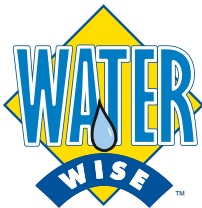




2005-2006 Program Summary Report



City of Lawrence WaterWise™ Program

Sponsored by:



Program Summary Report School Year 2005-2006

Submitted By:

Resource Action Programs®



June 2006

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Executive Summary

This report summarizes the results of the City of Lawrence WaterWise™ Resource Action Program implemented during the 2005-2006 school year. Two hundred forty-nine fourth grade students and their households participated in the program.

The WaterWise™ Resource Action Program combines a turnkey set of classroom activities with hands-on home projects to install efficiency devices and introduce resource conscious behavior to students and their families. The Program facilitates installation of resource efficient technologies in homes, builds knowledge of environmental issues and provides an effective community program for sponsors.

The WaterWise™ Resource Action Program yields a variety of measurable water and energy savings results. An overview of the results from this program appears below, with greater detail in the attached report.

Knowledge Gained: Identical surveys (tests) were taken by students prior to the program, and again upon its completion to measure knowledge gained. Scores and subject knowledge improved from 50% to 68%.

Measures Installed: Students completed retrofit activities as part of the program, and reported the measures they installed in their own homes.

Participant Satisfaction: Teachers reported the student participation and enthusiasm was excellent. 100% agreed that the materials were attractive and easy to use. Additionally, 100% of participating teachers indicated that they would like to participate in the program again, and that they would recommend it to their colleagues.



As part of the program, children take a pre-program and post-program test to measure knowledge gained.

Participant Feedback

"In my opinion, the things students liked best about the program...using the products and testing materials in their kitchens and bathrooms at home

~ M. Clover, Teacher, Deerfield Elementary

Thank-you... It was great to have my child be exposed to new ways of conserving natural resources. What a great way to get the message out to a lot of people.

-M. McCauley, Parent, Deerfield Elementary



Audit Information Obtained: Household audits (customer surveys) were performed by students and their families as part of the program activities. Important customer information was collected to better understand trends and usage. Some highlights include:

- 72% reported their water is heated by natural gas.
- 99% reported they had a dishwasher.
- 85% reported they liked the WaterWise™ Program.

Resource Savings Results: As a part of the program and working with parents or guardians, students installed resource efficient technologies in their homes while gathering information as provided above. They also measured the pre-existing equipment to calculate the savings generated. Savings from these activities will continue for many years to come. The table below shows the projected savings from the program, based upon information gathered by the students.

Total Projected Resource Savings

13,683,873	gallons of water saved
57,449	therms of gas saved
425,488	kWh electricity saved
13,683,873	gallons wastewater saved

Total Projected Resource Savings **per Household**

54,955	gallons of water saved
231	therms of gas saved
1,709	kWh electricity saved
54,955	gallons wastewater saved

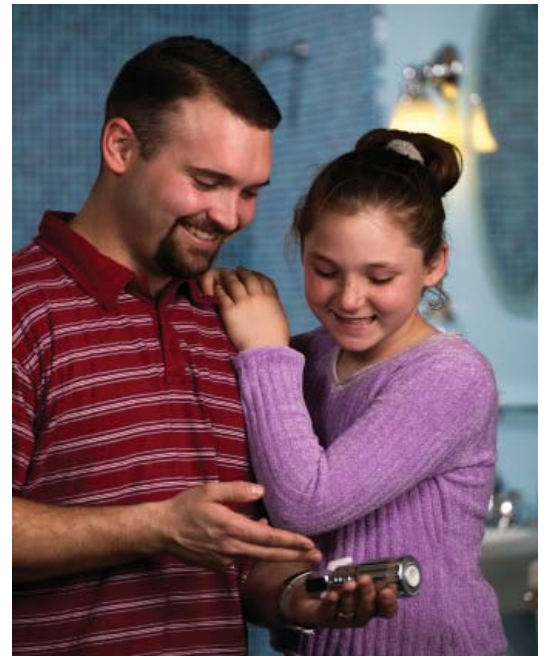


Program Overview

WaterWise™ is a fully implemented program, designed to generate immediate and long-term savings. The program uses a school-based method that builds student knowledge, provides high efficiency devices to families, and serves as an effective community outreach program.

The program staff identifies and enrolls students and teachers within the designated service territory. Enrolled participants receive educational materials designed to build participant knowledge and demonstrate simple ways to save, by not only changing habits, but also changing devices. Materials meet state and national educational standards, which allow the program to easily fit into teachers' existing schedules and requirements.

As part of the program, children take home a Resource Action Kit that contains high efficiency devices. With the help of their parents, they install the devices in their home and complete a home audit report. The WaterWise™ staff tabulates all responses, including home audits, teacher responses, student input, and generates a Program Summary Report.



As part of the program, participants take home a Resource Action Kit™. With the help of their parents they install the devices in their home.

Program Materials



Each participant receives a Resource Action Kit containing efficiency technologies for their homes and materials to perform the hands-on activities. Program materials include:

Each teacher/classroom receives:

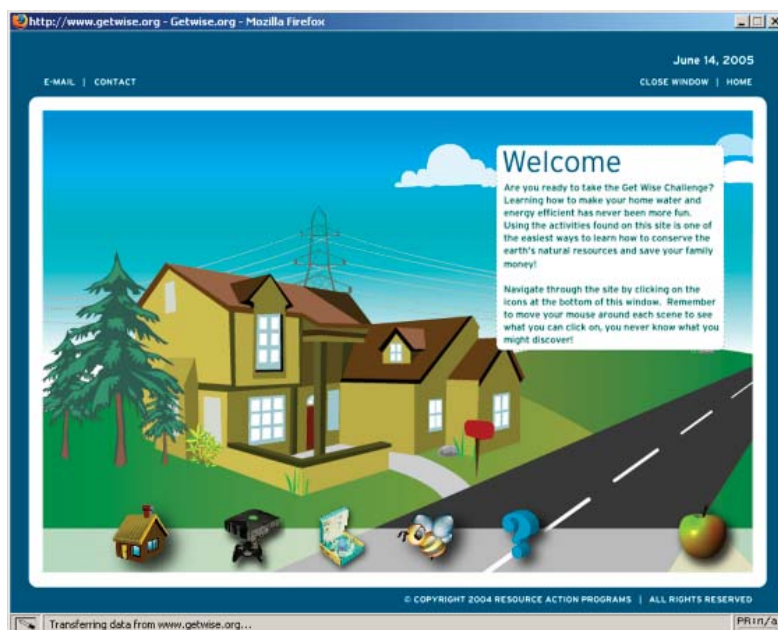
Program Introduction Video
Lesson Plans/Curriculum Correlation
Supplementary Activities
Spanish Language Support Materials
Implementation Checklist
Comprehensive Teacher Packet
24 Hour Web-based Support
Toll-Free Telephone Support
Classroom Posters

Each student/teacher receives:

Student Activity Booklet
Parent Introduction Letter
Resource Action Kit containing:

- Oxygenics® Showerhead
- Kitchen Aerator
- Bathroom Aerator
- Flow Rate Test Bag
- Toilet Leak Detector Tablets
- Mini Tape Measure
- Rain / Drip Gauge
- Water Temp Check Card
- Resource Fact Wheel
- CD-ROM Game

Certificate of Achievement
Pre & Post Surveys
Home Audit Form
Parent Comment Card
Interactive Program Website
Toll-Free Telephone Support



The Interactive Program Website mirrors program content in a fun, exciting way that helps make learning easy and helps instill lasting resource efficient behaviors.





Program Implementation

The WaterWise™ program offers a full range of implementation services as listed below. Participating teachers may implement the program to coincide with their lesson plans.

1. Teacher / School Identification
2. Program introduction to teachers
3. Teacher enrollment in program
4. Program Kit / Material Delivery
5. Delivery confirmation
6. Implementation dates scheduled with teachers
7. Periodic contact to ensure implementation and teacher satisfaction
8. Results collection
9. Data analysis
10. Program Summary Report
11. Thank-you cards sent to participating teachers

Participating teachers may implement the program to coincide with their lesson plans. The table below shows a comprehensive list of fourth grade classrooms that participated during the 2005-2006 school year.

School	Contact	Teachers	Students
Deerfield Elementary	Melissa Clover	1	25
Deerfield Elementary	Mrs. Eskilson	1	25
Deerfield Elementary	Mrs. Hadiji	1	27
Kennedy Elementary	Denise Curnes	1	23
Kennedy Elementary	Paula Meyers	1	23
Pickney Elementary	Lori Kimme	1	25
Pickney Elementary	Michelle Jacobsen	1	25
Schwegler Elementary	Deborah Norwood	1	68

Totals	8	241
Total Participants		249



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Program Impact

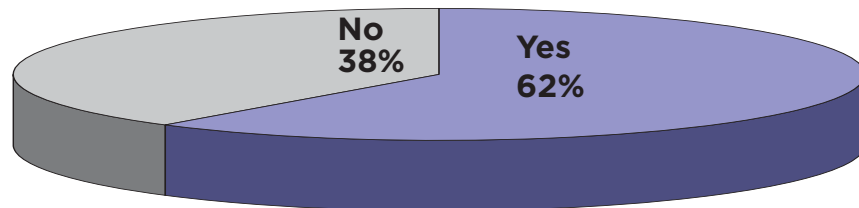
The City of Lawrence WaterWise™ Resource Action Program has had a significant impact within the community. As illustrated below, the Program successfully educated a portion of the community about water and energy efficiency while installing resource efficient technologies in homes and collecting data to better understand future trends and usage. The following results were compiled from actual student and family reports:

A. Water Adventure Report

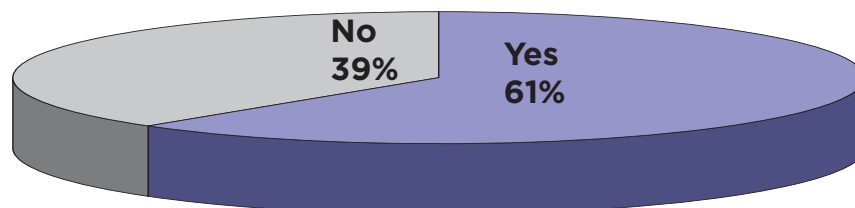
Upon completion of the program, participating families are asked to complete a Water Adventure Report (WAR) to assess their resource use, verify product installation and measure participation rates. A few samples are below while a complete summary of all responses is included in the appendices.

Did you like the program?	Yes	-	85%
Did you work with your family on this program?	Yes	-	61%
Have you changed the way you use water?	Yes	-	62%

Have you changed the way you use water?



Did you work with your family on this program?

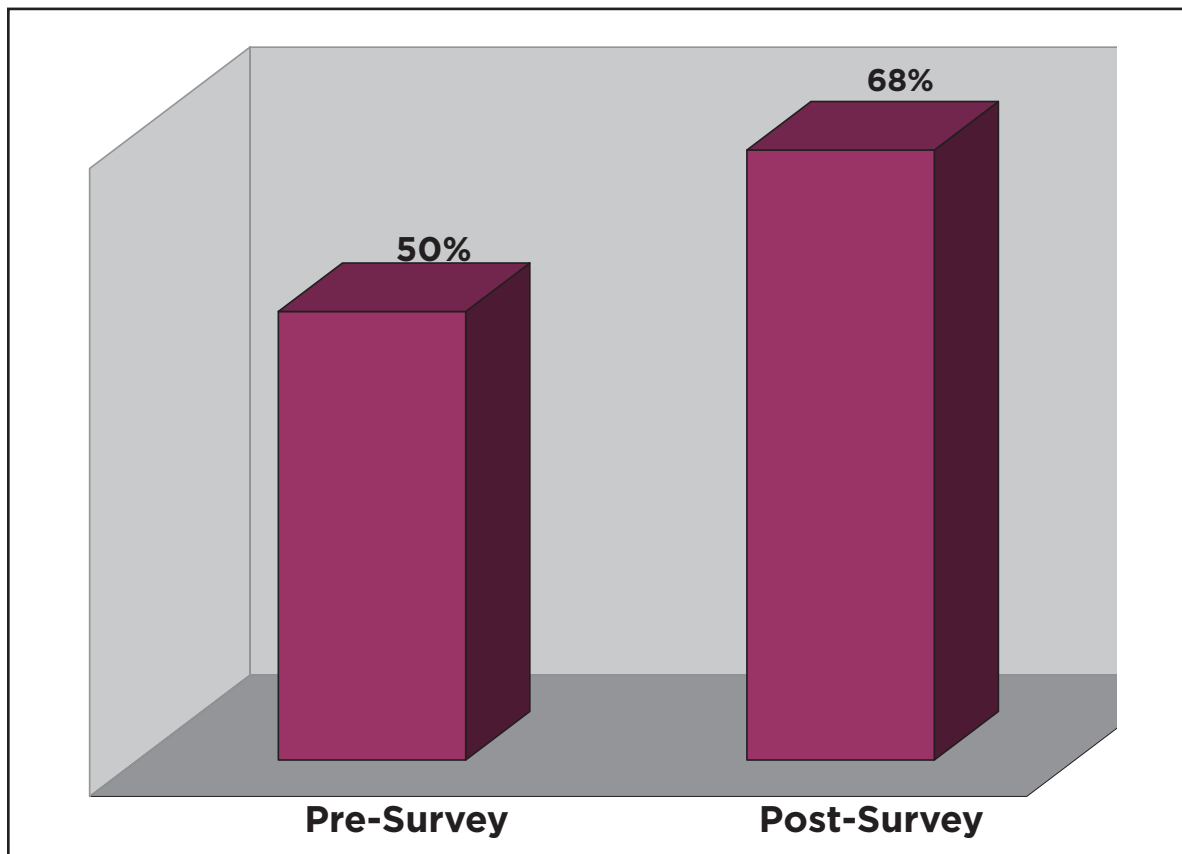




B. Pre/Post Survey

Students were asked to complete a 10 question survey before the Program was introduced and then again after it was completed to determine the learning impact and the knowledge gained through the Program. The average student answered 5.0 questions correctly prior to being involved in the Program and then improved to answer 6.8 questions correctly following participation.

Scores improved from 50% to 68%





Program Impact

C. Resource Savings Summary

Using the family habits collected from the customer survey information as the basis for this calculation, two-hundred forty-nine Clty of Lawrence WaterWise™ Resource Action Program households are expected to save the following resource totals. A list of assumptions and formulas used for these calculations can be found in Appendix A.

Projected Resource Savings

Total Number of Participants:

249

Annual

Lifetime

Reduction from showerhead retrofit:
Product Life: 10 years

1,126,974	11,269,740 gallons
4,731	47,314 therms
35,042	350,423 kWh

Reduction from kitchen aerator retrofit:
Product Life: 5 years

227,213	1,136,063 gallons
954	4,770 therms
7,065	35,325 kWh

Reduction from bathroom aerator retrofit:
Product Life: 5 years

255,614	1,278,070 gallons
1,073	5,366 therms
7,948	39,740 kWh

TOTAL PROGRAM SAVINGS:

1,609,801	13,683,873 gallons
6,758	57,449 therms
50,055	425,488 kWh

TOTAL PROGRAM SAVINGS PER HOUSEHOLD:

6,465	54,955 gallons
27	231 therms
201	1,709 kWh



D. Teacher Response

Programs improvements are based on the feedback from teachers. Each response is reviewed for pertinent information to both the program and the program sponsor. The following is a sample of the feedback collected from teacher evaluation forms.

Teacher Feedback

- 100% of teachers agreed or strongly agreed that the materials and activities were well received by students.
- 100% would conduct the program again, given the opportunity.
- 100% would recommend the program to other colleagues.

“In my opinion, the things students liked best about the program were...”

“Using the products and testing materials in their kitchens and bathrooms at home
~ **M. Clover, Deerfield Elementary**

“...the practical uses at home.”
~ **M. Hadiji, Deerfield Elementary**



Program Enhancements

E. Program Enhancements

In addition to increasing resource awareness and efficiency, Resource Action Programs strengthen bonds between sponsors and their communities. The program has been designed from start to finish with this in mind.

Some of the steps taken to insure our sponsors receive the greatest possible exposure are as follows:

Kit Branding: Each Resource Action Kit™ was labeled with all sponsor logos.

Press Releases: Press releases were offered highlighting program accomplishments.

Parent Feedback: Included in the program materials are parent comment cards. The table below contains select information from those cards.

Parent Feedback

What comments would you like to express to your child's WaterWise™ Program sponsor?

Thank-you... It was great to have my child be exposed to new ways of conserving natural resources. What a great way to get the message out to a lot of people.

-M. McCauley, Parent, Deerfield Elementary





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Appendix A

Resource Savings Estimates

Savings from Showerhead Retrofit

Average household size:	2.50 people ³
Average length of use:	8.00 minutes ⁴
Product life:	10.00 years ¹
Average showerhead has a flow rate of:	4.00 gallons per minute ⁴
Oxygenics showerhead has flow rate of:	2.00 gallons per minute
Flow reduction:	2.00 gallons per minute

Water:

Average showerhead requires:	80.00 gallons
Retrofit showerhead requires:	40.00 gallons
Showerhead produces an annual reduction of:	14,600.00 gallons
Showerhead produces a lifetime reduction of:	146,000 gallons

Gas:

Average showerhead requires:	0.47 therms
Retrofit showerhead requires:	0.23 therms
% of water heated by gas:	72%
Showerhead produces an annual reduction of:	61 therms
Showerhead produces a lifetime reduction of:	613 therms

Electricity:

Average showerhead requires:	8.88 kWh
Retrofit showerhead requires:	4.44 kWh
% of water heated by electricity:	28%
Showerhead produces an annual reduction of:	454 kWh
Showerhead produces a lifetime reduction of:	4,540 kWh

Number of participants:	249
Installation / participation rate of:	31%

Total reduction from showerhead retrofit:

Annual:	1,126,974 gallons 4,731 therms 35,042 kWh
Lifetime:	11,269,740 gallons 47,314 therms 350,423 kWh

1 - Product life taken from manufacturer.

3 - U.S. Census Bureau, 2003. Population Division, Fertility and Family Statistics Branch

4 - Ridge & Associates, 2001. Southern California Edison: Evaluation of 2000-2001 School Programs.



Savings from Kitchen Aerator Retrofit

Average household size:	2.50 people ³
Average length of use:	2.50 minutes ⁴
Product life:	5.00 years ¹
Average kitchen aerator has a flow rate of:	2.50 gallons per minute ⁴
Retrofit kitchen aerator has flow rate of:	1.50 gallons per minute ⁴
Flow reduction:	1.00 gallons per minute

Water:

Average kitchen aerator requires:	15.63 gallons
Retrofit kitchen aerator requires:	9.38 gallons
Retrofit kitchen aerator produces an annual reduction of:	2,281 gallons
Retrofit kitchen aerator produces a lifetime reduction of:	11,406 gallons

Gas:

Average kitchen aerator requires:	0.09 therms
Retrofit kitchen aerator requires:	0.05 therms
% of water heated by gas:	72%
Retrofit kitchen aerator produces an annual reduction of:	10 therms
Retrofit kitchen aerator produces a lifetime reduction of:	48 therms

Electricity:

Average kitchen aerator requires:	1.74 kWh
Retrofit kitchen aerator requires:	1.04 kWh
% of water heated by electricity:	28%
Retrofit kitchen aerator produces an annual reduction of:	71 kWh
Retrofit kitchen aerator produces a lifetime reduction of:	355 kWh

Number of participants:	249
Installation / participation rate of:	40%

Total reduction from kitchen aerator retrofit:

Annual:	227,213 gallons
	954 therms
	7,065 kWh
Lifetime:	1,136,063 gallons
	4,770 therms
	35,325 kWh

1 - Product life taken from manufacturer.

3 - U.S. Census Bureau, 2003. Population Division, Fertility and Family Statistics Branch

4 - Ridge & Associates, 2001. Southern California Edison: Evaluation of 2000-2001 School Programs.



Appendix A

Savings from Bathroom Aerator Retrofit

Average household size:	2.50 people ³
Average length of use:	2.50 minutes ⁴
Product life:	5.00 years ¹
Average bathroom aerator has a flow rate of:	2.00 gallons per minute ⁴
Retrofit bathroom aerator has flow rate of:	1.00 gallons per minute ⁴
Flow reduction:	1.00 gallons per minute

Water:

Average bathroom aerator requires:	12.50 gallons
Retrofit bathroom aerator requires:	6.25 gallons
Retrofit bathroom aerator produces an annual reduction of:	2,281 gallons
Retrofit bathroom aerator produces a lifetime reduction of:	11,406 gallons

Gas:

Average bathroom aerator requires:	0.07 therms
Retrofit bathroom aerator requires:	0.04 therms
% of water heated by gas:	72%
Retrofit bathroom aerator produces an annual reduction of:	10 therms
Retrofit bathroom aerator produces a lifetime reduction of:	48 therms

Electricity:

Average bathroom aerator requires:	1.39 kWh
Retrofit bathroom aerator requires:	0.69 kWh
% of water heated by electricity:	28%
Retrofit bathroom aerator produces an annual reduction of:	71 kWh
Retrofit bathroom aerator produces a lifetime reduction of:	355 kWh

Number of participants:	249
Installation / participation rate of:	45%

Total reduction from bathroom aerator retrofit:

Annual:	255,614 gallons
	1,073 therms
	7,948 kWh
Lifetime:	1,278,070 gallons
	5,366 therms
	39,740 kWh

1 - Product life taken from manufacturer.

3 - U.S. Census Bureau, 2003. Population Division, Fertility and Family Statistics Branch

4 - Ridge & Associates, 2001. Southern California Edison: Evaluation of 2000-2001 School Programs.



Water Adventure Report Data

Question	Answer	%
1	Did you install the new high efficiency showerhead?	
	1 Yes	31%
	2 No	69%
2	What is the flow rate of your old showerhead?	
	1 0-1.0	26%
	2 1.0-1.5	17%
	3 1.5-2.0	13%
	4 2.0-2.5	22%
	6 3.0+	22%
3	What is the flow rate of your new showerhead?	
	1 0-1.0	22%
	2 1.0-1.5	17%
	3 1.5-2.0	28%
	4 2.0-2.5	17%
	5 2.5-3.0	6%
	6 3.0+	11%
4	Number of bathrooms in residence?	
	1 1	9%
	2 2	43%
	3 3+	48%
5	Number of half bathrooms in residence?	
	1 0	48%
	2 1	41%
	3 2	8%
	4 3+	3%



Appendix B

6	How many toilets are in your home?		
	1	1	4%
	2	2	30%
	3	3	55%
	4	4+	10%
7	How many toilets did you check for leaks?		
	1	0	58%
	2	1	20%
	3	2	14%
	4	3+	8%
8	How many toilets are leaking?		
	1	0	74%
	2	1	23%
	3	2	2%
	4	3+	2%
9	Did you install the bathroom aerator?		
	1	Yes	45%
	2	No	55%
10	Did you install the kitchen aerator?		
	1	Yes	40%
	2	No	60%
11	How many faucets did you check for leaks?		
	1	0	79%
	2	1	11%
	3	2	4%
	4	3+	6%



12	How many faucets are leaking?		
	1	0	85%
	2	1	12%
	3	2	4%
13	How is your water heated?		
	1	Gas	72%
	2	Electric	28%
14	How often is your lawn watered per week?		
	1	0	11%
	2	1	10%
	3	2	11%
	4	3+	12%
	5	Don't know	56%
15	Was your home built before 1992?		
	1	Yes	62%
	2	No	38%
16	Type of residence?		
	1	Single family home	75%
	2	Multi-family (2-4 units)	15%
	3	Multi-family (5-20 units)	10%
17	Is your residence rented or owned?		
	1	Rented	11%
	2	Owned	89%
18	Number of children (age 0-17)?		
	1	1	7%
	2	2	44%
	3	3	35%
	4	4+	14%



Appendix B

19	Number of adults (age 18+)?		
	1	1	10%
	2	2	78%
	3	3	4%
	4	4+	8%
20	Do you have a dishwasher?		
	1	Yes	99%
	2	No	1%
21	Did you work with your family on this program?		
	1	Yes	61%
	2	No	39%
22	Have you and your family changed the way you use water?		
	1	Yes	62%
	2	No	38%
23	Did you like the program?		
	1	Yes	85%
	2	No	15%



Question	Answer	%
1. The materials were attractive and easy to use.		
1	Strongly Agree	50%
2	Agree	50%
3	Neutral	0%
4	Disagree	0%
5	Strongly Disagree	0%
2. The materials and activities were well received by students.		
1	Strongly Agree	0%
2	Agree	50%
3	Neutral	50%
4	Disagree	0%
5	Strongly Disagree	0%
3. The materials were clearly written and well organized.		
1	Strongly Agree	0%
2	Agree	100%
3	Neutral	0%
4	Disagree	0%
5	Strongly Disagree	0%
4. The conservation technologies were easy for students to use.		
1	Strongly Agree	0%
2	Agree	100%
3	Neutral	0%
4	Disagree	0%
5	Strongly Disagree	0%



Appendix C

5. Students indicated their parents supported the program.

1	Strongly Agree	0%
2	Agree	50%
3	Neutral	50%
4	Disagree	0%
5	Strongly Disagree	0%

6. If you had the opportunity, would you conduct this program again?

1	Yes	100%
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7. Would you recommend this program to other colleagues?

1	Yes	100%
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