

PN-ALP-506

**FOLLOW-UP ASSESSMENT OF THE USE AND  
IMPACT OF ENVIRONMENTAL EDUCATION  
LEARNING ACTIVITIES IN SECONDARY  
TECHNICAL SCHOOLS**

SOLID WASTE MANAGEMENT LEARNING SUPPLEMENT  
ALEXANDRIA PILOT SCHOOL PROGRAM

---

S E P T E M B E R - D E C E M B E R 2 0 0 0

---

BY DR. SHERIF KANDIL  
for AED / Egypt

APRIL 2001

**A E D •**

## **Implementation of Environmental Educational Activities in Industrial Secondary Schools in Egypt**

The Academy of Educational Development has produced an environmental education package. The package is based on a set of 25 environmental activities that enhances the environmental concepts through practical exercises and hands on experience. The package was designed to be used by teachers in the technical secondary schools in Egypt. The package that was approved by the Ministry of Education and the Egyptian Environmental Affairs Agency, includes:

- 1- A book on Solid Waste Management that contains the basic environmental concepts, the main environmental issues, the details of solid waste management (as the main chapter), as well as national case studies.
- 2- A set of 12 transparencies (with talking points for each transparency to be used by the teacher).
- 3- A video film that highlights the concept of recycling (entitled the success trip).
- 4- A compact disk (that includes all the previous materials as well as animations to illustrate the practical elements of the training exercises).

The Technical secondary schools in Egypt were presented by this package, where workshops were conducted to train the trainers on how to maximize the use of this package.

Three pilot schools in Alexandria were chosen to monitor the implementation of the environmental activities and the use of the educational package:

- 1- Moharram Bey Industrial Secondary School.
- 2- Rushdi Industrial Secondary School.
- 3- Advanced Hotel School.

Teachers were asked to document the implementation of the environmental activities, as well as its utilization of the package during a period of six months (October 2000 – March 2001). They were also asked to report on their impressions and comments on the package as well as the feedback of the students undertaking these activities during the implementation.

They were handed a documentation book that contained standard formats that include the teacher's name, date of activity, and number of students attending the activity, a brief description of this activity, as well as the students' impression according to a fixed formats (attachment 1).

A visit were conducted to each school where the books were collected, and the teachers were discussed about the implementation of the package.

#### **Summary and analysis of the Teachers Follow-up Reports:**

i. Teachers were assigned in each school to supervise the environmental activities. Twenty teachers participated in implementing and running these activities in the three Technical schools. The number of teachers supervising the environmental activities varied among the three schools. However Rushdy technical secondary school had 13 teachers who were involved in the environmental program. This high number is probably attributed to the nature of the school that deals mainly with textile

industries (which produces a lot of reusable waste). There are traditional industries in Egypt that are based on the textile waste (like the rug industry).

Moreover the management of Ruhdi technical secondary school gave the impression that they are very much dedicated to the environmental cause, which always makes a difference.

ii. Many activities were implemented. The total number of conducted activities is (22). Most of the activities were repeated in the 3 pilot schools. The total number of conducted activities is 96. However, understandably it was noted that particular activities were repeated more often in some schools, as the nature of activity was more compatible with the nature of the school.

It is worth noting that the teachers within the schools modified some of the activities as reported in the book of the package. They even invented new activities beside their traditional activities. The teachers indicated that the environmental concepts were enhanced when they consulted the fact sheets and the reference papers within package.

iii. The total number of participating students in all different activities within the 3 schools is (2028) students. The average number of students participating in each activity differed according to the nature of the activity. However it is obvious that the activities that were heavily implemented and mostly appreciated by both teachers and students are those who were:

- Stimulating and dynamic
- Easy to implement
- Compatible with the school nature
- Had group participation

## **Conclusion**

The solid waste management environmental package was well utilized. It helped clarifying the basic environmental concepts, enhanced the environmental activities, and inspired both teachers and students to create new activities

## **Appendix**

### **Implemented Activities as Reported by Teachers:**

#### **Descriptions, Goals and Results**

##### ***1. Side effects on health and the environment as a result of burning solid wastes***

The students learned the dangers of burning waste in open air (streets and dump sites) and its negative impact on air pollution. They introduced to the concept that burning waste could produce useful energy, however environmental precautions must be observed.

##### ***2. Creating a model of a sanitary landfill***

The students learned that the last step in solid waste management is to use landfill. Students were introduced to the necessary elements needed for a construction of a sanitary landfill as well as the characteristics of building a safe landfill to protect the environment.

##### ***3. Creating a model of a greenhouse***

The students were introduced for the first time the scientific concepts of the greenhouse effect and global warming phenomenon. They participated in building a model of a greenhouse for themselves.

##### ***4. Presentation of a videotape to highlight the economic and environmental benefits of solid waste recycling***

The students knew the benefits of solid waste recycling particularly the economic and environmental benefits of recycling. The film was well received and stimulated various discussions.

### ***5. Compiling an environmental press file***

Students collected captions of newspapers and magazines on the environmental issues: local and beyond. They became aware of the society needs as well as the international environmental issues. Moreover they became aware of the regulations concerning these issues. There were various methods in classifying the collected materials (according to the subject, the issue, the location, or the date).

### ***6. Nuts game (sustainability concept)***

The meaning of sustainable development was explained to the students. The concept became clear after playing the game as they realized that they may deplete their resources unless careful planning and conservation take place. Achieving sustainability by thinking of future generations was clarified and explained to students.

### ***7. Utilization of industrial remains (fibers, leather, and wool)***

The students realized that they could do a lot of objects by using the industrial remaining materials. This exercise stimulated their imagination and creativity. They made useful products out of the waste. The concept of recycling was emphasized.

### ***8. Manual manufacturing of recycled paper***

The students knew how to manufacture papers manually. They have acquired the skills of processing the waste paper. Moreover they have gained a self-confidence that they could apply the process and manufacture papers. This exercise emphasized the practical benefits for recycling.

### ***9. Manufacturing toys from empty pulley***

This exercise explored the creativity of students as they manufactured various toys and entertainment materials out of the pulleys.

### ***10. Preparing an environmental program for the school***

The students learned how to work in groups. Together with their teacher, they prepared a plan and time schedule to manage the environmental activities within their schools. They were concerned particularly with the solid waste management problem. They were excited about this task and felt its importance to their direct community.

### ***11. Utilizing and recycling of wastes and clays***

This exercise inspired the creativity of students as they made statues out of clay. They incorporated some of the reusable wastes to create different shapes. The adaptation of the waste materials in the statues was interesting.

### ***12. Classification of Waste from human activities***

This exercise illustrates the various types of waste as well as the various categories of raw materials that can be used and recycled. The exercise also highlights the different methods of recycling and its suitability to the categories of sorted waste materials.

### ***13. Environmental program in school radio, newspapers and magazines***

The students acquire via this exercise some planning and communication skills. They include an environmental element and

disseminate environmental concepts and awareness to their colleagues in all the school communications and publication programs.

#### ***14. Life cycle analysis***

The concept of life cycle analysis of materials “from cradle to grave” was introduced to students. They were urged to think of the production stages of some of the items or products they are using. This starts from considering the extraction of raw materials and primary resources. Then students think of the service life of various items until the items is exhausted. Also they have to think of the materials fate when it is disposed of. This will lead to the concept of materials selection and following its path through its entire life. The students were very interactive with this exercise.

#### ***15. What did our parents do?***

The students learned the positive aspects of the environmental habits that was practiced by the previous generations. They compared these practices with the technological developments and its impact on our environment. The main concept is to keep the good practices of our heritage and to modify the others that need changing.

#### ***16. Preparation an environmental activity exhibition***

Students contributed in organizing an exhibition of their innovations and products out of the recycled materials. This is a traditional activity that was enriched by the new ideas they applied. Out of this exercise they are gaining skills in displaying their exhibits and organizing environmental activities.

### ***17. Air pollution and its effect on living organisms***

The students played a positive role in choosing specific spots to detect air pollution and realizing the negative effects that reach living plants and humans. They were encouraged to suggest corrective actions.

### ***18. Marine Pollution***

A trip was organized to the main harbor of Alexandria. Students reported on the marine pollution. This is a new activity that originated from the local community needs. They discussed possible solutions with the directors of the harbor.

### ***19. Environmental auditing***

Students were encouraged to go through an environmental auditing exercise. They took their school as the target for the environmental audit. They identified the problems and were encouraged to suggest corrective actions. Students were very interactive in this exercise.

### ***20. Mechanical sorting of different solids***

Students learned that materials have different physical properties. This could be used in sorting out the waste according to its density, particle size, magnetic properties etc. Students were encouraged to use these scientific concepts to design a simple apparatus to fulfill this task.

### ***21. Differentiation between wastes and pollutants***

This activity illustrates to the students that separating wastes at the source makes recycling a relatively easier job. Also it reduces pollution as well as cost of recycling.

### *7. Educational trips to industrial sites*

Trips were organized to different factories in Alexandria that are relevant to the school activities. The students pointed out the positive environmental practices in the places they have visited. They also criticized the negative environmental behaviors in these factories and suggested remedy actions.

- **Attachment (1) The documentation sheet (translated)**

إدارة المخلفات الصلبة  
 مولا تعليمية تكميلية  
 البرنامج التدريبي بالاسكندرية

المعلمة	الصف الدراسي	عدد الطلاب	المقرر الدراسي	التاريخ	الإسم
الهندسة المعمارية	الثالث والاربع	١٤	نشاط تعليمي	٢٠١٦/١٥	نور محمد الغنيم

تمت بحمد الله  
 في مدينة الإسكندرية  
 في يوم الاثنين الموافق ١٥/١٢/٢٠١٦  
 الأستاذة / نورا محمد الغنيم

المواد المستفيدة

تاريخ

موقع

كيف استجاب الطلاب؟

هل يمكنك استخدامها مرة أخرى؟ لماذا نعم و لماذا لا

كانت مودعة أطفال الطلبة ايمانية وقد اقتصرنا  
 بعض الحروف التي تم عرضها في اطاره الدرس  
 وقامت السيدة بمناقشة الحروف التي  
 بعد مراجعتها العديدين من الطلاب ثم  
 بعض هذه الكلمات  
 ثم تم توزيع الاموال الزائدة

تم استئذاننا من قبل  
 السيدة سعاد السيد لاستخدام  
 النشاط

فأختت ليدك ملاحظات اخرى يرجى استخدام ظهر هذه الورقة



- Attachment (2) Tables of the detailed activities in industrial schools.

## *Detailed Activities in Industrial Schools.*

**Table ( 1.a ) Moharram Bey Industrial Technical School.**

educational activities (8) were conducted in the school. These activities were supervised by 4 teachers during the period October 2000 - March 2001. A total of 234 students participated in each activity. Some of the activities were repeated and the teachers identified the students' response to each activity .

Activities	Total no. of Participating Students	Repeating times	Average Student/ activity	Possibility of reusing the material	Student's Response
Effect of Burning Waste.	57	5	12	✓	Students understood the negative impacts of burning wastes in open air.
Press Report.	15	1	15	×	They accumulated the articles and press reports on the environmental issues.
Life Cycle Analysis.	20	1	20	×	Students identified the primary materials that are used in producing new products. Their response was very high.
The Nut Game (sustainability concept).	44	4	11	✓	They enjoyed the game and deduced the concept of sustainability.
Effect of Greenhouses on Land.	27	4	8	✓	Students were introduced to the concept of greenhouse for the first time. They constructed models by themselves.
What did our Parents do ?	39	4	10	×	Students realized the positive environmental practices in their heritage.
Sanitary Landfill.	32	3	11	×	The concept of environment protection, by using sanitary landfills, was clarified. The Students response was so high.
Environment & Population Activities Exhibition.	all students	1	-	✓	Students exhibited their activities and products learned how to organize an exhibition, and how to produce new useful things for the environment.
<b>Total</b>	<b>234</b>	<b>23</b>	<b>12.5</b>		

**Table ( 1 . b ) Rushdi Secondary Industrial School.**

educational activities (13) were conducted in the school. These activities were supervised by 13 teachers during the period October 2000 - March 2001. In average 21 students participated in each activity. Some of the activities were repeated and the teachers identified the students' response to each activity.

Activities	Total no. of Participating Students	Repeating times	Average Student/ activity	Possibility of reusing the material	Student's Response
Reuse of (remains thread, leather and wool).	334	12	28	✓	Students found useful ways to reuse these materials.
Manual Paper Manufacturing.	203	10	20	×	Students learned how to manufacture paper manually, they gained confidence in the recycling practices.
Manufacturing toys from empty Pulleys.	34	2	17	✓	Students created entertaining toys for children.
Side Effects of burning waste on Health and The environment.	8	3	3	×	Students realized the danger of burning garbage in open air.
Environmental program for the school.	42	3	14	✓	This idea excited students, as they helped in organizing environmental program for the school.
Sanitary Landfill.	108	3	36	×	They constructed a model of a sanitary landfill for themselves. They learned the elements needed to have a landfill.
Shaping of clay.	74	3	25	✓	Students achieved interesting shapes and used some reject materials.
Shaping of wastes and recycling	239	5	48	✓	Out of waste, students extracted raw material that can be reused and recycled.
Use of Solid metals in the Waste.	89	8	11	×	Students collected metallic wastes and making wall displays and various shapes out of it.
Effect of Greenhouses on Land.	18	2	9	×	The concept of global warning and greenhouse was introduced for the first time to students. They also constructed a model for themselves.

17

Video tapes demonstrating recycling procedures.	36	3		✓	Students were stimulated and challenged, the benefits of waste management. Their response was very high.
Environmental program in the School radio, newspapers and Magazines.	109	6	18	✓	Students gained basic skills in expressing themselves and communicating.
Recycling Paper.	181	7	26	×	Students utilized the used paper and recycled it in other artistic products.
<b>Total</b>	<b>1475</b>	<b>67</b>	<b>21</b>		

18

**Table (1. c) Advanced Hotelling School.**

educational activities (12) were conducted in the school. These activities were supervised by 3 teachers during the period October 2000 - March 2001. Average 15 students participated in each activity. Some of the activities were repeated and the teachers identified the students' response to each activity.

Activities	Total no. of Participating Students	Repeating times	Average Student/ activity	Possibility of reusing the material	Student's Response
Expressing Air Pollution, and its Effect on Living Organisms.	17	3	6	✓	Students realized the impact of Air pollution and its negative effect of human activities.
Preparing a press File.	34	2	17	✓	Through collection of students become aware of the environmental issues newspaper clips and other materials.
Marine Pollution.	17	1	17	✓	Students' response was very high as they felt the danger of Marine pollution.
Environmental Audit.	17	1	17	✓	Students were very much involved in this exercise and proposed solutions for the encountered problems.
Combusting Solid Wastes, and its Side Effects on Health and The Environment.	17	1	17	✓	Students realized the dangerous effects of burning waste in open air.
Categorizing different solid material.	35	2	18	✓	Students identified and quantified the various components of the solid waste.
Sanitary Landfill.	48	3	16	×	The concept of environment protection, by using sanitary landfills was clarified. Students' response was so high.
Differentiation between wastes and pollutants.	17	1	17	✓	Sorting waste from the source makes recycling much easier and profitable.
The Nut Game (sustainability concept).	33	2	17	✓	They enjoyed the game and deduced the concept of sustainability.
Effect of Greenhouses on Land.	8	1	8	✓	Students realized the meaning of global warning and made model of greenhouses for themselves.
Video tapes demonstrating recycling procedures.	58	3	19	✓	Students enjoyed the benefit of recycling on industrial scale.

19

educational trips to factories.	18	1	✓	They visited various factories, noted the relative practices in these factories and suggested remedies.
<b>Total</b>	<b>319</b>	<b>21</b>	<b>15.5</b>	

20