



ENVIRONMENTAL CONSCIOUSNESS IN HIGHER EDUCATIONAL INSTITUTIONS: A CASE OF SIMS

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Abstract:

In this paper, the environmental consciousness of Srinivas Institute of Management Studies (SIMS) is discussed. The institution displays sensitivity to issues like climate change and environment. It adopts environment friendly practices and takes necessary actions such as – energy conservation, rain water harvesting, waste recycling, carbon neutral etc. Green Audit of its campus and facilities like Audit on Electricity consumption, Audit on water consumption, Audit on printing and paper wastage, Audit on optimum utilization of college elevator/ Lift, Audit on food wastage, Audit on vehicle used in the campus, Audit on mobile phones used in the campus, Audit on fire fighting facility and implementation, Audit on plastic wastage in the campus, and Audit on green plantation facility around the campus are conducted and analyzed. The paper also includes the initiatives taken by the college to make the campus eco-friendly in areas of Energy conservation, Use of renewable energy, Water harvesting, Check Dam construction, Efforts for carbon neutrality, Plantation, Hazardous waste management, E-waste management, and Electricity saving through LED/LCD monitors.

Index Terms: Sensitivity to Issues like Climate Change, Sensitivity to Environmental Issues, Higher Educational Institutions & Green Audit

1. Introduction:

Any organization can sustain for longer period in its business if only it has environmental consciousness. Higher education institutions are not exception in this regard. They should educate their stakeholders in various issues related to environmental degradation and maintain sustainable environment for future generations. Higher educational institutions can take effective steps in improving/maintaining good environment and contribute their service for a concept called green education. In this regard, the educational institutions should display sensitivity to issues like climate change and environmental issues. They should adopt environment friendly practices and takes necessary actions such as – energy conservation, rain water harvesting, waste recycling, carbon neutral etc. Through time bound auditing of various resources consumption, institutions monitor and control the unnecessary wastage of these scarce resources [1-6]. In this paper, we have presented the action plan on environmental consciousness of a higher education institution namely Srinivas Institute of Management Studies (SIMS). The institution displays sensitivity to issues like climate change and environment. It adopts environment friendly practices and takes necessary actions such as – energy conservation, rain water harvesting, waste recycling, carbon neutral etc. It adopted a model of Green Audit of its campus through its innovative practices like Audit on Electricity consumption, Audit on water consumption, Audit on printing and paper wastage, Audit on optimum utilization of college elevator/ Lift, Audit on food wastage, Audit on vehicle used in the campus, Audit on mobile phones used in the campus, Audit on fire fighting facility and implementation, Audit on plastic wastage in the campus, and Audit on green plantation facility around the campus are conducted and analyzed. The paper also include the initiatives taken by the college to make the campus eco-friendly in areas of Energy

conservation, Use of renewable energy, Water harvesting, Check Dam construction, Efforts for carbon neutrality, Plantation, Hazardous waste management, E-waste management, and Electricity saving through LED/LCD monitors.

2. Green Audit on Resource Consumption:

The institution conducts periodic green audit of its campus and facilities. Periodic Audit on electricity consumption, water consumption, paper usage, Plastic waste, Food audit, Vehicle and Green plantation is conducted around the campus. Inspection and supervision of the campus and facilities are being done internally by the head of the institution, maintenance engineer and Gardner on a regular basis to ensure that the institution remain green campus. The internal audit is conducted every year.

Audit on Electricity Consumption:

The College building occupies 3 floors from the first floor. The following is the list of items with the individual power consumption per hour used in the college.

Table 1: Standard power consumption of individual item used in the college per hour

S. No	Particular	Power consumption per hour
1.	Air Conditioner	1.5 KW
2.	Computer	300 W
3.	Network Printer/Xerox Machine	500 W
4.	Inkjet Printer	50 W
5.	Dot Matrix Printer	50 W
6.	Tube Light	40 W
7.	Fan	50 W
8	LCD Projectors	500 W
9	Water Cooler	200 W
10	Lift	5KW
11	Spot light (CFL)	25 W

Assuming that the working hours per day is assumed to be 6 hours. The consumption of power by various items per day is given below:

Table 2: Daily power consumption of different rooms in the college

S. No	Room Particulars	Tube lights	Fans	Computers	Air Conditions	LCD Projectors	Printers	Total power /day in KW
1	Director's chamber	2	2	1	1(sparingly used)	-	1	5
2	Office	4	4	6			2	24
3	Staff rooms	30	40					18
4	Class rooms (15)	75	130			15		84
5	Auditorium	24	24		10	1		69.84
6	Library	34	34	4				25.5
7	Computer Lab	45	45	210			5	425
8	Ladies Room	8	6					3.7
9	Staff toilet	9	3					1
10	Gents Toilet	6	2					0.5

Total daily usage of the power - 656.54 KW or units appr.

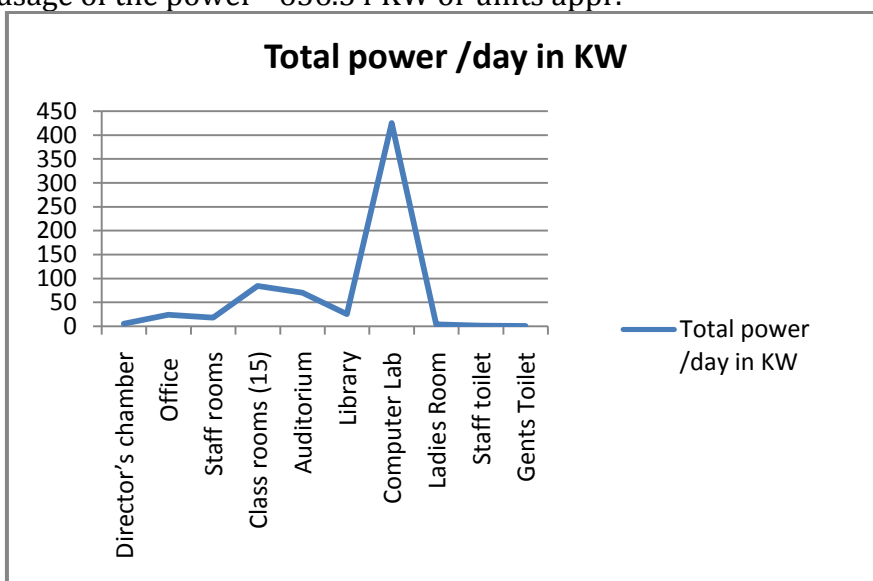


Figure 1: Chart representing the consolidated power consumption per day by different rooms in the college

The consumption of the electricity for the years 2011, 2012 and 2013 are listed below :

Table 3: Power consumption for the three years (unit wise)

S. No	Year	Total Power Consumption in units	Electricity Charges in Rs.
1	2011	177491	9,40,699
2	2012	187490	10,04,187
3	2013	168550	8,93,314

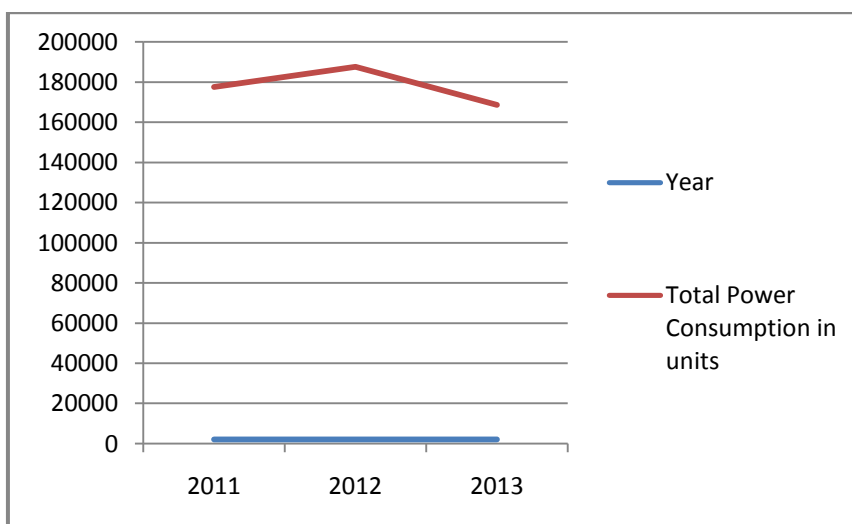


Figure 2: Chart representing power consumption for the three years

It is observed that in the audit for 2011 and 2012, the electricity consumption and cost increased but due to the institutional effort, both consumption and cost could be reduced even though there is an increase in the strength of students. This is because the internal auditing committee had taken a lot of measures in stopping the power wastages observed by

- Constant supervision to switch off lights and fans when not in use.
- Gradual replacement of CRT monitors in the computer lab by LED monitors.

- Window screens which were obstruction to natural light were replaced so that dependents on electrical lighting are reduced.
- Replacement of incandescent bulbs with tube light & CFL lights which consume less energy.

The college has a plan to install solar energy project to completely energize the campus.

Audit on Water Consumption:

The college depends on the following sources for its water requirement:

- ✓ Potable water from the public distribution system maintained by the city corporation which is charged in terms of per liter use of water.
- ✓ Any deficiency in case of water shortage is compensated through purchase of drinking water available in a tanker which is also charged in terms of per litre use of water.
- ✓ The college has a Bore well with a capacity of 5 HP motor which is meant only for Toilets, Cleaning, Gardening etc. This has additional feature of re-chargeability.

The description on consumption of water for last three years 2010-2014 is given below:

Water consumption for the year 2010-11 is 120 lakh of litre cost Rs 1,20,000.

Table 4: Month wise water consumption for the year 2010-11

S. No	Month	Water consumption per month in litres	Price in Rs.
1.	June	12 lakh	12,000
2.	July	12 lakh	12,000
3.	August	12 lakh	12,000
4.	September	12 lakh	12,000
5.	October	8 lakh	8,000
6.	November	8 lakh	8,000
7.	December	12 lakh	12,000
8.	January	12 lakh	12,000
9.	February	12 lakh	12,000
10.	March	10 lakh	10,000
11.	April	5 lakh	5,000
12.	May	5 lakh	5,000

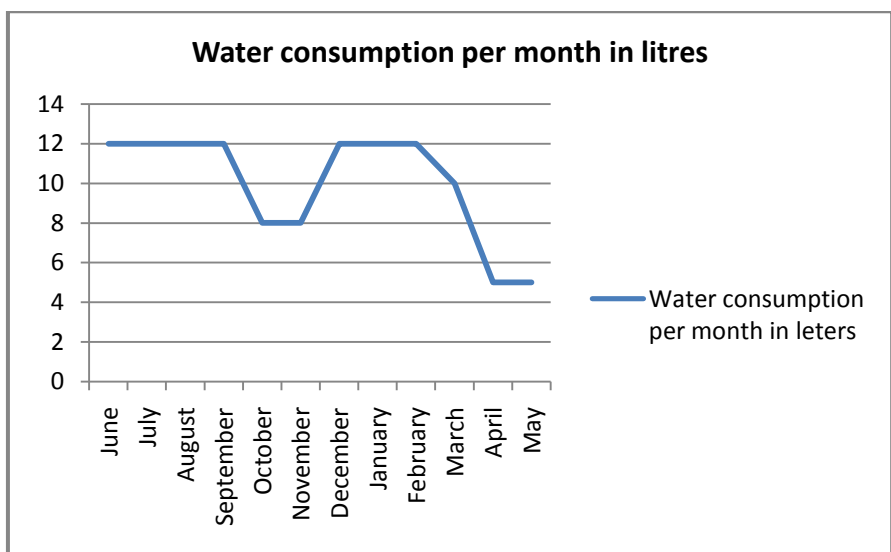


Figure 3: Chart showing the consumption of water during 2010-11

Water consumption for the year 2011-12 is 83 lakh of litre of cost Rs 83,000

Table 5 : Month wise water consumption for the year 2011-12

S. No	Month	Water consumption per month	Price
1.	June	8 lakh	8000
2.	July	8 lakh	8000
3.	August	8 lakh	8000
4.	September	8 lakh	8000
5.	October	6 lakh	6000
6.	November	6 lakh	6000
7.	December	6.5 lakh	6500
8.	January	7.5 lakh	7500
9.	February	7.5 lakh	7500
10.	March	7.5 lakh	7500
11.	April	5 lakh	5000
12.	May	5 lakh	5000

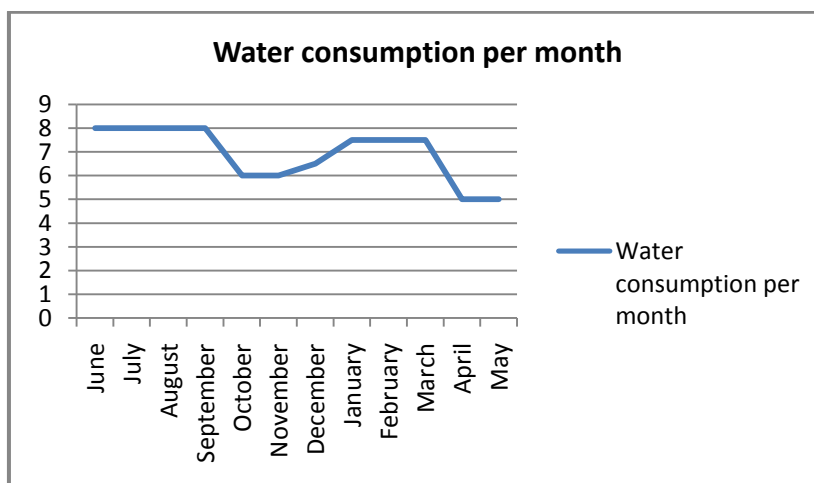


Figure 4: Chart showing month wise water consumption for the academic year 2011-12
Water consumption for the year 2012-13 is 103 lakh litre of cost Rs 1,02,000

Table 6: Month wise water consumption for the year 2012-13

S.. No	Month	Water consumption per month	Price
1.	June	9 lakh	9000
2.	July	9 lakh	9000
3.	August	9 lakh	9000
4.	September	9 lakh	9000
5.	October	7.5 lakh	7500
6.	November	7 lakh	7000
7.	December	8 lakh	8000
8.	January	10 lakh	10000
9.	February	10 lakh	10000
10.	March	9 lakh	9000
11.	April	7.75 lakh	7750
12.	May	6.75 lakh	6750

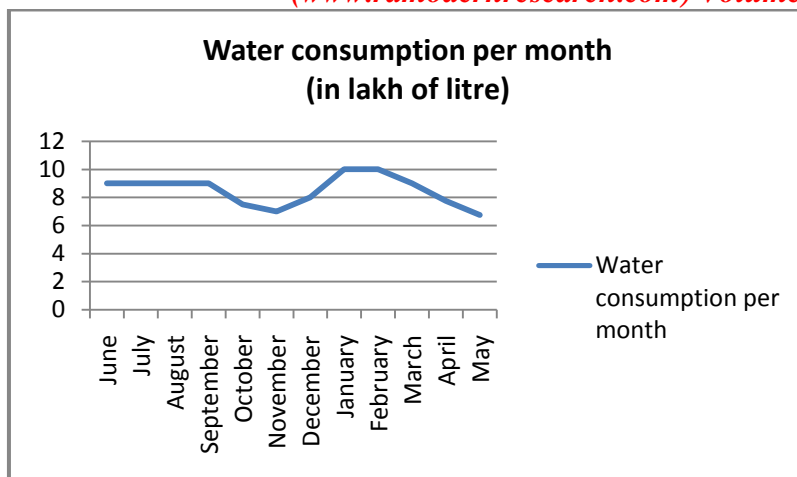


Figure 5: Chart showing water consumption for the year 2012-13

In the college we have two water coolers with purifiers for the students and staff to drink water and we have enough taps in the ladies and gents and staff toilets for the cleaning purposes. Daily consumption is around 35,000 litres of water using corporation and bore well.

Audit on Printing and Paper Wastage:

Our college has two heavy duty printers cum xerox machine in the office which is outsourced. For every page of print or xerox, the college is paying Rs. 0.35 excluding the paper.

Table 7: Daily usage of the printer

S. No	Department	No. of Print out in pages	Cost in Rs
1.	Principal Chamber	50	17.50
2.	Office	600	210
3.	MBA	100	35
4.	MCA	100	35
5.	MSW	100	35
6.	BCA	100	35
7.	BBM and B Com	100	35

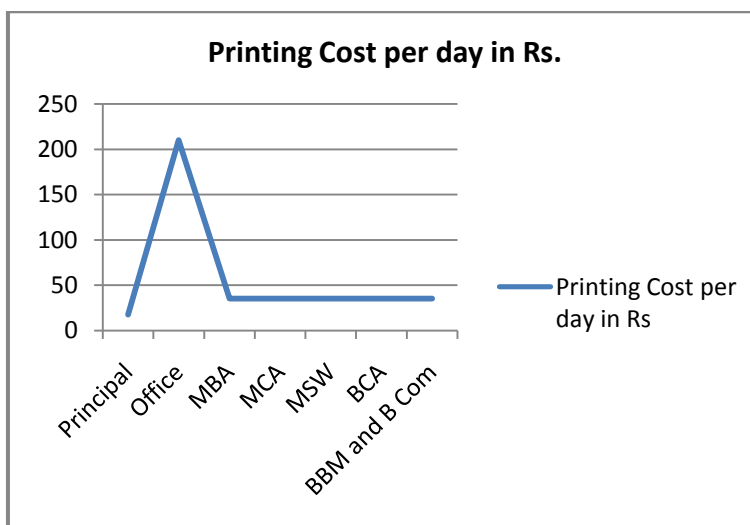


Figure 6: Daily printing rate by various departments.

Daily consumption of paper for the print and photocopy: 1,150 pages. Paper wastages per day: 20 to 25 pages apprx. Monthly payment for printing & Xerox: Rs 10, 000. The dot matrix printer is used in the lab only for the print out of the students.

Audit on Optimum Utilization of College Elevator/Lift:

The lift facility is provided to the staff members and guests visiting the college. The lift is operated by an attender. The lift service is out sourced for AMC. The use of ramp and stair-cases are encouraged to save the electricity.

Audit on Food Wastage:

The college canteen prepares food based on an estimate provided by the college so as to minimize the wastage.

Audit on Vehicle Used in the Campus:

The college operates 6 buses to transport students from the hostel and return. Daily the buses take 4 trips from hostel to college and back. Two trips in the forenoon and two trips in the afternoon.

Table 8: Daily expenses of the college buses during 2010-11

S. No.	Bus Number	Distance travelled per day	Mileage	Daily cost in Rs including diesel and maintenance
1.	11	16 Km	5	150
2	12	32 km	5	300
3.	13	24 km	5	200
4.	14	24 km	5	200

Daily cost for the college is Rs 850

Table 9: Monthly expenditure for four buses in the academic year 2010-11

S. No.	Month	Cost for four buses including maintenance in Rs
1.	June	21250
2.	July	21250
3.	August	21250
4.	September	21250
5.	October	15000
6.	November	5000
7.	December	20000
8.	January	21250
9.	February	21250
10.	March	21250
11.	April	5000
12.	May	2000

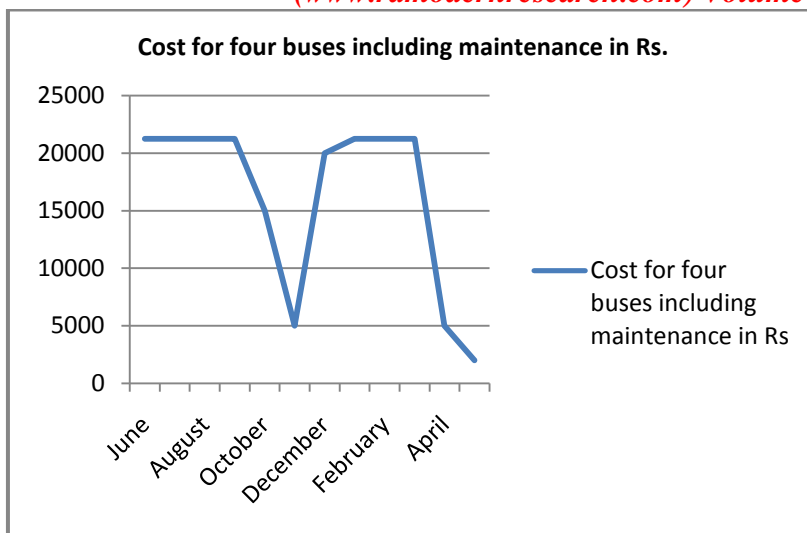


Figure 7: Chart showing expenditure for the four buses in the academic year 2010-11

Table 10: Daily expenses of the college buses during 2011-12

S. No.	Bus Number	Distance travelled per day	Mileage	Daily cost in Rs including diesel and maintenance
1.	11	16 Km	5	200
2.	12	32 km	5	400
3.	13	24 km	5	300
4.	14	24 km	5	300

Daily cost for the college is Rs 1,200

Table 11: Monthly expenditure for four buses in the academic year 2011-12

S. No.	Month	Cost for four buses including maintenance in Rs
1.	June	30000
2.	July	30000
3.	August	30000
4.	September	30000
5.	October	22000
6.	November	8500
7.	December	22000
8.	January	30000
9.	February	30000
10.	March	22000
11.	April	8500
12.	May	3000

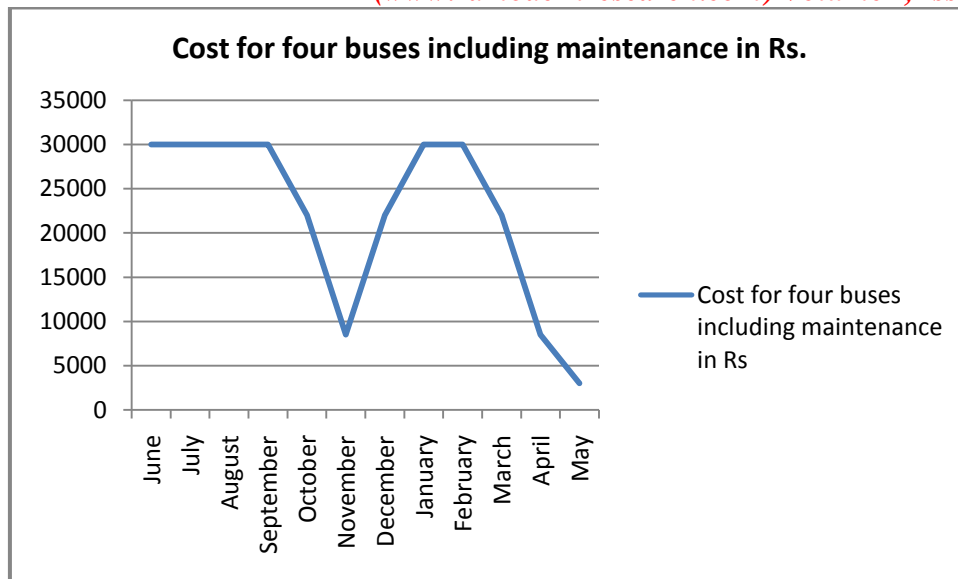


Figure 8: Chart showing expenditure for the four buses in the academic year 2011-12

Table 12: Daily expenses of the college buses

S. No	Bus Number	Distance travelled per day	Mileage	Daily cost in Rs including diesel and maintenance
1.	11	16 Km	5	250
2.	12	32 km	5	440
3.	13	24 km	5	340
4.	14	24 km	5	340
5.	15	16 km	5	250
6.	16	32 km	5	440

Daily cost for the college is Rs 2060

Table 13: Monthly expenditure for six buses in the academic year 2012-13

S. No	Month	Cost for six buses including maintenance in Rs
1.	June	51500
2.	July	51500
3.	August	51500
4.	September	51500
5.	October	39000
6.	November	12500
7.	December	39000
8.	January	51500
9.	February	51500
10.	March	39000
11.	April	12500
12.	May	5000

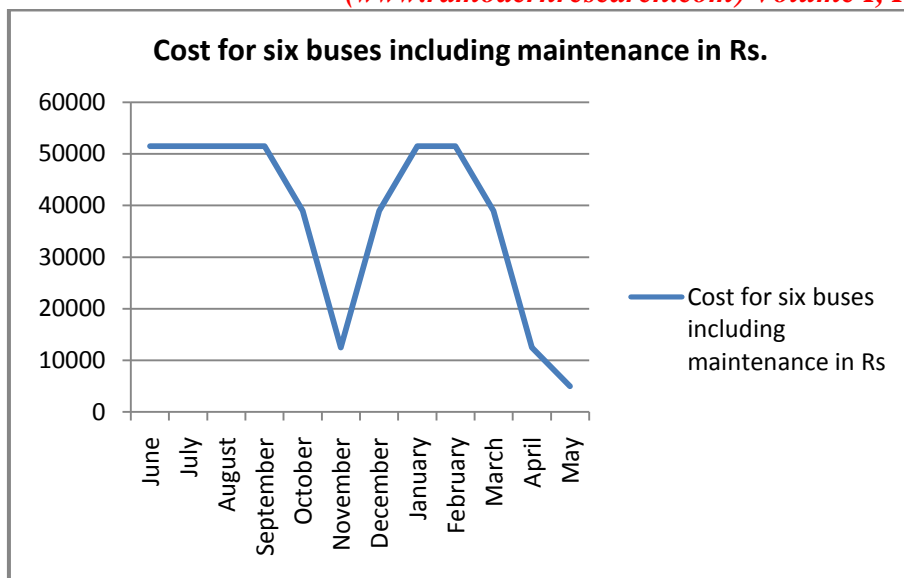


Figure 9: Chart showing expenditure for the six buses in the academic year 2012-13

Inference:

- There is a gradual increase in the expense due to increase in fuel price year by year
- The increase is also due to increase in the maintenance work
- The college has a plan to shift its hostels to closer locations to cut down the expenditure on the transport.

Audit on Mobile Phones Used in the Campus:

The college does not permit the students carry mobile phones inside the college campus. Use of mobile phones is potential health hazard as well as social nuisance in academic environment.

Audit on Fire Fighting Facility and Implementation:

The college has the fire safety measures installed in each floor with the fire extinguishers for the protection from any fire related problems.

Audit on Plastic Wastage in the Campus:

The college does not encourage any plastic carry bags and use only cloth bags for the daily activities. However, while buying computers and electronic goods, the plastic packing materials are sold as junk material. The NSS team of our college conducts programs of cleaning the campus for any plastic wastage.

Audit on Green Plantation Facility around the Campus:

The surroundings of the college is maintained green with fruit trees and other plants. Potted plants and cultivated plants are also grown in possible places inside the college.

3. Initiatives to Make Eco-Friendly Campus:

Energy Conservation:

The college building is constructed aesthetically such that natural light and air flow is maximum utilized

Use of Renewable Energy:

The implementation of solar energy is under planning stage for all the lights and fans in the college. The estimated cost of this project is over 1.05 crores.

Water Harvesting:

The entire rain water flowing from the roof is harvested through re-charging pit for recycling the bore well facility.

Check Dam Construction: No applicable

Efforts for Carbon Neutrality:

The college contributes very little to the carbon. Traces if any expected to be from the Diesel power Generator and automobiles is neutralized by maintaining trees around.

Plantation:

The surroundings of the college are maintained green with fruit trees and other plants. Potted plants and cultivated plants are also grown in possible places inside the college.

Hazardous Waste Management: Not applicable.

E-Waste Management:

Non repairable computers, motherboards, monitors, hard disks and other electronic devices are disposed through selling them to for away vendors.

Electricity Saving Through LED/LCD Monitors:

The computer lab was having CRT monitors till 2008-09. The new introduction of LCD and LED monitors are attractive in several ways like, less space consumption, more clarity and less power consumption. Based on these factors we have replaced all our old CRT monitors with new LCD monitors. Now recent purchases are having LED monitors which consume less power compared to LCD and CRT monitors.

4. Strategy of the Institution:

The institution displays sensitivity to issues like climate change and environmental issues in following ways:

- ✓ Display of Posters & Banners in the College.
- ✓ Display of Banners on Climate change & Clean Environment in College website.
- ✓ Information on Energy Conservation pasted in all classrooms.
- ✓ Energy & Environment activities under Student Forum.
- ✓ Articles on Environment Consciousness posted in college website & e-Magazine:
- ✓ Programs under SIRRA focusing on campaign through street play and folk art.
- ✓ Programs under NSS related to plastic free environment.
- ✓ Decreased use of papers through SMS, and e-mails replacing hard copy of letters to attain Paper - free Office.
- ✓ The college offers environment related Certificate programs for P.G. Students
- ✓ The college supports LCD technology in teaching to maintain dust free class rooms.
- ✓ The college celebrates World Environmental Day
- ✓ Green Plantation Programs in nearby schools by MSW students
- ✓ The college gives emphasis to research on green business through establishment of a Centre on Green Business.
- ✓ The college conducts student competition on environmental issues.

5. Conclusion:

Srinivas Institute of Management Studies has adopted green audit of its campus facilities and actions have been taken to decrease the resource wastage. Based on results of audit of various resources the students and faculty are educated to conserve food, drinking water, electricity & waste management and there is a substantial improvement in their attitude towards preserving green environment.

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