：

量度甚麼？ 統計你和家人每日和每星期的膠袋使用數量



有幫助的建議

- 你要知道問題有多大以及你可以對環境作出什麼改善。

如何量度？ 記錄並總結每星期你和家人每天使用或得到的膠袋數量

怎樣統計及記錄？ 每當你或家人使用或將膠袋帶回家，把有關資料記錄如下（看表格一）：

- a) 獲得或使用膠袋的日期；
- b) 在甚麼情況下你或家人獲得或使用那些膠袋；
- c) 該膠袋由那一位家庭成員帶回來；
- d) 記錄該次所獲得或使用的膠袋總數量；
備註：如當日沒有使用或獲得任何膠袋，在該日『情況』及『數量』兩欄的位置填上“不適用”；
- e) 在每星的周末總結該星期的膠袋總用量；
- f) 然後對收集之膠袋使用情況作出檢討，並確立改善方案。

Reduce The Use of Plastic Bags



USEFUL TIPS



Ask your family members how many plastic bags they have brought back and you should note it in your diary.

a) Date	b) Situation	c) Family Member	d) Qty.	e) Review / Actions
04/01/2013 (Fri)	Buy newspaper	Dad	1	
	Shopping in supermarket	Mom	5	
04/02/2013 (Mon)	Buy bread in bakery	Mom	3	
	Buy newspaper	Dad	1	
04/03/2013 (Mon)	Buy a storybook	Brother	1	
04/04/2013 (Thu)	Buy snacks	Me	1	
04/05/2013 (Sat)	Buy snacks	Brother	2	
04/06/2013 (Tue)	N/A		N/A	
04/07/2013 (Thu)	Buy bread in bakery	Mom	2	
	Buy drinks in convenience store	Brother	1	
e) Total no. of plastic bags used this week:				17

減少使用膠袋



有幫助的建議



詢問家庭成員帶了多少膠袋回來，並且記錄在表格內。

a) 日期	b) 情況	c) 家庭成員	d) 數量	e) 檢討 / 行動
04/01/2013 (五)	買報紙	爸爸	1	
	超級市場購物	媽媽	5	
04/02/2013 (一)	買麵包	媽媽	3	
	買報紙	爸爸	1	
04/03/2013 (一)	買書	哥哥	1	
04/04/2013 (四)	買零食	自己	1	
04/05/2013 (六)	買零食	哥哥	2	
04/06/2013 (二)	不適用		不適用	
04/07/2013 (四)	買麵包	媽媽	2	
	在便利店買飲料	哥哥	1	
e) 本周膠袋使用總數:				17

Reduce The Use of Plastic Bags



Step 4 Make a summary of the data collected and identify actions that can be taken to solve the problems concerned.

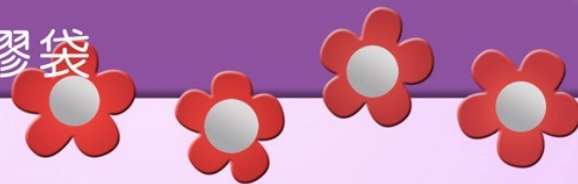
For Example:

Number of Plastic Bags We Used Every Week

a) Date	b) Situation	c) Family Member	d) Qty.	f) Review / Actions
04/01/2013 (Fri)	Buy newspaper	Dad	1	Bring our own bag(s)
	Shopping in supermarket	Mom	5	Bring our own bag(s)
04/02/2013 (Mon)	Buy bread in bakery	Mom	3	Use less packing, one bag is enough
	Buy newspaper	Dad	1	Bring our own bag(s)
04/03/2013 (Mon)	Buy a storybook	Brother	1	Bring our own bag(s)
04/04/2013 (Thu)	Buy snacks	Me	1	Bag may not be necessary, say "NO" to plastic bags
04/05/2013 (Sat)	Buy snacks	Brother	2	Bag may not be necessary, say "NO" to plastic bags
04/06/2013 (Tue)	N/A		N/A	
04/07/2013 (Thu)	Buy bread in bakery	Mom	2	Use less packing, one bag is enough
	Buy drinks in convenience store	Brother	1	Bag may not be necessary, say "NO" to plastic bags
e) Total no. of plastic bags used this week:				17

Above is only an example of the actions that may be carried out to help reduce the use of plastic bags. You can think of any other possible action to be carried out.

減少使用膠袋



步驟 4 然後對收集之膠袋使用情況作出檢討，並確立改善方案。

例子：

每周膠袋使用數量記錄

a)日期	b)情況	c)家庭成員	d)數量	f)檢討 / 行動
04/01/2013 (五)	買報紙	爸爸	1	自備購物袋
	超級市場購物	媽媽	5	自備購物袋
04/02/2013 (一)	買麵包	媽媽	3	減少膠袋包裝，一個膠袋已足夠
	買報紙	爸爸	1	自備購物袋
04/03/2013 (一)	買書	哥哥	1	自備購物袋
04/04/2013 (四)	買零食	自己	1	毋須使用膠袋，不接受店家所提供的膠袋
04/05/2013 (六)	買零食	哥哥	2	毋須使用膠袋，不接受店家所提供的膠袋
04/06/2013 (二)	不適用		不適用	
04/07/2013 (四)	買麵包	媽媽	2	減少膠袋包裝，一個膠袋已足夠
	在便利店買飲料	哥哥	1	毋須使用膠袋，不接受店家所提供的膠袋
e) 本周膠袋使用總數：				17

以上只是一些參考例子，你可就有關情形採取不同的行動。



Week _____

7

Every Week

Week _____

Step 6 At the end of the two weeks, sum up the total number of plastic bags consumed and divided by two. This number shows you the average number of plastic bags consumed by you and your family each week.

Average usage of plastic bags consumed per week (before) **A1**
= (plastic bags used in week 1 + plastic bags used in week2)

A green felt cloud with a scalloped edge, decorated with several small pink and red flowers and white dots. It is placed on a red background.

5

第 星期

[illegible]

第 星期

[illegible]

6

$$= (\text{第一周的膠袋使用量} + \text{第二周的膠袋使用量})$$

Number of Plastic Bags We Used Every Week

Step 7 Make a list of actions you and your family can do to achieve your target - reduce the use of plastic bags.

For Example:

List of actions/activities to reduce the use of plastic bags

- A. Bring and use our own bag(s) when we buy things
- B. Refuse unnecessary bags offered during shopping
- C. Re-use plastic bags



USEFUL TIPS

- Reduce the use of plastic bags week by week



每周膠袋使用數量記錄

步驟 7 根據上述檢討和所定出可減少膠袋使用量的方法，列出一份清單清楚寫上你及你的家人可採取的行動，從而達到這個計劃的目標 - 減少耗用膠袋

例子：

減少膠袋使用行動要點

- A. 購物時自備購物膠袋
- B. 購物時拒絕不必要的膠袋
- C. 循環使用膠袋



有幫助的建議

- 減少每星期膠袋的使用量。



Number of Plastic Bags We Used Every Week

Step 8 Make sure you tell every family member about this activity, target and actions listed. Remind and encourage them from time to time if necessary.

Week _____

[illegible]

Number of Plastic Bags We Used Every Week

Step 9 As in step 3, record in the table the number of plastic bags used or taken home by every family member including yourself every day. Repeat this for four weeks.

Week _____

[illegible]

每周膠袋使用數量記錄

步骤

8

確保你已清楚告訴家中每一位成員你的計劃、目標和所需採取的行動。在過程中，你有責任不斷提醒及鼓勵家中每一位成員的配合和參與，以達到理想的效果。

第_____星期

[illegible]

每周膠袋使用數量記錄

步驟

Q

如步驟三，每天記錄你和家人的膠袋使用量，並將有關資料記錄於表格裏，為期四週。

第 星期

[illegible]



Every Week

Week _____

Every Week

Week _____

Step 11 Find out the average usage of plastic bags per week.

Average usage of plastic bags per week (after) **A2**
 = (plastic bags used in week 1 + week2 + week 3 + week 4)

4

步驟

第



Two colorful paper plate insects are shown. The one on the left is orange and red, resembling a ladybug or beetle. The one on the right is green and blue, resembling a grasshopper or frog. Both are made from a paper plate with cut-out legs and antennae.

第

步骤



A2

$$= (\text{周一} - \omega k) + \text{周二} - \omega k$$

4

Number of Plastic Bags We Used Every Week

Step 12 Changes and Improvement. Compare the difference in usage of plastic bags before and after the planned actions.

- (i) Difference in number of plastic bags used before and after the programme $D1$
 = Average usage of plastic bags per week (after) $A2$
 - Average usage of plastic bags consumed per week (before) $A1$
- (ii) As there are 52 weeks in a year, the number of plastic bags that can be reduced in a year
 = Difference in number of plastic bags used before and after the programme $D1 \times 52$
- (iii) Percentage of decrease in the usage of plastic bags
 = $\frac{\text{Difference in number of plastic bags used before and after the programme } D1}{\text{Average usage of plastic bags consumed per week (before) } A1} \times 100\%$

$$(i) D1 = A2 \frac{\text{week } 1 + 2 + 3 + 4}{4} - A1 \frac{\text{week } 1 + 2}{2}$$

$$D1 = A2 \frac{+ + + +}{4} - A1 \frac{+}{2}$$

$$D1 = A2 () - A1 ()$$

$$D1 = \underline{\hspace{2cm}}$$

$$(ii) D1 \times 52 = \underline{\hspace{2cm}}$$

$$(iii) \frac{D1}{A1} \times 100\% = \underline{\hspace{2cm}}$$



每周膠袋使用數量記錄

步驟 12 改變和改善 - 比較此活動前後的膠袋使用量

- (i) 活動前和活動後的膠袋使用量的差別 $D1$
 = 每周平均膠袋使用量(後) $A2$ - 每周平均膠袋使用量(前) $A1$
- (ii) 以一年有五十二個星期計算，每年可減少膠袋使用數量
 = 活動前和活動後膠袋使用量的差別 $D1 \times 52$
- (iii) 減少之膠袋使用之百分比
 = $\frac{\text{活動前和活動後膠袋使用量的差別 } D1}{\text{每周平均膠袋使用量(前) } A1} \times 100\%$

$$(i) D1 = A2 \frac{\text{周 } 1 + 2 + 3 + 4}{4} - A1 \frac{\text{周 } 1 + 2}{2}$$

$$D1 = A2 \frac{+ + + +}{4} - A1 \frac{+}{2}$$

$$D1 = A2 () - A1 ()$$

$$D1 = \underline{\hspace{2cm}}$$

$$(ii) D1 \times 52 = \underline{\hspace{2cm}}$$

$$(iii) \frac{D1}{A1} \times 100\% = \underline{\hspace{2cm}}$$



Number of Plastic Bags We Used Every Week

Step 13 Implications and Lessons Learned

Plastic bags are widely used in our daily life. Every day an enormous amount of plastic bags is being used and disposed; as a result lots of waste are generated. Plastic is a non-biodegradable substance that exists in the environment for a long time, thus devastating our environment.



每周膠袋使用數量記錄

步驟 13 總結

在日常生活中，膠袋的使用極為普遍。每日大量的膠袋被棄置，製造大量垃圾，最為重要的是塑膠是一種不易被分解的物質，需要很長時間才能被大自然吸收，因而大大破壞了我們的環境。

