THE PERFORMANCE OF THE IRISH GREEN-SCHOOLS PROGRAMME

RESULTS OF THE GREEN-SCHOOLS RESEARCH PROJECTS

Research by Dr. Michael John O' Mahony and Frances Fitzgerald

Report compiled by Dr. Michael John O' Mahony

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Environmental Education Unit
An Taisce
Tailor's Hall
Back lane
Dublin 8
Tel. 01 4541819 Fax. 01 4541802
Email - education @antaisce.org

An Taisce
The National Trust for Ireland

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Tailor's Hall
Back Lane
Dublin 8
Tel. 01 4541819 Fax. 01 4541802
Email - education @antaisce.org
Website: www.antaisce.org

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Green-Schools Researcher	Dr. Michael John O' Mahony
Green-Schools Researcher	Ms. Frances Fitzgerald

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Member is open to all.

Tel: (01) 4541786 Fax: (01) 4533255 e-mail: info@antaisce.org

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We would like to thank the principals, co-ordinating teachers, class teachers and caretakers from the surveyed schools who took part in the surveys, for their time and accommodating cordiality. We would also like to thank Anthony Purcell, An Taisce Green-Schools Manager for access to the Green-Schools databases and Dr. Colin Lawton, An Taisce Environmental Education Unit Manager for advice and consultation. Finally, we would like to thank the thousands of students who took part in the surveys. Go raibh míle maith agaibh.

Michael John O' Mahony

Frances Fitzgerald

Introduction

The following report outlines the results of the recent research undertaken by An Taisce into the performance of the Green-Schools programme in Ireland. The research took place during year 4 of the programme in Ireland (September 2000-June 2001).

The performance of the programme was assessed and evaluated in two main areas:

1) The quantification of the diversion of waste from landfill achieved by the programme.
2) The impact of the programme on environmental awareness, behaviour, environmental leadership and a number of related topics.

On this basis the report is divided into two parts.

Part I deals with a national survey of the diversion of waste from landfill achieved by the Green-Schools programme. This work was undertaken by Frances Fitzgerald as part of an M.Sc. in Sustainable Development at the Dublin Institute of Technology, Bolton Street, Dublin.

Part II the results of a nation-wide study into the social aspects of the programme (i.e. environmental awareness, behaviour, opinion leadership and a number of related topics). This work was undertaken for An Taisce by Dr. Michael John O' Mahony.

Also included at the beginning of the report is a brief summary of the Green-Schools programme and also some information about An Taisce.

Chapter 1

The Green Schools Programme

1 The Green-Schools Programme

1.1 Introduction & Background

Green-Schools is a European-wide environmental education programme, which aims to promote and acknowledge whole school action for the environment. Green-Schools involves taking environmental issues from the curriculum and applying them to the day-to-day running of the school. Green-Schools is both an education programme and an award scheme. The Green-Schools programme is an initiative of FEE (The Foundation for Environmental Education) with over 5000 schools within 24 countries across Europe participating in the programme. Within Ireland, An Taisce -The National Trust for Ireland, has been operating Green-Schools in partnership with local authorities and with financial support from Coca-Cola for the past 4 years. To date (November) over 900 Irish schools have registered for the programme and 97 schools have completed the programme and have been awarded the Green-Flag. This makes the Irish Green-Schools programme the fastest growing in Europe. The current themes being undertaken by the Green-Schools programme are Waste and Litter. The energy theme will commence in the coming school year (2001-2002). This will be followed in the coming years by water, transport and healthy living.

Once a school has registered for the programme they can then undertake the seven steps or elements of the programme.

The seven steps are as follows:

1) *The Green-Schools Committee* – The Green-Schools Committee comprises pupils, teachers, non-teaching staff, parents and members of the community. The committee directs the school's involvement in the project.
2) *The Environmental Review* – This step involves the school examining its environmental impact in order to identify targets for action and improvement.
3) *The Action Plan* – This comprises a number of specific time-tabled targets identified from the review.
4) *Monitoring and Evaluation* – This ensures that progress towards targets is followed, that any necessary changes are made to the action plan and that achievement is

celebrated. It further ensures that environmental education and care is an on-going process in the school

5) *Integration of the project into curriculum work* – This is provided by the curriculum materials which give good ideas on how to integrate environmental issues into lessons.
6) *Informing and involving the wider community with the project* - This is a publicity campaign that keeps the school and wider community involved and informed through displays, assemblies, press coverage and a day of action.
7) *Formulation of a Green-Code* – this is a statement of the school's environmentally friendly ethos.

When the school has adopted the seven steps of the programme they can apply for the Green-Flag Award. The school's application is reviewed and if necessary recommendations for further action are made. When the recommendations have been implemented the school is given an assessment visit. Once a school has been awarded it can fly the flag for two years and then it has to renew its application.

An Taisce - The National Trust for Ireland, is an independent, environmental, non-government organisation (NGO). The present studies were undertaken by An Taisce's Environmental Education Unit, which is based in An Taisce's headquarters in Dublin. Other campaigns include the *Blue Flag Awards for Beaches and Marinas*, *Young Reporters for the Environment* and *Learning about Forests*. An Taisce also operates Ireland's largest anti-litter campaign, *National Spring Clean* and various litter monitoring and surveying projects.

PART I

THE DIVERSION OF WASTE FROM LANDFILL ACHIEVED BY THE GREEN-SCHOOLS PROGRAMME IN IRELAND

Researcher Frances Fitzgerald

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Chapter 2

Introduction & Methodology

2. Introduction & Methodology

2.1 Introduction

As outlined on pages 8 and 9 the Green-Schools programme is an environmental education programme that encourages and acknowledges whole school action for the environment. The current study focused on one of the current themes of the programme, which is waste minimisation and recovery. The primary aim of this work was to quantify any reduction in waste to landfill achieved by the programme. As indicated above this research was undertaken by Frances Fitzgerald as part of an M.Sc. in Sustainable Development at the Dublin Institute of Technology, Bolton Street, under the supervision of Dr. Michael John O' Mahony, Environmental Education Unit, An Taisce and Ms. Éanna Ní Lamhna, Dublin Institute of Technology, Bolton Street.

2.2 Methodology & Approach

The approach taken to the project was to undertake a comparative study of the schools undertaking the programme. At the time of initiating the study (December 2000) over 800 primary and secondary schools were participating in the Irish Green-Schools Programme. Of these 48 schools had completed the programme and had been awarded the Green-Flag. In order to monitor any reduction in waste to landfill achieved by the programme the participating schools were divided into three groups on the criteria of where they were in the programme.

These groups were:

1. Pre-Action Plan schools
2. Post-Action Plan Schools
3. Awarded schools

The first group of schools (i.e. pre-action plan schools) were defined as schools that had just started the programme and had not yet implemented the fundamental component of the programme, the Action Plan, prior to the study. These schools were assumed to be broadly similar to schools that were not involved in the programme and would provide the baseline information on the amount of waste produced in a typical school not involved in the Green-Schools programme.

The second group of schools (i.e. post-action plan schools) were defined as schools that had implemented their Action Plan but had not yet applied for the Green-Flag Award.

The third group of schools were schools that had completed the programme and had been awarded the Green-Flag.

Accurate monitoring of all these schools would not have been possible. Therefore, a sample number of schools from each group were taken.

The number of schools sampled from each group and the population (students and teachers) of each sample group are outlined in the table below.

	Pre-Action Plan	**Post-Action Plan**	**Awarded**
No. of Schools	9	14	24
Population	2,977	3,344	5,011

Table 2.2 (a) Number of Schools and Populations from each group

The names and locations of the schools that participated in the survey are outlined in **Appendix I**.

To evaluate the performance of the programme the schools participating in the study were asked to weigh the mass of waste that was destined to landfill from the school over a fixed survey period. The survey period taken was from February 5th until March 9th 2001 (five weeks). The schools noted the weekly total mass of waste going to landfill and also gave a qualitative description of this waste. Along with these data the school also recorded the school population (staff and students), the number of days the school was open, and any occasions (e.g. sports days etc.) that could generate larger amounts of waste over the survey period.

From the above data the mass of waste to landfill per capita per day value was calculated for each school. The values from each school group were then averaged and compared.

Along with the above data the schools were asked to provide the following background information.

- School type (primary/secondary/boys/girls/mixed/rural/urban).
- If there was a waste disposal charge for the school.
- If the school was monitoring waste going to landfill prior to the survey and by what method.
- The number of and types of recycling schemes currently operating in the school.
- A qualitative indication of the main types of waste destined for landfill.

Chapter 3

Results

3. Results

3.1 Waste to landfill per capita per day values

The waste to landfill per capita values for the three groups of schools surveyed are outlined in **Fig. 3.1 (i)** and **Table 3.1 (a)** below.

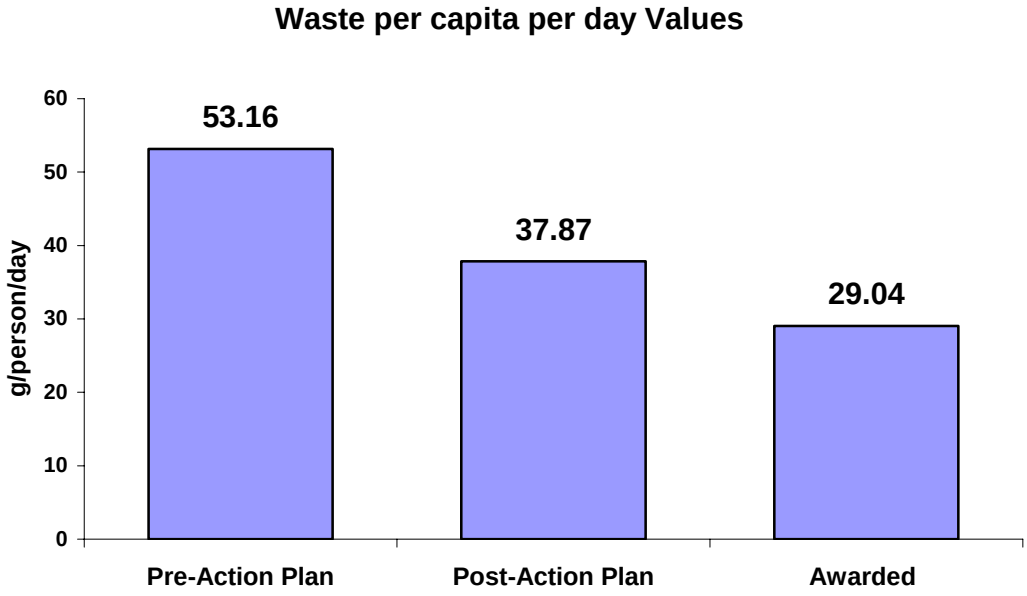

Fig. 3.1 (i) Graph of average waste to landfill per capita values for the three school groups.

	Pre-Action Plan	Post-Action Plan	Awarded
Waste per capita per day	53.16g	37.87g	29.04g

Table 3.1 (a) Average waste per capita values for the three school groups

From these results it is apparent that a considerable waste to landfill reduction occurs during a school's progress through the programme. The reduction revealed in the current study by schools that had completed the programme was 45%.

The range of waste to landfill per capita values within the 9 Pre-Action Plan Schools was from 20.07g/person/day to 117.44g/person/day. The range of waste to landfill per capita values within the 14 Post-Action Plan Schools was from 12.76g/person/day to

69.02g/person/day. The range of waste to landfill per capita values within the 24 Awarded Green-Schools was from 2.19g/person/day to 54.00g/person/day.

3.2 Effect of background characteristics on the Waste to Landfill per capita values

The table below outlines the breakdown of the school types involved in the waste monitoring survey.

	Primary	Secondary	Boys	Girls	Mixed	Rural	Urban
Awarded	24	0	2	4	18	11	13
Pre-Action Plan	5	4	1	0	8	8	1
Post-Action Plan	11	3	2	3	9	7	7

Table 3.2 (a) Breakdown of school types participating in the current study

From the current study the following features were noted as regards the effect of the background characteristics:

3.2.1 Effect of School Population

Indications from the current study would imply that the larger the school population the larger the waste to landfill per capita values (see **Fig. 3.2.1 (i)** below).

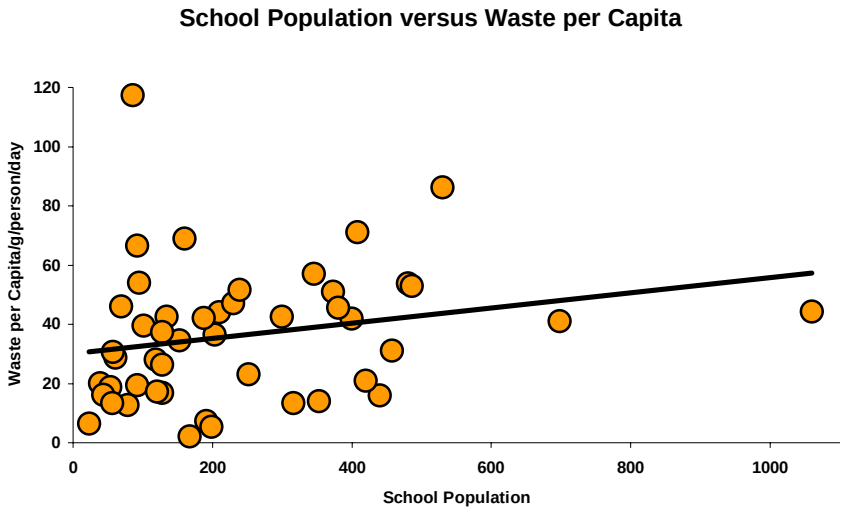

Fig. 3.2.1 (i) Plot of school population against waste to landfill per capita value of all schools in the current study.

3.2.2 Differences between Primary and Secondary schools

Secondary schools produced more waste to landfill per capita than primary schools. This was accounted for by the longer school day, the use of more materials in the school and the general larger size of secondary schools. The average per capita values are outlined in **Fig. 3.2.2 (i)** below.

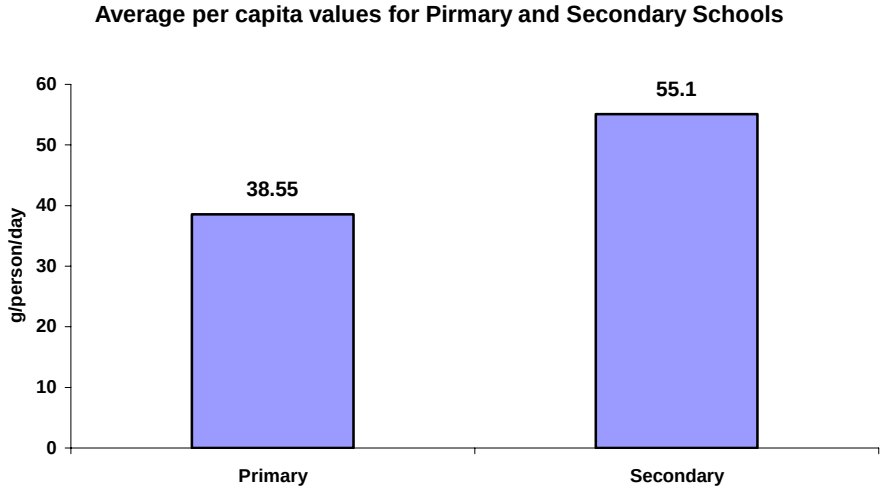

Fig. 3.2.2 (i) Comparison of average per capita values for primary and secondary schools

3.2.3 Differences between Urban and Rural Schools

Urban schools typically generated slightly more waste to landfill than rural schools. This could be accounted for by the general larger size of urban schools. The average per capita values are outlined in **Fig. 3.2.3 (i)** below.

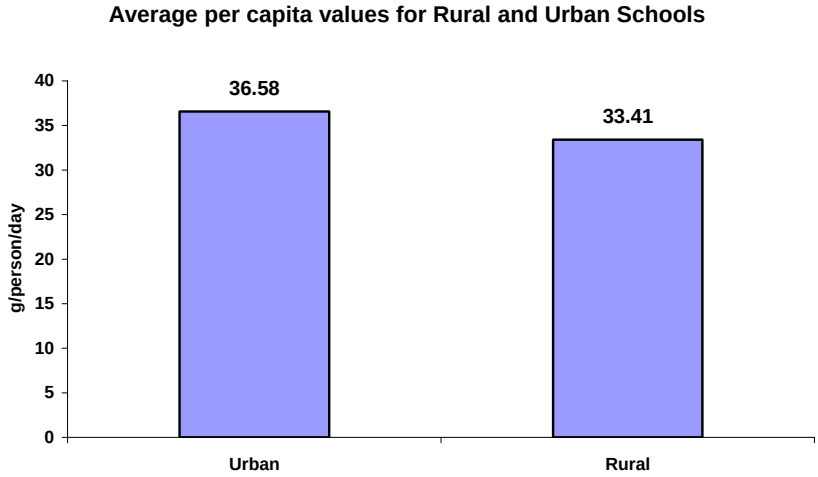

Fig. 3.2.3 (i) Comparison of average per capita values for urban and rural schools

3.2.4 Effect of Waste Disposal Charges

39 out of the 47 schools surveyed were being charged for waste disposal. Several different methods of payment were being used

- Per Bag
- Per Bin
- Per Week
- Per Month
- Per Year

The current study indicates that schools that were paying a waste disposal levy were producing less waste for landfill than those that didn't have to pay (see **Fig. 3.2.4 (i)** below)

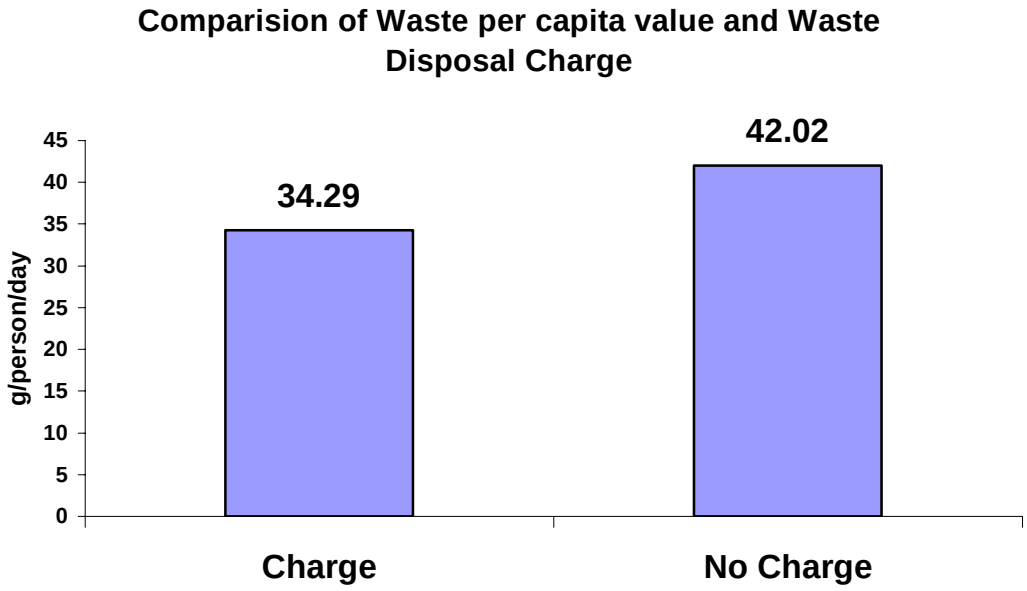

Fig. 3.2.4 (i) Comparison of waste per capita values and waste disposal charges

3.2.5 Effect of Waste Monitoring

26 out of the 47 schools surveyed were monitoring their waste prior to the survey. Monitoring was being undertaken by a number of methods. These included monitoring by weight, by volume, counting the number of bags or bins going to the landfill. From the current study, schools that monitored their waste typically generated less waste to landfill (see **Fig. 3.2.5 (i)** below).

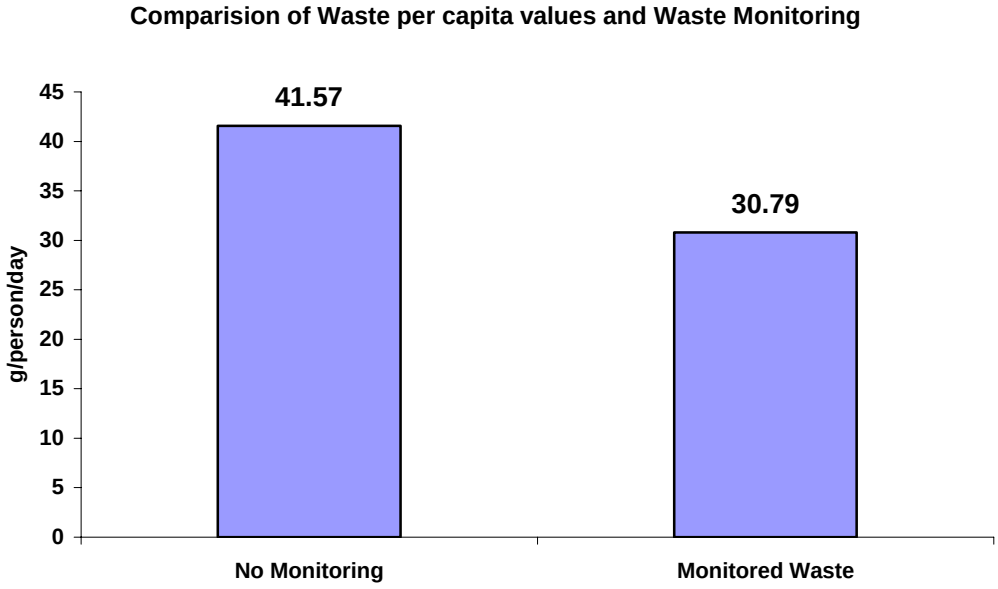

Fig. 3.2.5 (i) Comparison of waste to landfill per capita values and waste monitoring

3.2.6 Number of recycling projects

The number of recycling and reuse projects was higher within Awarded Green-Schools. However, most schools had recycling and reuse schemes before they undertook the Green-Schools programme. The current study would indicate that the larger the number of projects the lower the waste per capita value (see **Fig. 3.2.6 (i)** below).

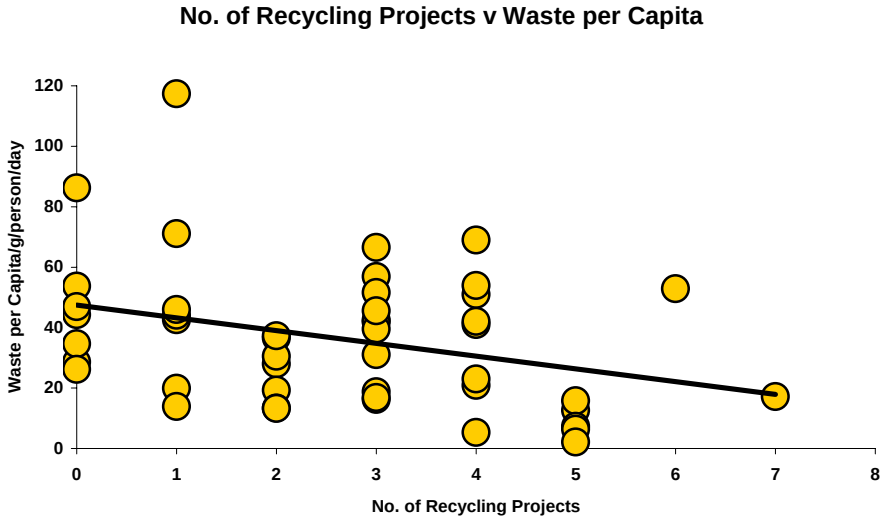

Fig. 3.2.6 (i) Plot of number of recycling projects within school and per capita waste to landfill.

3.3 Waste Composition

The following qualitative information was also obtained over the survey period. The most common types of waste destined for landfill were:

- Sweet Wrappers
- Juice/Milk/Yoghurt Cartons
- Tin Foil
- Paper Hand Towels
- Plastic Packaging
- Crisp Packets
- Sugar Wrappers
- Used Markers
- Plastic Bottles
- Floor Sweepings and Dust.

Appendix

Appendix 1 - Schools that participated in the Waste Monitoring Study

A very big thank you to all the pupils, care-takers, principals, other staff and especially the co-ordinating teachers in the following 47schools who so enthusiastically responded to the challenge of this study. Your efforts and hard work are gratefully appreciated.

1. Abbey CBS, Tipperary
2. Ballycanew NS, Wexford
3. Bayside Junior School, Dublin
4. Carnaun NS, Galway
5. Carysfort NS, Wicklow
6. Cloonlyon NS, Mayo
7. Convoy Joint NS, Donegal
8. Cranford NS, Donegal
9. Creagh NS, Galway
10. Creggs Central NS, Galway
11. Faha NS, Kerry
12. Feenagh NS, Limerick
13. Fenor NS, Waterford
14. Kennedy Park NS, Wexford
15. Lauragh NS, Kerry
16. Monsignor Mc Carthy, Roscommon
17. Mountmellick Community School, Laois
18. Portlaw NS, Waterford
19. Rathmichael NS, Dublin
20. Sacred Heart School, Offaly
21. Scoil Aonghusa, Louth
22. Scoil Bhride Naofa, Kildare
23. Scoil Caitriona Senior, Galway
24. Scoil Chonglais, Wicklow
25. Scoil Eanna, Waterford
26. Scoil Iosaif Naofa, Galway
27. Scoil an Linbh Iosa, Kildare
28. Scoil Mhuire na nAird, Wicklow
29. Scoil Naisiunta an Chlochain, Kerry
30. St. Clares GNS, Kerry
31. St. Francis BNS, Kerry
32. St. James's NS, Galway
33. St. Josephs GNS, Laois
34. St. Josephs, Tipperary
35. St. Kerrils NS, Galway
36. St. Kierans BNS, Limerick
37. St. Maelruains Senior School, Dublin
38. St. Marys NS, Kildare
39. St. Marys NS, Roscommon
40. St. Michaels College, Kerry
41. St. Michaels GNS,Wicklow
42. St. Mochullas, Clare
43. St. Senans NS, Clare
44. St. Thomas' Community School,Wicklow
45. Tiernasligo NS,Donegal
46. Tuam Vocational School, Galway
47. Whitechurch NS, Waterford

PART II

THE PERFORMANCE OF THE IRISH GREEN-SCHOOLS PROGRAMME – AN ASSESSMENT AND EVALUATION OF ENVIRONMENTAL AWARENESS, BEHAVIOUR, OPINION LEADERSHIP AND RELATED TOPICS

Researcher Dr. Michael John O' Mahony

Environmental Education Unit
An Taisce
Tailor's Hall
Back lane
Dublin 8
Tel. 01 4541819 Fax. 01 4541802
Email - education @antaisce.org

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Survey Highlights

When Irish primary school students from schools that have completed the Green-Schools programme are compared with students from primary schools that have never undertaken the programme for their levels of environmental awareness, behaviour, opinion leadership and a number of related topics the following results are apparent.

- Awareness levels about environmental issues among both types of students are very similar.

- When it comes to positive behaviour towards the environment, students within the awarded Green-Schools are less likely to drop litter while being more likely to participate in local environmental projects, conserve water and energy and think about the environment when making a purchase.

- Green-Schools students discuss the environment and associated issues in more settings, more often. Discussion within the classroom setting is particularly high among Green-Schools students. Furthermore, Green-Schools students generally encourage others to be environmentally friendly more than their Non-Green School counterparts. In essence the Green-Schools students are better environmental opinion leaders.

- Green-Schools students feel that environmental problems are an urgent problem whereas Non-Green-Schools students consider these to be more of a problem for the future.

- Green-School students identify teachers as the main source of information on the environment. Among Non-Green-Schools students television and radio is the main source of this information.

- Recycling levels of glass, paper/cardboard and aluminium along with levels of home composting are higher within the homes of Green-Schools students than within the homes of Non-Green-Schools students.

- 91% of students within Non-Green-Schools felt that they could do something about the state of the environment. This number was even higher among Green-Schools students at 96%.

- The main environmental concern indicated by both Green-Schools and Non-Green-Schools students was litter. This was followed among Green-Schools students by the lack of an environmentally friendly culture in Ireland and among Non-Green-Schools students by the lack of recycling facilities in Ireland.

- The current work has revealed a moderate positive relationship between behaviour towards the environment and opinion leadership (discussion and encouragement) among both Green-Schools and Non-Green-Schools students.

- The current study indicates that awareness levels do not directly effect behaviour towards the environment.

Executive Summary

This report details the results of the recent research undertaken by the Environmental Education Unit of An Taisce into the social impacts of the Green-Schools programme in Ireland. In essence, is the programme having any success in improving the student's attitudes and behaviour towards the environment? The research comprised a nationwide comparative study of 5th and 6th class primary school students (age range 10-13 yrs. old) from awarded Green-Schools with 5th and 6th class primary school students from Non-Green-Schools i.e. schools that had never undertaken the programme. 654 students from 17 awarded Green-Schools and 654 students from 19 Non-Green-Schools were surveyed between March-June 2001. The survey method used was a personally issued questionnaire. The questionnaire contained 15 questions which were primarily aimed to assess the levels of environmental awareness/knowledge, behaviour and opinion leadership among the students. Related topics such as the urgency of environmental issues, sources of information on the environment, recycling levels within student's homes, attitudes towards the Local Agenda 21 concept (personal efficacy) and the students main environmental concerns were also assessed within the questionnaire. Background and reference data was also gathered on age, gender, habitation, mobile phone ownership and Internet access at home.

Environmental knowledge/awareness levels are very similar for the two groups. This trait was evaluated with five true or false and four multiple-choice questions. The Green-Schools students scored slightly higher with a score of 4.77 out of 9 in comparison to 4.53 out of 9 for Non-Green-Schools students. However, the difference in this trait is not statistically significant. Furthermore, the rank from most to least correctly answered question was very similar within the two groups. It is important to note that comparisons with similar assessments by previous surveys on these levels among the Irish adult population indicate that the students within this current study scored notably higher.

As regards positive behaviour towards the environment the Green-Schools students scored significantly higher. To assess behaviour the students were asked if they 'Always', 'Sometimes' or 'Never' undertook certain actions. These actions were dropping litter, participating in local environmental projects, conserving water, conserving electricity and buying environmentally friendly products. Green-Schools students scored 5.58 out of ten whereas Non-Green–Schools students scored 4.75 out of 10. Overall, the Green-Schools students are less likely to drop litter and more likely to participate in local clean ups and

environmental projects, conserve water and electricity and consider the environment when making a purchase.

Environmental opinion leadership levels among Green-Schools students are considerably higher than among Non-Green-School students. Green-school students scored 2.06 out of 5 with Non-Green-Schools students scoring 1.53 out of 5. To assess opinion leadership with respect to the environment the students were asked if they had discussed the environment in a number of settings in the month prior to surveying. The settings given were at home, with friends, in the classroom or not at all. Furthermore, the students were asked if they 'Always', 'Sometimes' or 'Never' encouraged others to be more environmentally friendly. Levels of discussion are broadly similar at home (~20%) and with friends (~10%). However, discussion levels within the classroom settings are much higher among Green-Schools students (GS-80%, NGS–49%). Almost one-third (32%) of Non-Green-School students admitted to not having discussed the environment at all in the month prior to surveying in comparison to less than one in ten (9%) of Green-Schools students. The number of Green-Schools students who 'Always' encourage others to be environmentally friendly is almost twice that of Non-Green-School students (GS–11%, NGS-6%). 72% of Green-Schools and 62% of Non-Green-School students indicated they 'Sometimes' encouraged others to be more environmentally friendly. Almost one third (31%) of Non-Green-School students admitted to 'Never' encouraging others to be more environmentally friendly, in comparison to 16% of Green-Schools students.

The main sources of information about the environment indicated by Green-Schools students are teachers (83%), followed by television/radio (56%), books/newspapers/ magazines (43%), family/friends (30%) and the Internet (18%). For Non-Green-Schools students the results are broadly similar except the rank of the teacher and television-radio is reversed with television-radio (67%), teachers (61%), books/newspapers/ magazines (45%), family/friends (31%) and the Internet (19%). The number using the Internet in both groups is particularly interesting as almost half (47%) from each group indicated they had access to the Internet at home.

Environmental problems are seen as more of an urgent problem among Green-Schools students (GS–47%, NGS–30%), whereas Non-Green-School students feel environmental problems are more of a problem for the future (NGS–51%, GS–42%).

The levels of recycling of paper/cardboard, aluminium and glass are higher within the homes of Green-School students. Home composting levels are also higher.

90.8% of Non-Green-Schools students felt that they could do something about the state of the environment. This number was even higher among Green-Schools students at 95.6%.

The response rate of Green-Schools students to an unprompted, optional, open-ended, qualitative question on their concerns about the environment was slightly higher (NGS-48%, GS-52%). The main unprompted environmental concern for both Green-Schools and Non-Green schools students was litter. This was followed among Green-Schools students by the lack of an environmentally friendly culture in Ireland, landfill and destruction of the ozone layer. Among Non-Green-Schools students litter was followed by the lack of recycling facilities in Ireland, car pollution and by the lack of an environmentally friendly culture in Ireland.

The current research indicates that there is a direct positive relationship between a student's behaviour towards the environment and opinion leadership. In essence it appears that the more often the student discusses the environment particularly within the classroom setting and the more often they encourage others, (and are themselves encouraged), to be environmentally friendly the more positive their behaviour is towards the environment. The current study has found no direct link between a student's awareness levels and behaviour.

Chapter 4

Introduction & Methodology

4 Introduction & Methodology

4.1 Introduction & Approach

The approach taken to the present survey was one of a comparative study of 5th and 6th class primary school students from Awarded Green-Schools with 5th and 6th class primary school students from Non-Green–Schools (i.e. primary schools who have never undertaken any part of the Green Schools program), for the following traits:

1. Environmental Awareness-Knowledge
2. Environmental Behaviour
3. Environmental Opinion Leadership

Several other related topics were also included into the survey. These included the urgency of environmental issues, recycling levels within the students' homes, where students got information about environmental issues, and the student's attitude towards a Local Agenda 21 type statement (Personal Efficacy). A number of background and reference questions were also asked. These included the student's age, gender, habitation (city, town, village, rural), number in household, mobile phone ownership and access to the Internet at home. Finally, a qualitative open–ended optional question was included to assess the student's main environmental concerns.

4.2 Sampling and background characteristics

For the current study 5th and 6th class students from 17 awarded Green-Schools and 19 Non-Green-Schools were surveyed. The number of students surveyed from each school type was 654 (total number surveyed 1308). The schools and the number of 5th and 6th class students surveyed from each school are outlined in the table below (see **Table 4.1 (a), Fig. 4.2 (i)**).

Table 4.2 (a) Schools and numbers surveyed within the current study

Awarded Green School	Number Surveyed	Non-Green-School	Number Surveyed
(**1**)* St. Claire's G.N.S., Kenmare, Co. Kerry	34	(**2**) St. Michael's N.S., Sneem, Co. Kerry	11
(**3**) St. Francis's B.N.S., Kenmare, Co. Kerry.	32	(**4**) Kilgarvan N.S., Kilgarvan, Co. Kerry	22
(**5**) St. Kieran's B.N.S., Galvone, Limerick	42	(**6**) Presentation G.N.S., Galvone, Limerick	16
(**7**) Feenagh N.S., Co. Limerick	14	(**8**) Effin N.S., Co. Limerick	10
(**9**) Fenor N.S., Co. Waterford	16	(**10**) St. Declan's N.S., Ardmore, Co. Waterford	15
(**11**) Portlaw N.S., Co. Waterford	45	(**12**) Glor na Mara N.S., Tramore, Co. Waterford	99
(**13**) St. Sennan's N.S., Shannon, Co. Clare	36	(**14**) Newmarket-on-Fergus N.S., Co. Clare	48
(**15**) Lisdowney N.S., Co. Kilkenny	15	(**16**) Ballyragget GNS, Co. Kilkenny	25
(**17**) St. Patrick's N.S., Cloonlyon, Co. Mayo	16	(**18**) Tavrane N.S., Co. Mayo	21
(**19**) St. Joseph's B.N.S., Terenure, Dublin	42	(**20**) Presentation G.N.S., Terenure, Dublin	54
(**21**) Rosses Point N.S., Co. Sligo	39	(**22**) Grange N.S., Co. Sligo	23
(**23**) St. Joseph's NS, Arlow, Co. Wicklow	86	(**24**) Tara Hill N.S., Co. Wexford	28
(**25**) Kennedy Park N.S., Wexford	90	(**26**) CBS B.N.S., Wexford	143
(**27**) St. Joseph's G.N.S., Mountmellick, Co. Laois	55	(**28**) St. Patrick's B.N.S., Mountmellick, Co. Laois	31
(**29**) Bushy Park N.S., Circular Road, Galway	70	(**30**) Chroí Iosa G.N.S., Newcastle, Galway	32
(**31**) The Don N.S., Ballagha-derreen, Co. Roscommon	5	(**32**) Rathduff N.S., Grenagh, Co. Cork	22
(**33**) Cloontuskert N.S., Co. Roscommon	17	(**34**)Analeentha N.S., Mallow, Co. Cork	13
		(**35**) St. Joseph's B.N.S., Mardyke, Cork	27
		(**36**) Burnfort N.S., Mallow, Co. Cork	14
GREEN-SCHOOL TOTAL	**654**	**NON-GREEN-SCHOOLS TOTAL**	**654**

* Note: Number of school indicates position on **Fig. 4.2 (i)**

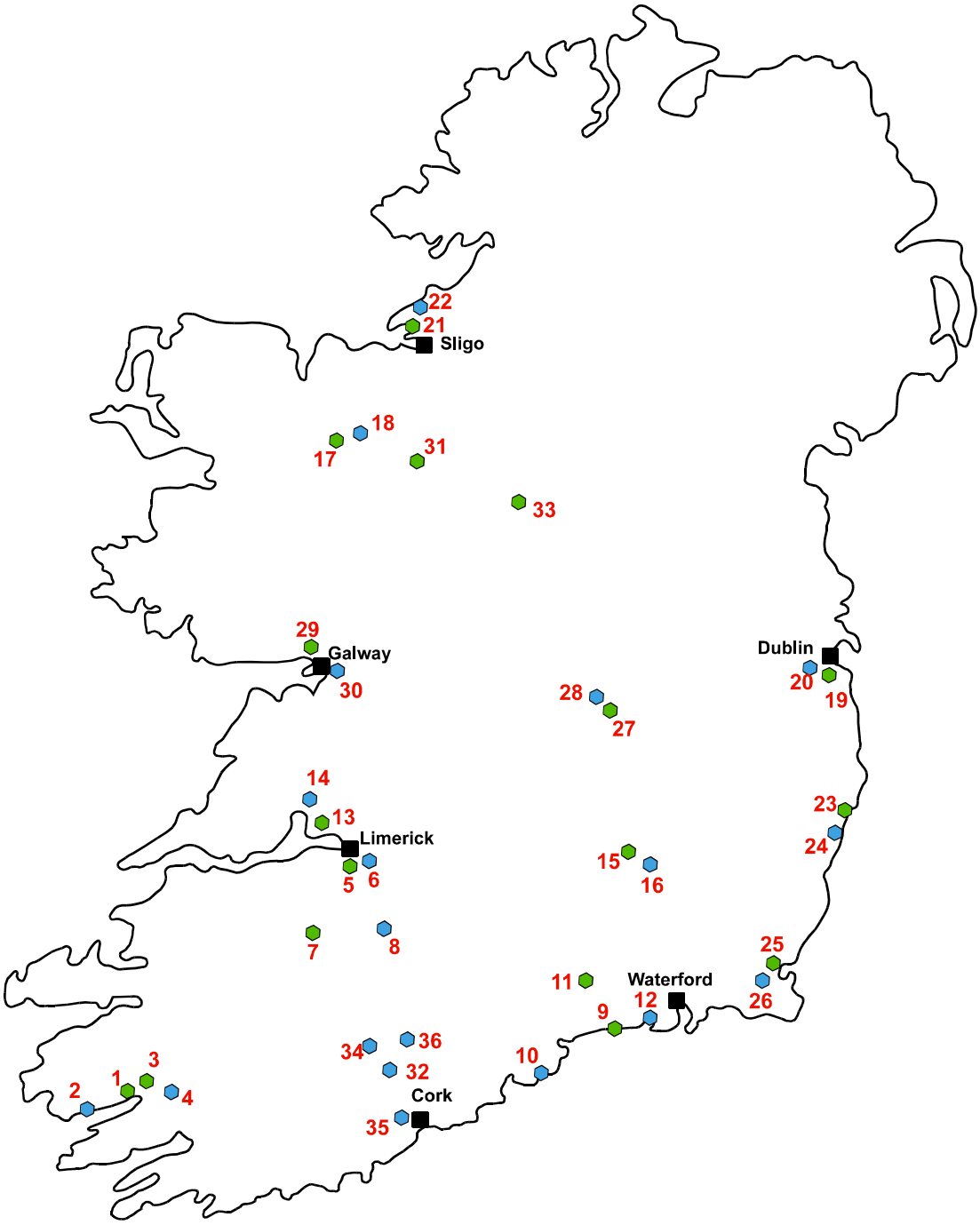

Fig. 4.2 (i) Location of surveyed school (numbered from previous table). Green dot-Green-School, Blue Dot–Non-Green-School

The selection of the schools for surveying was as nationwide as possible and was controlled by the location of primary schools that had been awarded the Green-Flag up to May 2001. At the time of surveying 40 primary schools, within 14 counties had been awarded the Green Flag. (This number increased to 97 schools in June 2001). 17 of these schools were selected. The Non-Green-Schools were then selected, where possible, within the same localities as the awarded Green-Schools with approximately the same

student population, gender balance and habitation (i.e. the Green-School was 'paired' with a similar local Non-Green-School). This approach was taken to reduce the effect of background characteristics/factors such as gender, school size and locally sensitised environmental concerns on the results of the study.

The background characteristics of the two school types are outlined below (see **Figs. 4.2 (ii), (iii), (iv), (v)**). The characteristics include gender, habitation, age and household number.

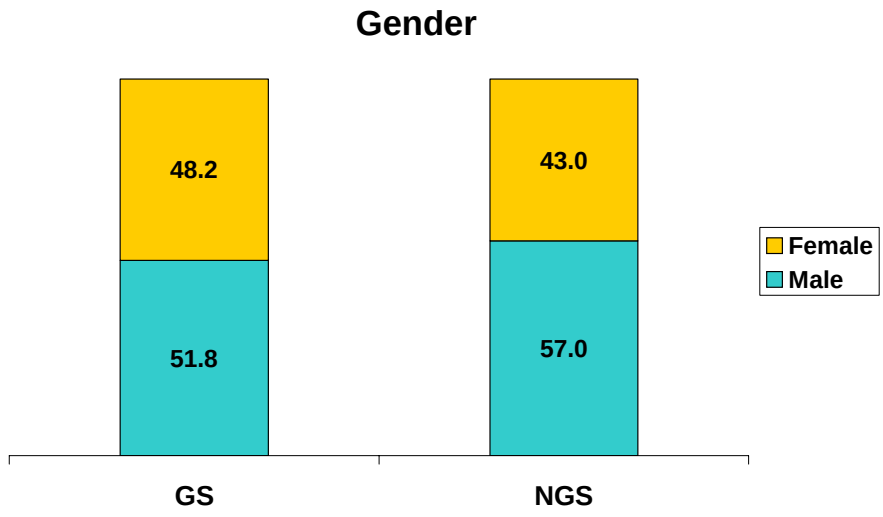

Fig. 4.2 (ii) Gender composition of each school type (GS-Green-Schools, NGS-Non-Green-Schools).

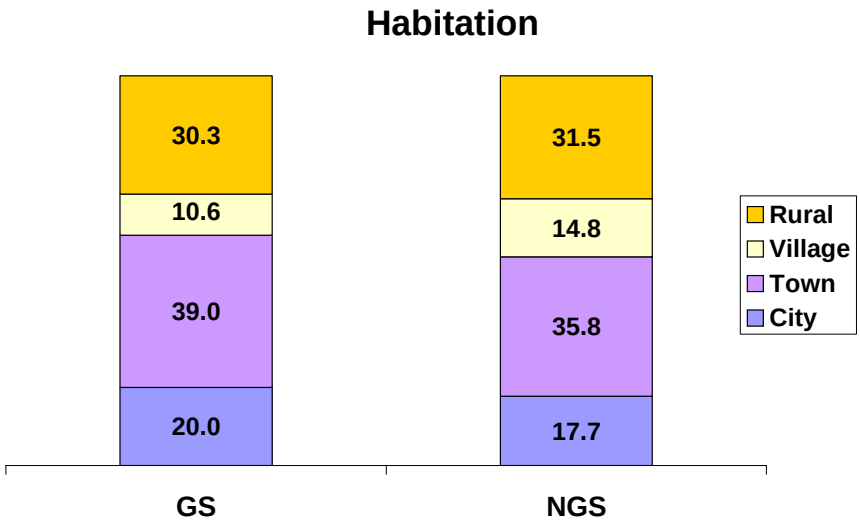

Fig. 4.2 (iii) Habitation composition of each school type (GS-Green-Schools, NGS-Non-Green-Schools).

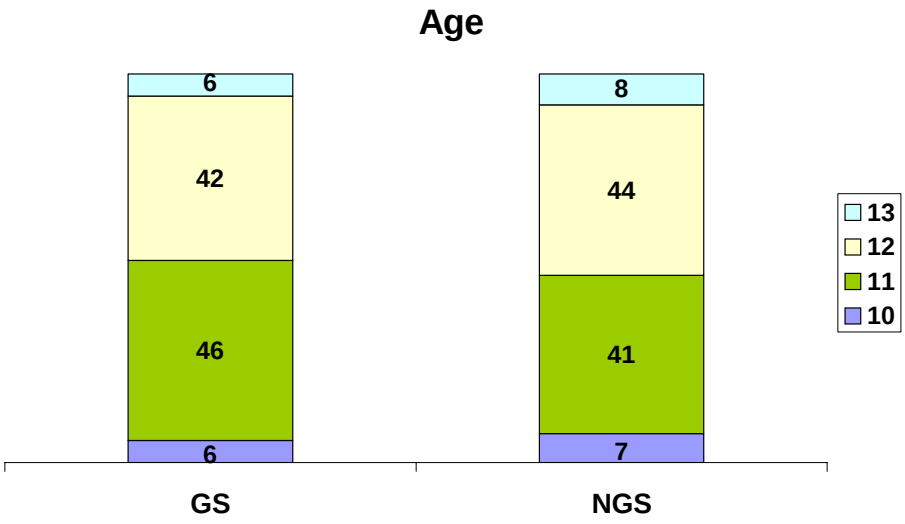

Fig. 4.2 (iv) Age (10-13 yrs. old) composition of each school type (GS-Green-Schools, NGS-Non-Green-Schools). Mean Age $_{GS}$ -11.49, Mean Age $_{NGS}$ - 11.54.

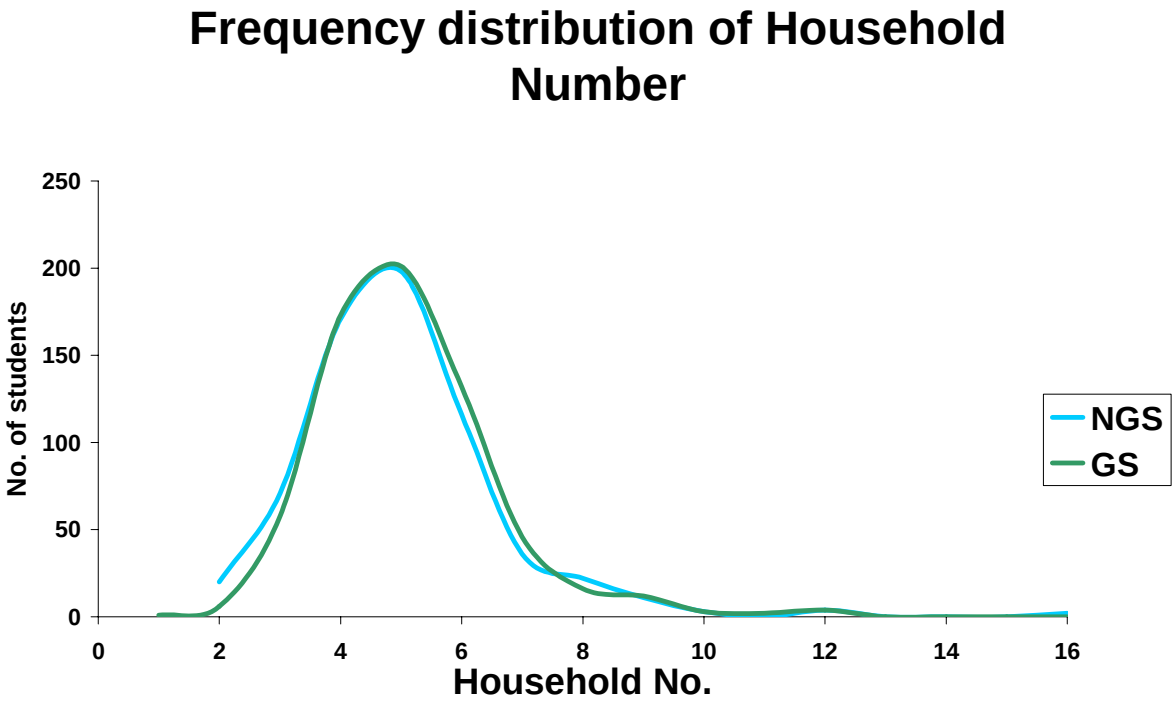

Fig 4.2 (v) Frequency distribution of household among students surveyed. GS-Green Schools, NGS-Non-Green-Schools. Mean Household Number $_{GS}$ -5.09, Mean Household Number $_{NGS}$ - 4.98

Two further reference characteristics were also included. These were mobile phone ownership and access to the Internet at Home (see **Fig. 4.2 (vi)** below).

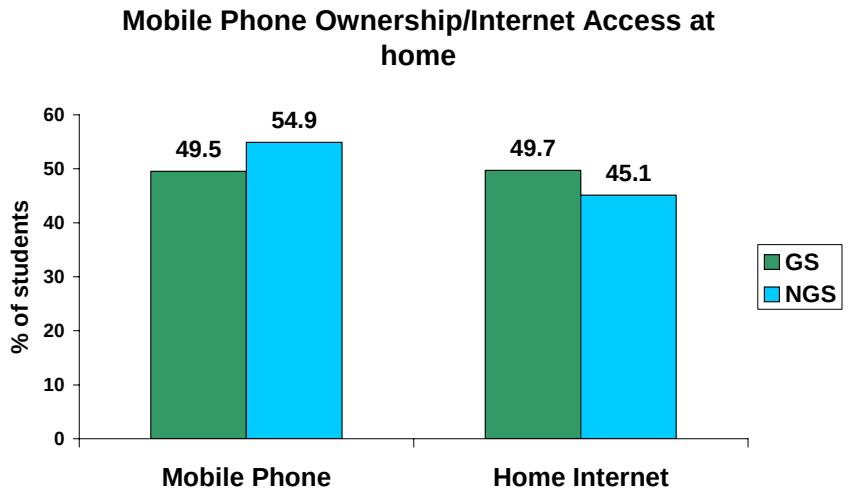

Fig. 4.2 (vi) Mobile phone ownership and Internet access at home among survey students.

The survey method used within the current study was a **personally issued** questionnaire. This method was chosen to optimise the response rate and create a repeatable controlled setting for surveying within all the schools surveyed. The questionnaire contained 15 questions (see Appendix I). The survey procedure is outlined in Appendix 2.

4.3 Environmental Awareness & Knowledge

Within the current study the environmental awareness and knowledge levels among the students was assessed by nine questions. These questions comprised a set of 5 true/false/don't know questions and 4 multiple-choice questions. Some of these questions have been given in previous surveys to asses attitudes and awareness within Irish adults (15 yrs. +). However, the wording in all cases is slightly different (see Chapter 6).

For the 5 true/false/don't know questions the students were asked to read five statements and indicate if they felt the statement was true or false or if they didn't know. This set of questions covered large scale–global environmental issues such as the effects of human activity, the greenhouse effect, the ozone layer, car pollution, waste prevention and recycling and climate change (see **Table 4.3 (a)** below).

Table 4.3 (a) Set of True/False/Don't Know Questions. Correct responses in brackets.

a) **'Human activity has <u>no</u> effect on the state of the environment'**	**(FALSE)**
b) **'The 'greenhouse effect' is caused by the hole in the ozone layer'**	**(FALSE)**
c) **'Cars are <u>not</u> a major cause of air pollution'**	**(FALSE)**
d) **'It is better to prevent waste than to recycle waste'**	**(TRUE)**
e) 'The greenhouse effect does <u>not</u> cause any changes to the earth's climate'	**(FALSE)**

Questions b and c have been asked in previous surveys with a slightly different wording.

The 4 multiple choice questions covered more technical areas such as the decomposition of waste, landfill in Ireland, Irish waste composition and resource usage in Ireland (see Table below).

Table 4.3 (b) Multiple-choice question set. Correct answer underlined and in bold.

How long does it take for an aluminium can to decompose?		
1-2 year	20 - 30 years	**<u>80 –100 years</u>**
What percentage of household waste in Ireland goes to landfill for disposal?		
Around 10%	Around 50%	**<u>Around 90%</u>**
Paper & cardboard make up what proportion of Irish household waste?		
Around 10%	**<u>Around 30%</u>**	Around 70%
On average how much paper does an Irish person use per year?		
Around 7kg	Around 70 kg	**<u>Around 170kg</u>**

4.3.1 Calculation of Environmental Awareness and Knowledge Scores

Environmental Awareness and Knowledge scores were calculated in the following manner. Each student was given a point for each correct response-answer to the 9 questions asked. This gave a maximum environmental awareness score of 9.

4.4 Environmental Behaviour

Behaviour towards the environment was assessed in the current study by asking the students if they **'Always'**, **'Sometimes'** or **'Never'** undertook 5 actions. These actions are listed below:

Table 4.4 (a) List of Actions to assess levels of positive behaviour towards the environment.

1) Do you drop litter on the ground?
2) Do you take part in local environmental projects (e.g. clean up a beach, park, street etc.)?
3) Do you try to save tap water?
4) Do you turn off lights when leaving a room for a short time?
5) Do you buy products that are environmentally friendly?

4.4.1 Calculation of Environmental Behaviour Scores

Environmental behaviour scores were calculated as follows. For actions 2-5 the scoring was **'Always' - 2**, **'Sometimes' – 1, 'Never' – 0**. For action 1 (i.e. dropping litter) the scoring is reversed to **'Always' - 0**, **'Sometimes' – 1, 'Never' – 2.** This gives a maximum behaviour score of 10.

4.5 Environmental Opinion Leadership

Opinion leadership is a socio-political variable that is often used in market studies, opinion polls and social surveys (e.g. EUROBAROMETER). Eurobarometer 37.0 defines an opinion leader as someone who generally exercises more influence on the opinions of other people than other people exercise on them. In the current study this trait is being assessed with respect to the environment.

Opinion Leadership traits towards the environment were assessed in two areas:

1) Discussion
2) Encouragement of others

With respect to discussion the students were asked if they had discussed the environment in the following settings 1) At home, 2) With their friends, 3) In the classroom or 4) Not at all in the last month (see below). (Note: the student could indicate more than one setting)

Have you discussed environmental issues in the last month?			
At home	With your friends	In the classroom	Not at all

To assess encouragement the students were asked if they 1) **'Always'**, 2) **'Sometimes'** or 3) **'Never'** encouraged others to be more environmentally friendly (see below).

Do <u>you</u> encourage others (e.g. family, friends, classmates, etc.) to be more environmentally friendly?		
Always	Sometimes	Never

4.5.1 Scoring of Opinion Leadership

Opinion Leadership was scored as follows:

Discussion was scored as one point per discussion setting (i.e. At home - 1, With their friends – 1, In the classroom – 1). Not at all was scored 0. Encouragement of others is

scored **'Always' – 2**, **'Sometimes' – 1** and **'Never' – 0**. This gave a maximum student opinion leadership score of 5.

4.6 Related Topics

Along with the three main traits of environmental awareness/knowledge, environmental behaviour and environmental opinion leadership several other aspects were included in the survey. These included:

1) The urgency of environmental issues
2) Recycling levels within students homes
3) Where students got information about environmental issues
4) Attitude to a Local Agenda 21 type statement.

As regards urgency the students were asked if they felt environmental problems were a) an urgent problem, b) a problem for the future, c) not a problem or d) if they didn't know (see below).

Do <u>you</u> feel environmental problems are;

a) An urgent problem	**b**) A problem for the future
c) Not a problem	**d**) Don't know

To evaluate the levels of recycling within student's homes the students were asked the following:

Do you do any of the following at home;

Composting?	Yes	No	Don't know
Recycling?	Yes	No	Don't know
What things are recycled?	Paper/Cardboard		Aluminum Cans
	Glass Bottles	Other	Please state_____

As regards information about the environment and associated issues the students were asked the following:

How do you hear/find out about environmental issues?

Newspapers/Magazines/Books	Family/Friends
TV/Radio	Internet
Teachers	Other

If other please state_____

In this question the student could indicate more than one response.

To gauge the students personal efficacy and attitudes towards the Local Agenda 21 concept the following question was asked:

What do <u>you</u> think of the following statement:

'THERE IS NOTHING I CAN DO ABOUT THE STATE OF THE ENVIRONMENT'

Do you: Agree Disagree

The final question on the current survey was an optional, open-ended question. In this case the students were asked to outline any major concerns they had about the environment.

Chapter 5

Results

5 Results

5.1 Environmental Knowledge and Awareness

Environmental knowledge and awareness levels among the 5th and 6th class students from awarded Green-Schools and Non-Green-Schools are broadly similar. The average score (i.e. number of correctly answered questions of the nine asked) for Green-Schools students was **4.77** and **4.64** for Non-Green-Schools students. Testing of the difference between the scores revealed it not to be statistically significant. Furthermore, the frequency distribution of the number of correct answers and the percentage of correct responses for each question was very similar for both types of student (see **Table 5.1 (a)** and **Figs. 5.1 (i), (ii)** below).

Table 5.1 (a) Frequency of the number of correctly answered questions within Green-Schools and Non-Green-Schools samples

Score	No. of Green-Schools students	% of Sample	No. of Non-Green-Schools students	% of Sample
0	0	0	1	0.2
1	13	2.0	13	2.9
2	27	4.1	46	10.3
3	86	13.1	102	22.8
4	159	24.3	136	30.4
5	166	25.4	157	35.1
6	122	18.7	125	28.0
7	54	8.3	52	11.6
8	27	4.1	18	4.0
9	0	0	4	0.9

The rank from most correctly answered question to least correctly answered question is also broadly similar (see **Table 5.1 (b)** below). In both groups question 3 (True/False/Don't Know '*Cars are <u>not</u> a major cause of air pollution*') was the most correctly answered question (89% in both groups) and question 2 (True/False/Don't Know '*The greenhouse effect is caused by the hole in the ozone layer*') the least correctly answered question (21%-GS, 19%-NGS). Both of these questions have been

asked in a previous survey to Irish adults with slightly different wording (Faughnan & McCabe 1998). This is dealt with in Chapter 6.

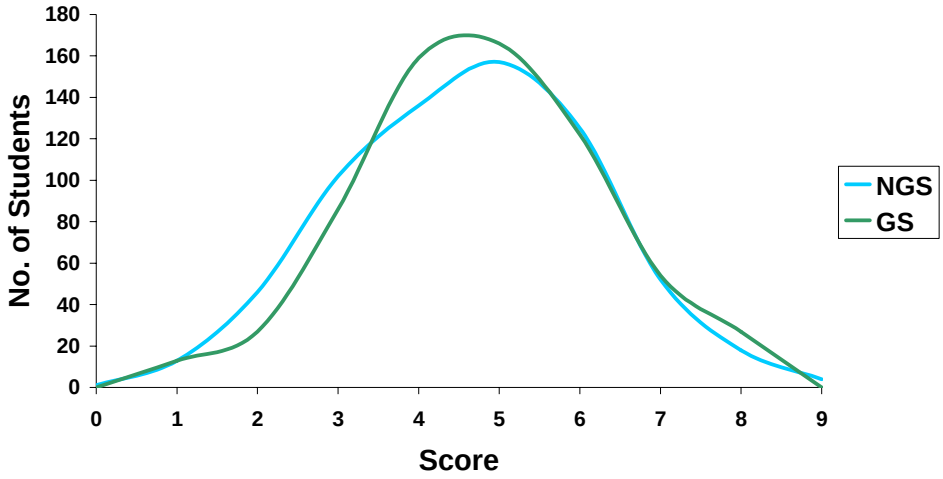

Fig. 5.1 (i) Frequency distribution plot of Environmental Awareness and Knowledge Scores within the current study. Note normal distribution for both school types. NGS – Non-Green-Schools, GS – Green Schools).

Table 5.1 (b) Rank of correctly answered questions within current study from Green-Schools and Non-Green-Schools
(T/F-True/False, MC-multiple choice)

Rank	Green - Schools	% Correct	Non-Green-Schools	% Correct
1	'Cars are not a major cause of air pollution' (T/F)[**False**]	**89%**	'Cars are not a major cause of air pollution' (T/F)[**False**]	**89%**
2	'Human activity has no effect on the state of the environment' (T/F)[**False**]	**78%**	'Human activity has no effect on the state of the environment' (T/F)[**False**]	**73%**
3	'Paper & Cardboard makeup what proportion of Irish Household Waste?' (MC) [**30%**]	**60%**	'The greenhouse effect does not cause any changes to the earth's climate' (T/F))[**False**]	**58%**
4	'The greenhouse effect does not cause any changes to the earth's climate' (T/F))[**False**]	**58%**	'Paper & Cardboard makeup what proportion of Irish Household Waste' (MC) [**30%**]	**56%**
5	'On average how much paper does an Irish person use per year?' (MC)[**170kg**]	**50%**	'What percentage of Irish household waste goes to landfill for disposal?' (MC)[**90%**]	**51%**
6	'What percentage of Irish household waste goes to landfill for disposal?' (MC)[**90%**]	**48%**	'On average how much paper does an Irish person use per year?' (MC)[**170kg**]	**48%**
7	'How long does it take an aluminium can to decompose?' (MC)[**80-100years**]	**41%**	'How long does it take an aluminium can to decompose?' (MC)[**80-100years**]	**39%**
8	'It is better to prevent waste than recycle waste' (T/F)[**True**]	**33%**	'It is better to prevent waste than recycle waste' (T/F)[**True**]	**32%**
9	'The greenhouse effect is caused by the hole in the ozone layer' (T/F)[**False**]	**21%**	'The greenhouse effect is caused by the hole in the ozone layer' (T/F)[**False**]	**19%**

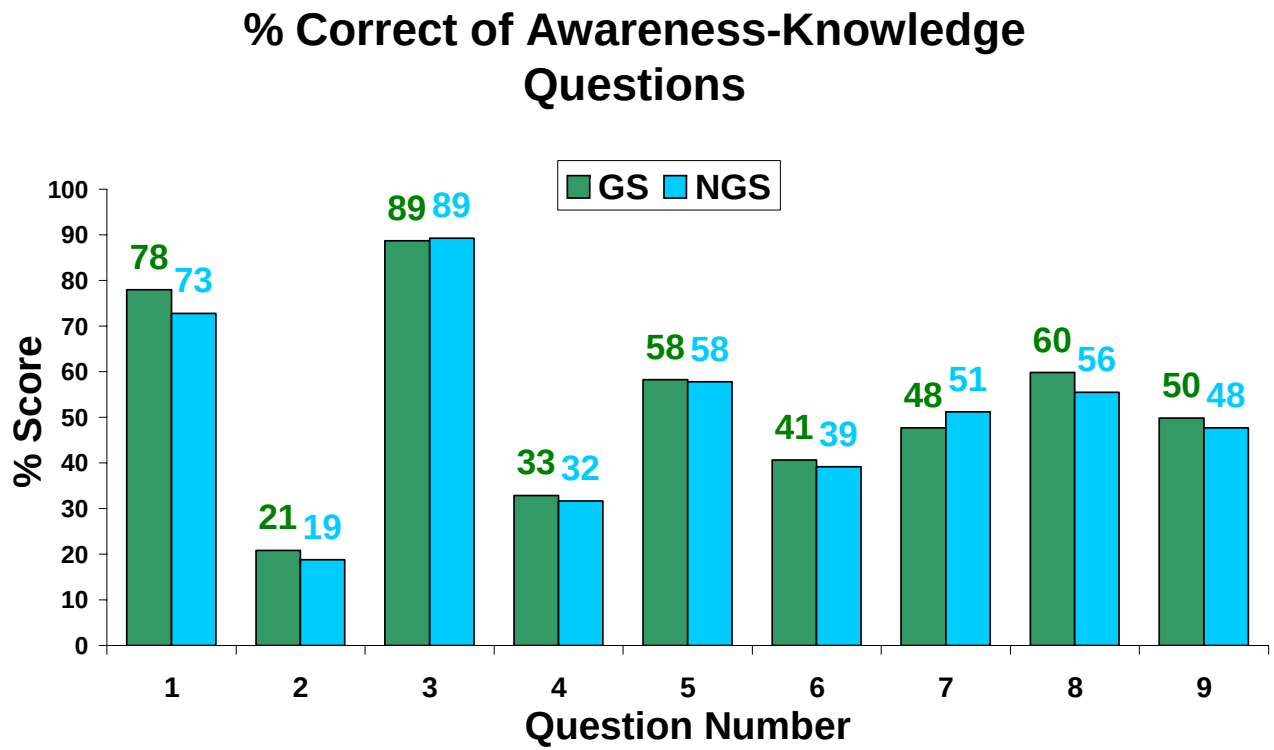

Fig. 5.1 (ii) Percentage of correct responses per awareness-knowledge question in both school types. Questions1-5 True/False Questions, Questions 6-9 Multiple choice questions. Correct responses in square brackets. Q.1 - 'Human activity has no effect on the state of the environment' [**False**], Q.2 - 'The greenhouse effect is caused by the hole in the ozone layer' [**False**], Q.3 - 'Cars are not a major cause of air pollution' [**False**], Q.4 - 'It is better to prevent waste than recycle waste' [**True**], Q.5 - 'The greenhouse effect does not cause any changes to the earth's climate' [**False**], Q.6 - How long does it take an aluminium can to decompose?' [**80-100 years**], Q.7 – 'What percentage of Irish household waste goes to landfill for disposal?' [**90%**], Q.8. – 'Paper & Cardboard makeup what proportion of Irish Household Waste?' [**30%**], Q.9 – 'On average how much paper does an Irish person use per year?'[**170kg**]. *Only question 1 revealed a statistical difference (+5% to GS) in the percentage of correct responses between the Green-schools and Non-Green-Schools*.

5.2 Effect of Background Characteristics on Awareness and Knowledge Levels

5.2.1 Age

There is a slight increase in awareness level with age among both Green-Schools and Non-Green-Schools students (see **Table 5.2.1 (a), Figs. 5.2.1 (i), (ii**)).

Table 5.2.1 (a) Average Awareness Scores for various ages among Green-Schools and Non-Green-Schools students

Age	GS Awareness	NGS Awareness
10	4.7567 (n=37)	3.9592 (n=49)
11	4.6877 (n=301)	4.3924 (n=265)
12	4.8000 (n=275)	4.8833 (n=283)
13	5.1081 (n=37)	5.1153 (n=52)
r value	0.048833663	0.213026403

However, only the difference increase among Non-Green-Schools is statistically significant.

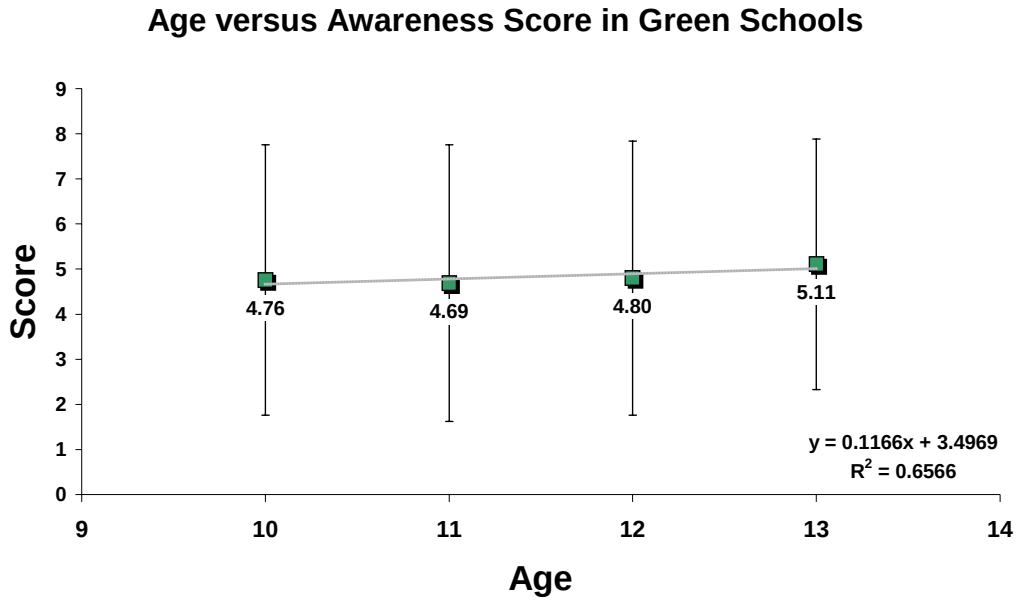

Fig. 5.2.1 (i) Plot of mean awareness score for each age among Green-Schools Students. Error bars equal 2 standard deviations.

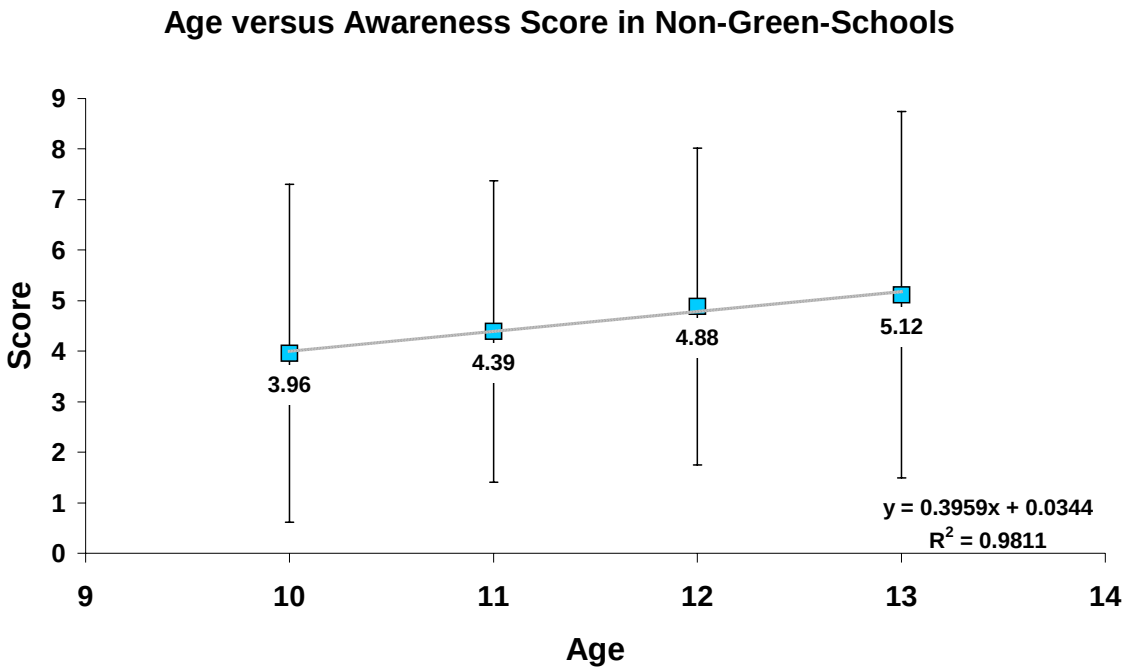

Fig. 5.2.1 (ii) Plot of mean awareness score for each age among Non-Green-Schools Students. Error bars equal 2 standard deviations.

The difference between 10 year old Green-Schools and Non-Green-Schools students is statistically significant (t = 2.630098, significant to 1%).

5.2.2 Gender

Awareness scores appear slightly higher among males in both Green-Schools and Non-Green-Schools (see **Table 5.2.1 (b)**). However, these increases do not appear to be statistically significant.

Table 5.2.1 (b) Average Awareness Scores for male and female Green-Schools and Non-Green-Schools students

Gender	Awareness GS	Awareness NGS
Male	4.8063 (n=315)	4.7043 (n=372)
Female	4.7286 (n=339)	4.5532 (n=282)
r value	0.025654036	-0.046904357

5.3 Behaviour

The average environmental behaviour score was significantly higher among Green-Schools students at **5.58** out of 10, while Non-Green-Schools students scored **4.75** out of 10. Furthermore, the frequency distribution plot of scores displays a skew towards positive behaviour within the Green-Schools student population with a normal distribution of Non-Green-Schools behaviour scores. (see **Fig. 5.3 (i)** below)

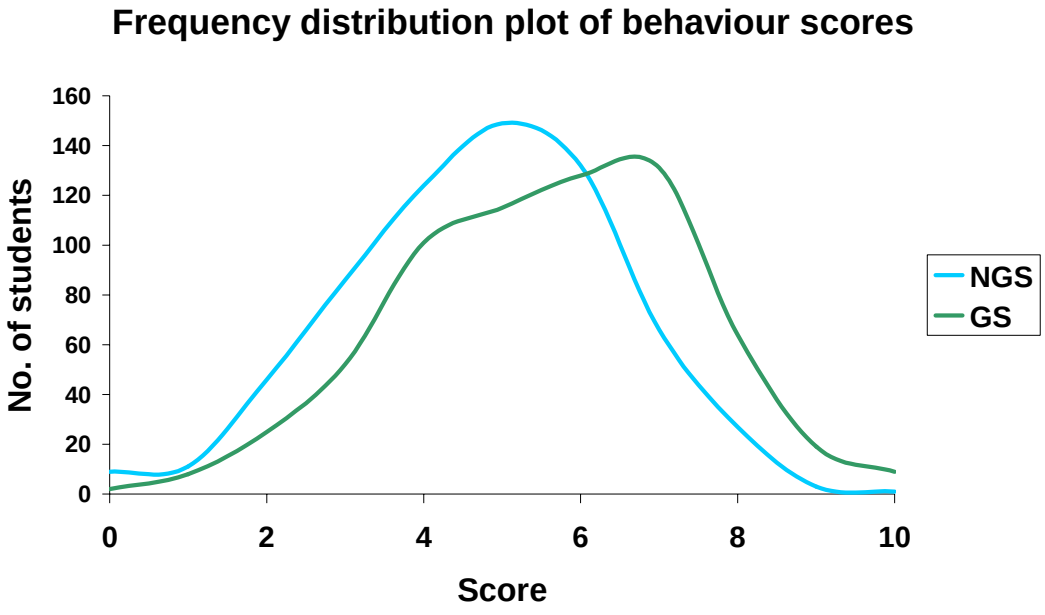

Fig. 5.3 (i) Frequency distribution plot of behaviour scores from the current study. Note normal distribution of Non-Green-Schools scores (NGS) and skew of Green-Schools towards higher scores (GS).

The most commonly undertaken positive action by both types of student was not dropping litter. The least commonly undertaken positive action towards the environment among both student types was taking part in local environmental projects.

However, 4% of Non-Green-Schools students admitted to 'Always' dropping litter. This figure was only 2% for Green-Schools students. In all 63% of Non-Green-Schools and 55% of Green-Schools students admitted to dropping litter at some stage or other (i.e. Sometimes + Always) (see **Fig. 5.3 (ii)** below).

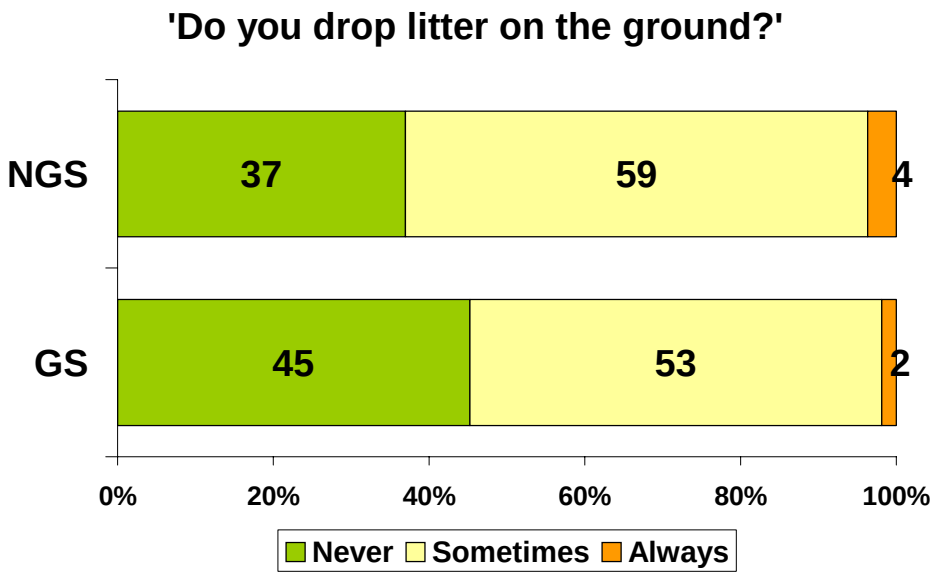

Fig. 5.3 (ii) Proportions of Green-Schools and Non-Green-Schools students who Never, Sometimes or Always drop litter.

The largest behavioural difference within the current study was observed in relation to local environmental projects. Over two-thirds of Non-Green-Schools students have never taken part in a local project whereas two-thirds of Green-schools students have.

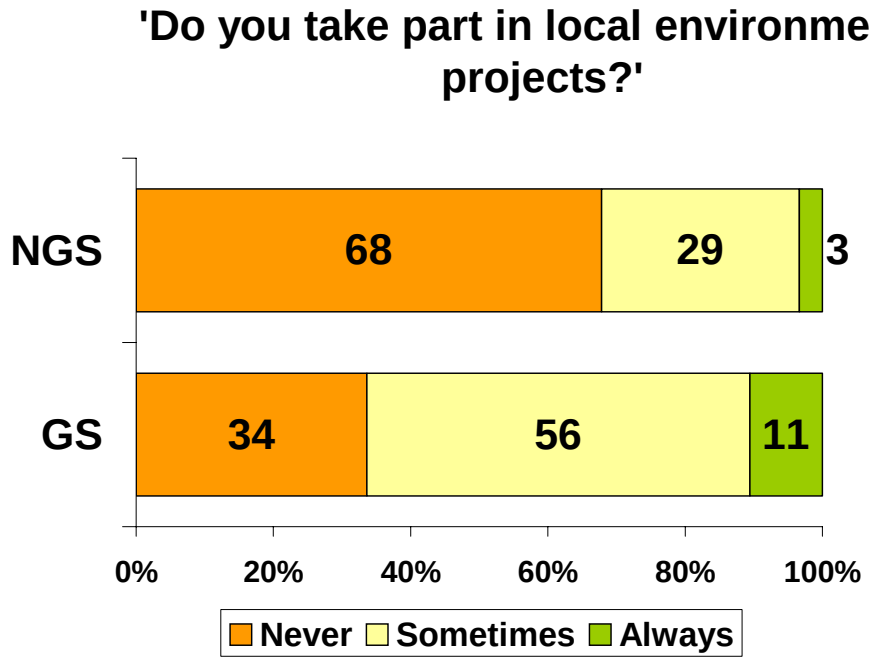

Fig. 5.3 (iii) Proportions of Green-Schools and Non-Green-Schools students who Never, Sometimes or Always participate in local environmental projects.

Green-Schools students score higher with respect to saving tap water and saving electricity, particularly when it comes to 'Always' undertaking the positive action (see **Figs. 5.3 (iv), (v)** below).

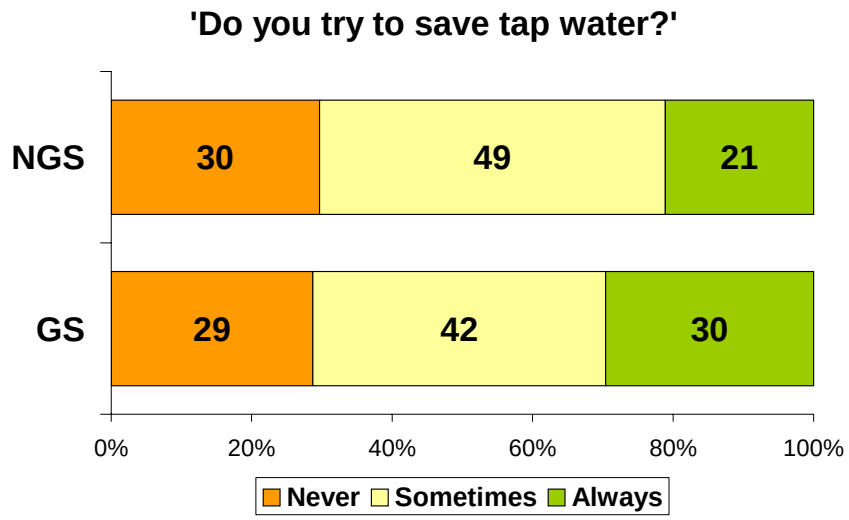

Fig. 5.3 (iv) Proportions of Green-Schools and Non-Green-Schools students who Never, Sometimes or Always try to save tap water.

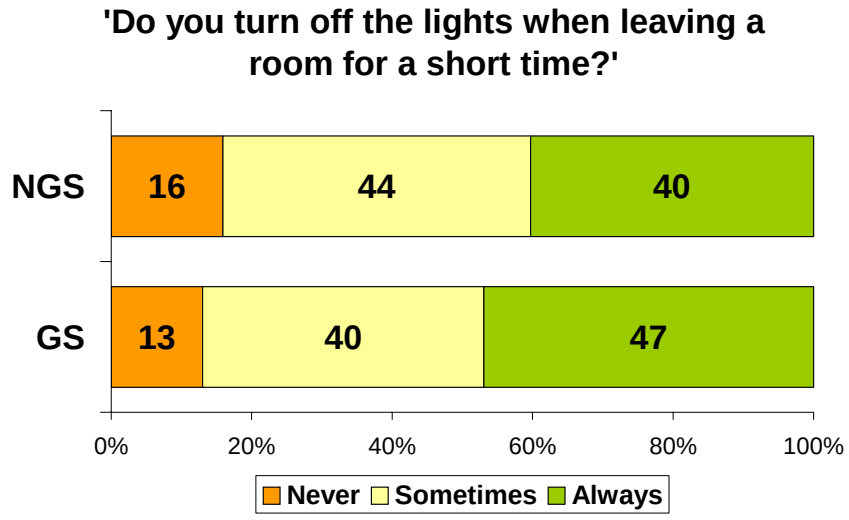

Fig. 5.3 (v) Proportions of Green-Schools and Non-Green-Schools students who Never, Sometimes or Always turn off lights when leaving a room for a short time.

Thinking about the environment when making a purchase displays the largest middle ground of any of the actions (i.e. undertaking the action sometimes). However, almost

twice as many Green-Schools students (GS-15%, NGS-8%) 'Always' buy products that are environmentally friendly (see **Fig 5.3 (vi)** below).

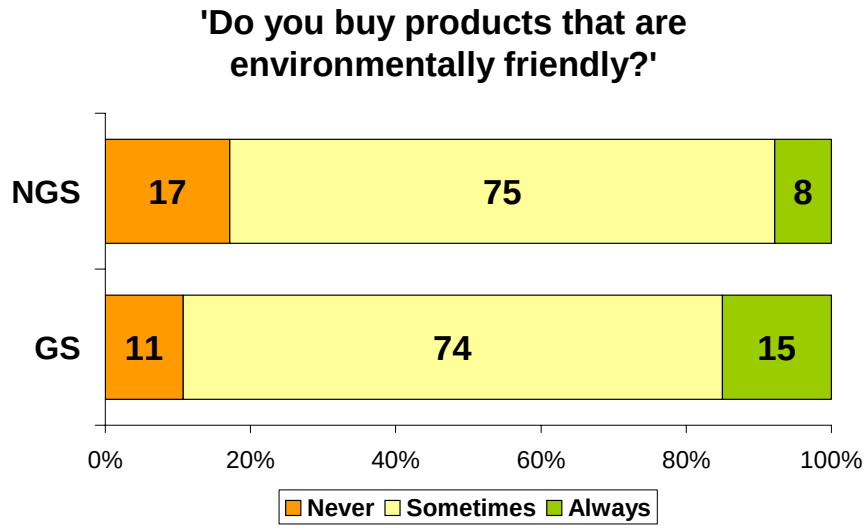

Fig. 5.3 (vi) Proportion of Green-School and Non-Green-School students who Never, Sometimes or Always buy products that are environmentally friendly.

Table 5.3 (a) Statistical confidence of differences between behaviour of student types. Difference = Green-Schools % minus Non-Green-Schools %.

Action		Difference	Z	Confidence
Do you drop litter on the ground?	**Always**	-2%	-2.0281	96%
	Sometimes	-6%	-2.3393	98%
	Never	+8%	3.0360	99.6%
Do you take part in local environmental projects?	**Always**	+8%	5.1078	>99.99%
	Sometimes	+27%	9.9069	>99.99%
	Never	-34%	-12.333	>99.99%
Do you try to save tap water?	**Always**	+9%	3.5579	>99.99%
	Sometimes	-7%	-2.7080	99.33%
	Never	-1%	-0.3648	28.4%
Do you turn off lights when leaving a room for a short time?	**Always**	+7%	2.3972	98.3%
	Sometimes	-4%	-1.4006	83.4%
	Never	-3%	-1.4942	86.5%
Do you buy products that are environ-mentally friendly?	**Always**	+7%	4.0904	>99.99%
	Sometimes	-1%	-0.3812	29.7%
	Never	-6%	-3.3554	>99.99%

When the scores for the various actions are calculated as a percentage of maximum the Green-Schools students score higher for all actions (see **Fig. 5.3 (vii)** below).

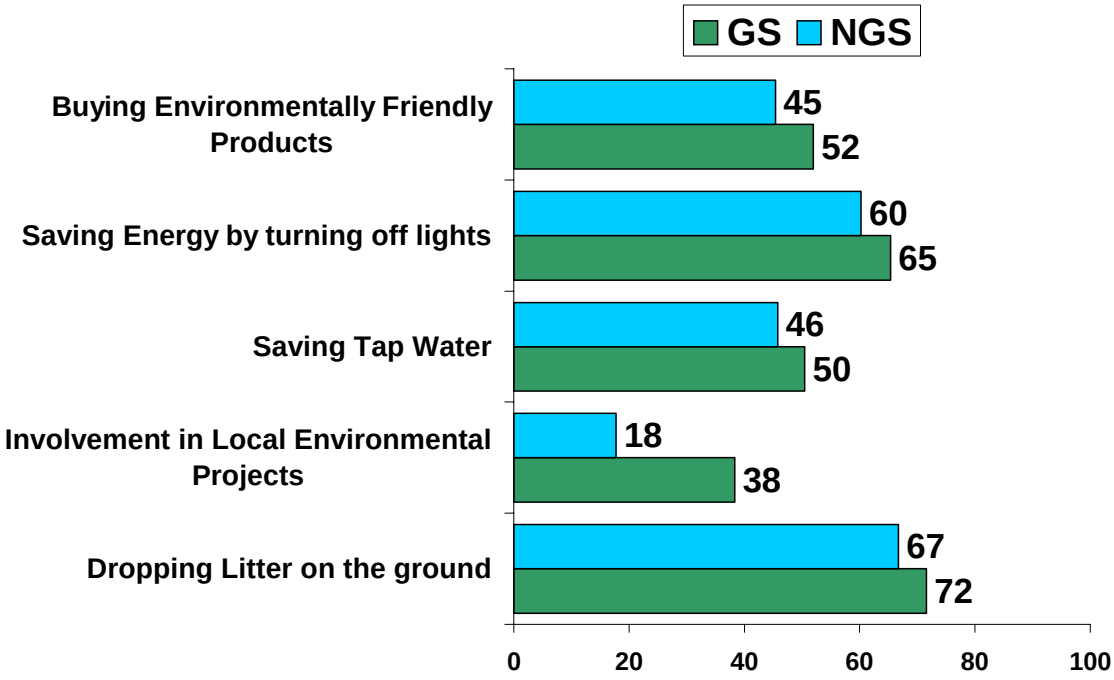

Fig. 5.3 (vii) Green-Schools and Non-Green-Schools students behaviour scores as a percentage of maximum.

5.4 Effect of Background characteristics on behaviour

5.4.1 Age

In the case of both Green-Schools and Non-Green-Schools students there is a slight decrease in behaviour score with age (see **Table 5.4.1 (a)** below). Only the decrease in Green-Schools is statistically significant to 1%

Table 5.4.1 (a) Average Behaviour Scores for various ages among Green-Schools and Non-Green-Schools students

Age	GS Behaviour	NGS Behaviour
10	6.4595 (n=37)	4.7551 (n=49)
11	5.5814 (n=301)	4.7547 (n=265)

12	5.5310 (n=275)	4.6925 (n=283)
13	5.0270 (n=37)	4.4808 (n=52)
r value	-0.117307992	-0.016566236

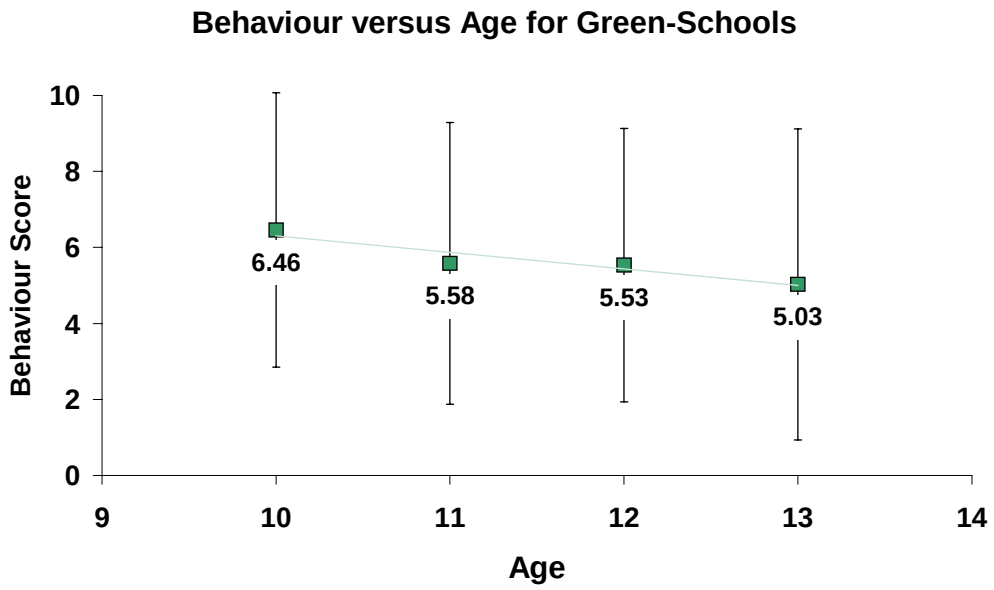

Fig. 5.4.1 (i) Plot of mean behaviour score for each age among Green-Schools students. Error bars equal 2 standard deviations.

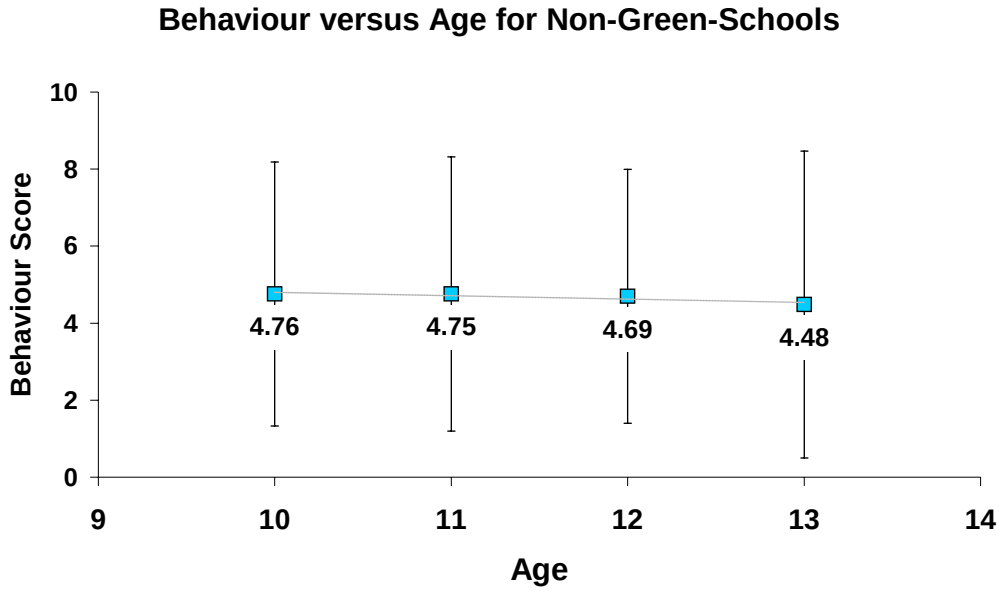

Fig. 5.4.1 (ii) Plot of mean behaviour score for each age among Non-Green-Schools students. Error bars equal 2 standard deviations.

5.4.2 Gender

In the case of Green-Schools students males score very slightly higher than females while the converse is apparent within Non-Green-Schools (see **Table 5.4.2 (a)** below).

Table 5.4.2 (a) Average Behaviour Scores for male and female Green-Schools and Non-Green-Schools students

Gender	GS Behaviour	NGS Behaviour
Male	5.7682 (n=315)	4.5725 (n=372)
Female	5.4100 (n=339)	4.9929 (n=282)
r value	0.124629943	0.120387288

In both cases these differences are statistically significant.

5.5 Environmental Opinion Leadership

Opinion leadership scores are very significantly different between Green-Schools students and Non-Green-Schools students. The average opinion leadership score for Green-Schools students is **2.07** out of 5. This is in comparison to a score of **1.53** out of 5 for Non-Green-Schools students. Furthermore, the frequency distribution plot of the Green-Schools scores display a normal distribution, whereas the Non-Green-Schools distribution is skewed towards lower scores (see **Fig. 5.5 (i)**).

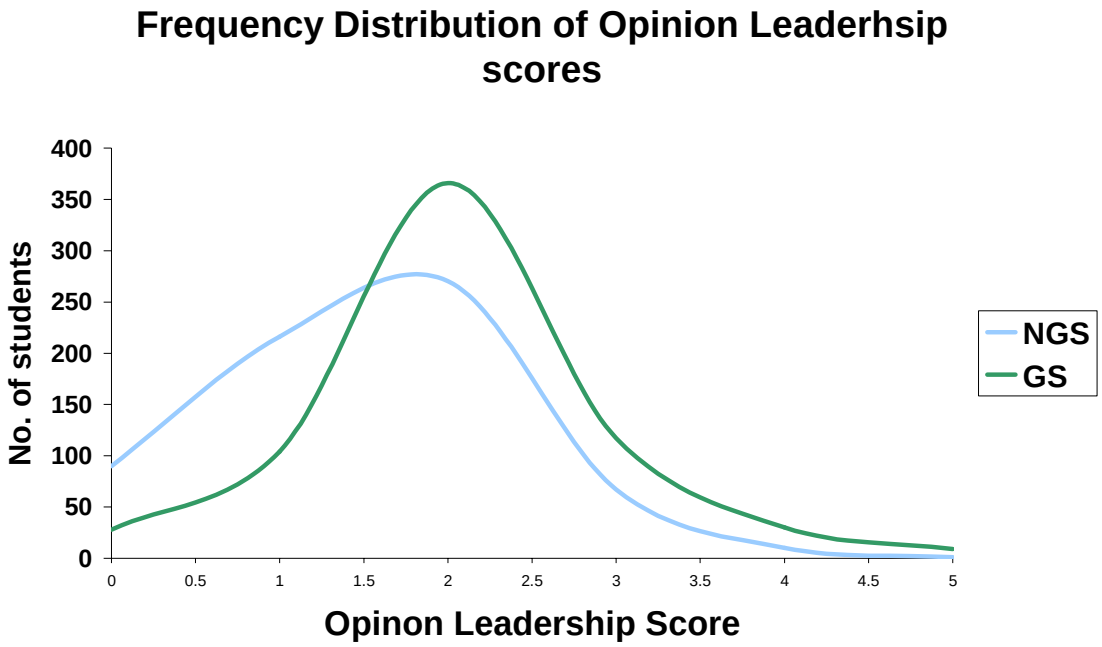

Fig. 5.5 (i) Frequency distribution of student opinion leadership scores within the current study. Note normal distribution of Green-Schools scores and skew of Non-Green-Schools scores towards lower values.

As regards discussion, Green-Schools students discuss the environment in more settings, more often. Firstly, almost one-third (32%) of Non-Green-School students admitted to not having discussed the environment at all in the month prior to surveying. This is in comparison to less than one in ten (9%) of Green-School students. Discussion levels with friends (**GS-9%, NGS-7%**) and within the home (**GS-22%, NGS-23%**) are very similar. However, it is within the classroom setting that the largest difference is apparent. Four out of five (80%) of Green-Schools students have discussed the

environment in the classroom in the month prior to surveying. This is in comparison to less than half of Non-Green-Schools students (49%) (see **Fig. 5.5 (ii)** below).

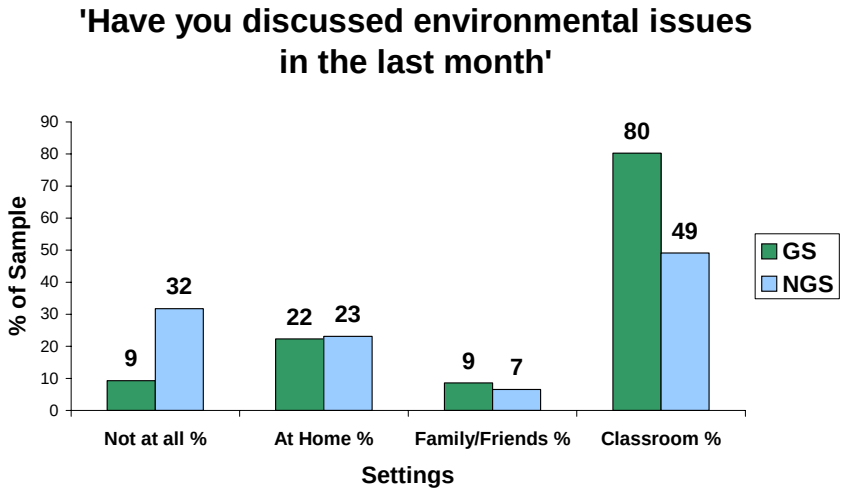

Fig. 5.5 (ii) Discussion settings and levels from the current study.

Encouragement levels are higher among Green-Schools students. Green-Schools students are almost twice as likely to always encourage others to be more environmentally friendly (**GS-11%, NGS-6%**) and almost twice as unlikely to never encourage others to be more environmentally friendly (**GS-16%, NGS-31%**) (see **Fig. 5.5 (iii)** below).

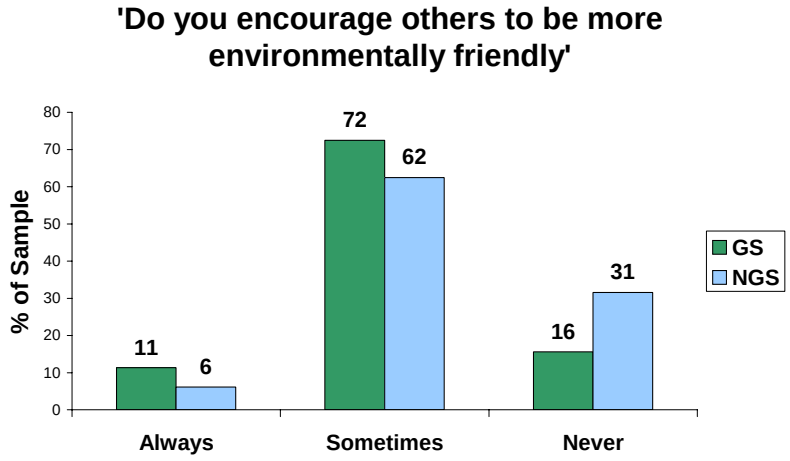

Fig. 5.5 (iii) Levels of encouragement from the current study.

5.6 Effect of Background Characteristics on Environmental Opinion Leadership

5.6.1 Age

There is a very slight increase of opinion leadership with age among both Green-Schools and Non-Green-Schools students. However, this increase is not statistically significant (see **Table 5.6.1 (a)** below).

Table 5.6.1 (a) Average Opinion Leadership Scores for various ages of Green-Schools and Non-Green-Schools students

Age	GS OPL	NGS OPL
10	2.1081 (n=37)	1.4489 (n=49)
11	1.9967 (n=301)	1.5698 (n=265)
12	2.1418 (n=275)	1.4487 (n=283)
13	2.0270 (n=37)	1.8653 (n=52)
r value	0.020231181	0.035403495

5.6.2 Gender

Table 5.6.2 (a) Average Opinion Leadership Scores for male and female Green-Schools and Non-Green-Schools students

Gender	GS OPL	NGS OPL
Male	2.1397 (n=315)	1.4005 (n=372)
Female	2.0000 (n=339)	1.7057 (n=282)
r value	0.091038259	0.164961866

Male Green-Schools students have a slightly higher opinion leadership score than females with the converse apparent among Non-Green-Schools students.

5.7 Related topics

5.7.1 Urgency of Environmental problems

When asked about the issue of the urgency of environmental problems there is a substantial difference of opinion between Green-Schools and Non-Green-Schools students. Almost a half (47%) of Green-Schools students felt that environmental problems are an urgent problem in comparison to less than one third (30%) of Non-Green-Schools students. Over half (51%) of Non-Green-Schools students felt these were problems for the future in comparison to 42% of Green-Schools students. 6% of Non-Green-Schools and only 4% of Green-Schools felt that there was no problem with the environment. 13% of Non-Green-Schools and 7% of Green-Schools students responded 'Don't Know' (see **Fig. 5.7.1 (i)** below).

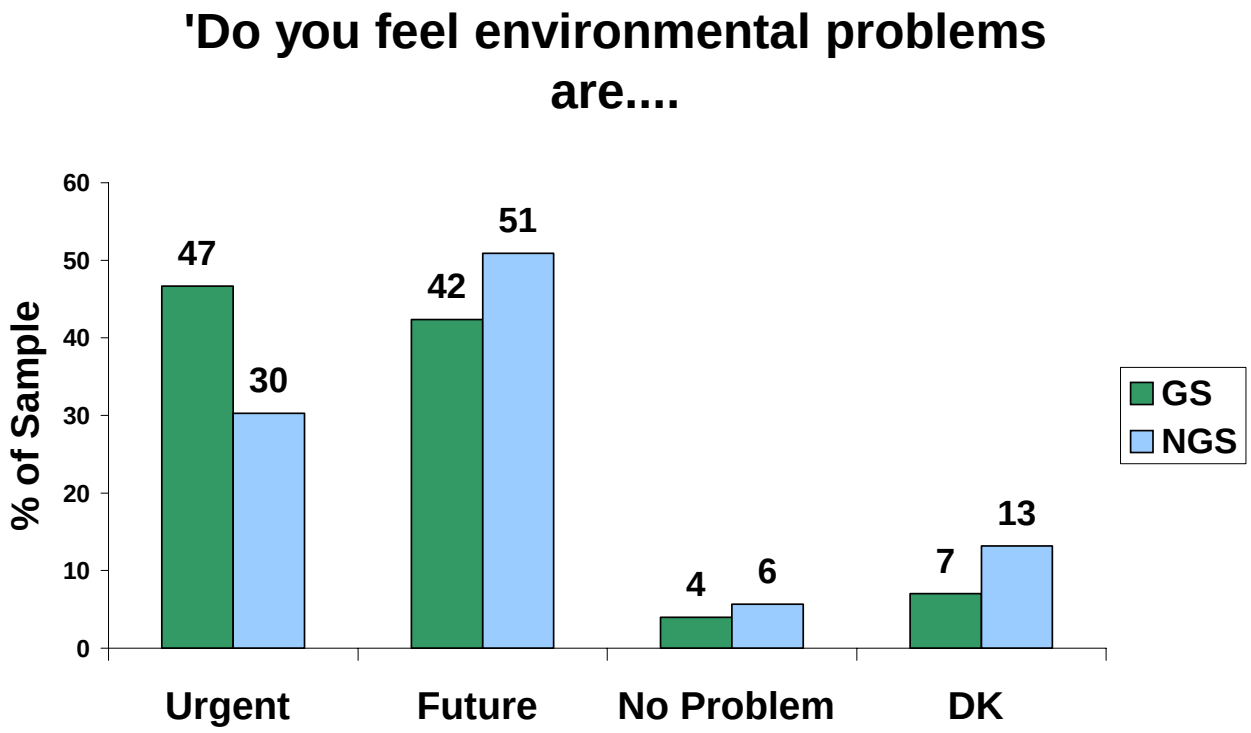

Fig. 5.7.1 (i) Percentages of Green-Schools and Non-Green-Schools students responses to the urgency of environmental issues. (In all cases except 'No Problem' the difference between GS and NGS responses is statistically significant to 1%.

5.7.2 Information about the environment and associated issues

The sources of information about the environment are very similar for both student types except in one key area. The teacher is significantly seen as the main source of information among Green-Schools students followed by TV/Radio, Printed Media, Family/Friends and the Internet. Among Non-Green-Schools students the positions of the teacher and TV/Radio are reversed (see **Fig. 5.7.2 (i)** below). The other sources (1%-GS, 1%-NGS) indicated by the student from both group were presentations/school visits made by environmental organisations and local authority personnel. The percentage using the Internet is particularly interesting as one of the reference/background characteristics mentioned previously in this study was access to the Internet at home. The levels of access were indicated to be around 50% of each student type.

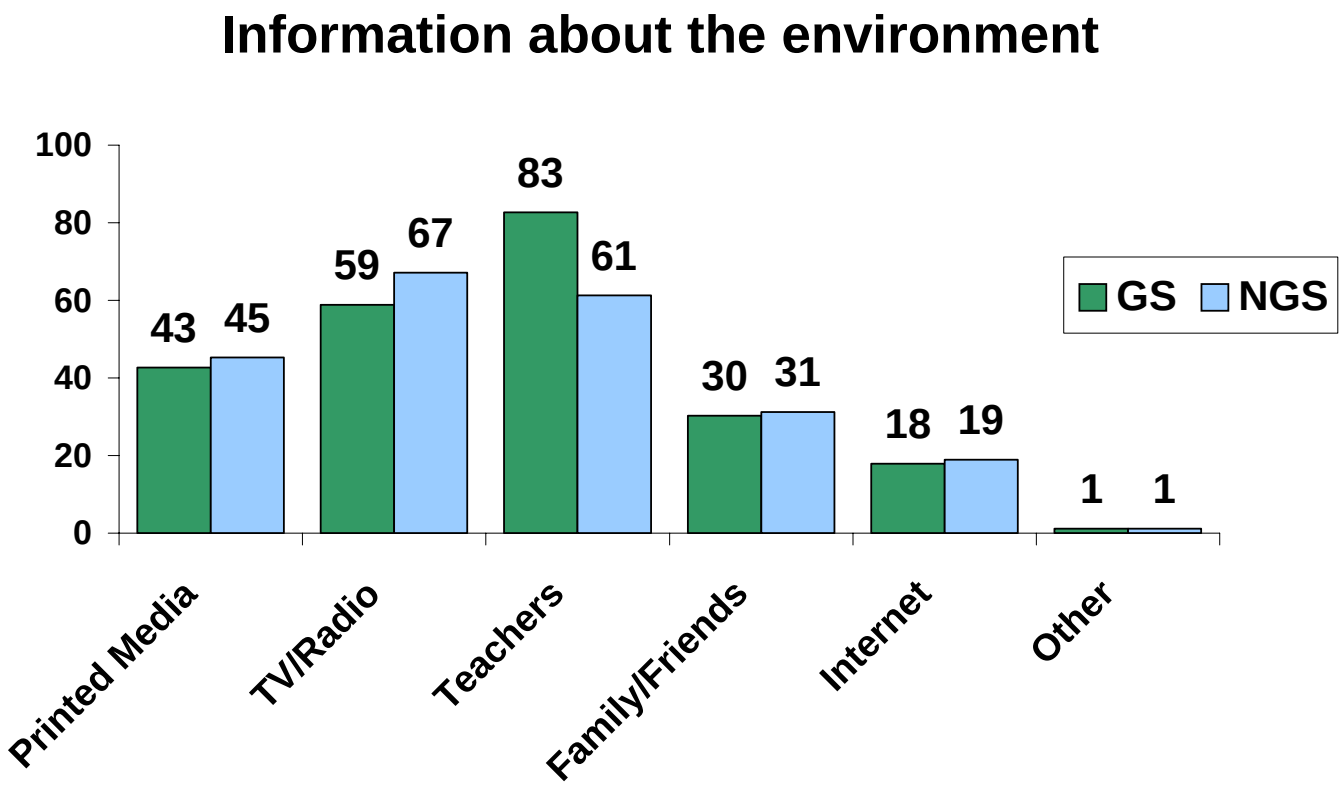

Fig. 5.7.2 (i) Sources of information about the environment indicated by Green-Schools and Non-Green-Schools students within the current study.

5.7.3 Home Recycling

Home recycling and composting levels are higher within the homes of Green-Schools students.

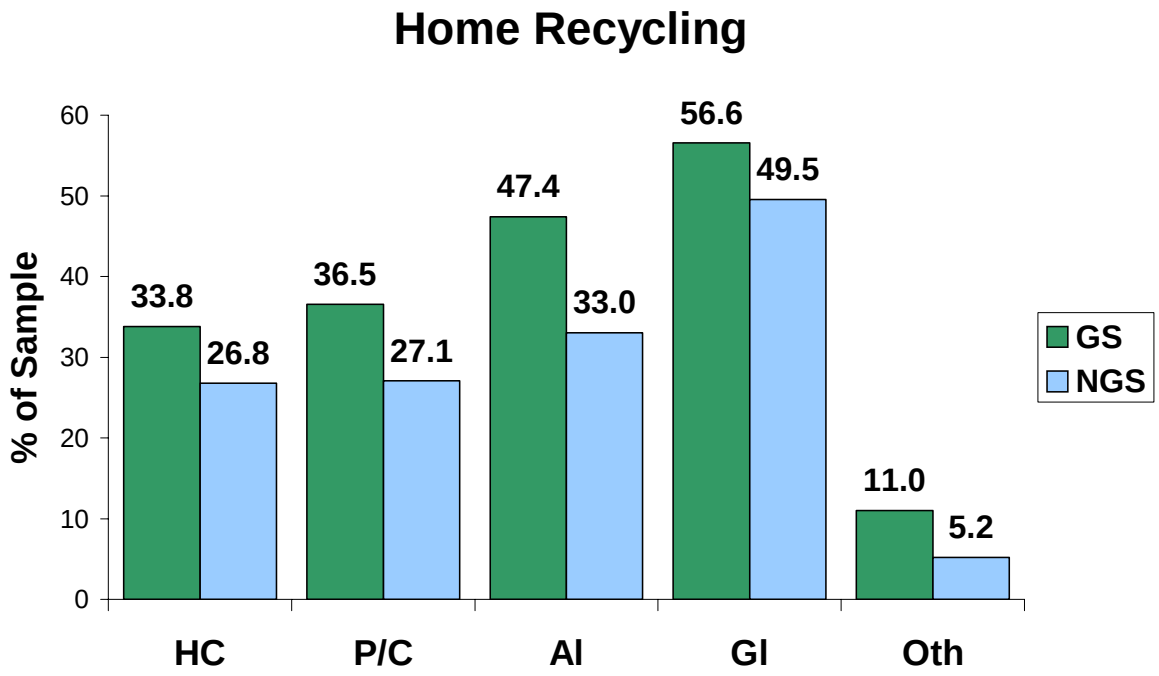

Fig. 5.7.3 (i) Percentages of home recycling and home composting within the homes of Green-Schools and Non-Green-Schools students. HC-Home Composting, P/C-Paper & Cardboard, Al-Aluminium cans, Gl-Glass Bottles, Oth-Other.

The statistical confidence of the difference between the Green-Schools and non-Green-Schools home recycling levels is outlined in Table below.

Table 5.7.3 (a) Statistical confidence of difference in home recycling levels

Activity	Difference	Z	Confidence
Home Composting	+7.0%	2.7683	99.4%
Paper & Cardboard	+9.4%	3.6810	99.97%
Aluminium Cans	+14.4%	5.3007	>99.99%
Glass Bottles	+7.1%	2.5485	98.9%
Other	+5.8%	3.8502	99.98%

The 5-11% mentioned by students in the Other (Oth) category comprises clothes and plastic.

5.7.4 Attitudes towards the Local Agenda 21 concept (Personal efficacy)

When asked if they felt there was nothing they could do about the state of the environment over 90% of Non-Green-Schools students disagreed and over 95% of Green-Schools disagreed (see **Fig. 4.7.4 (i)** below). This question has been asked in previous attitudes surveys to the Irish adult population with a slightly different wording. This is dealt with further in Chapter 4. There 5% difference between the two groups is statistically confident to 0.1%.

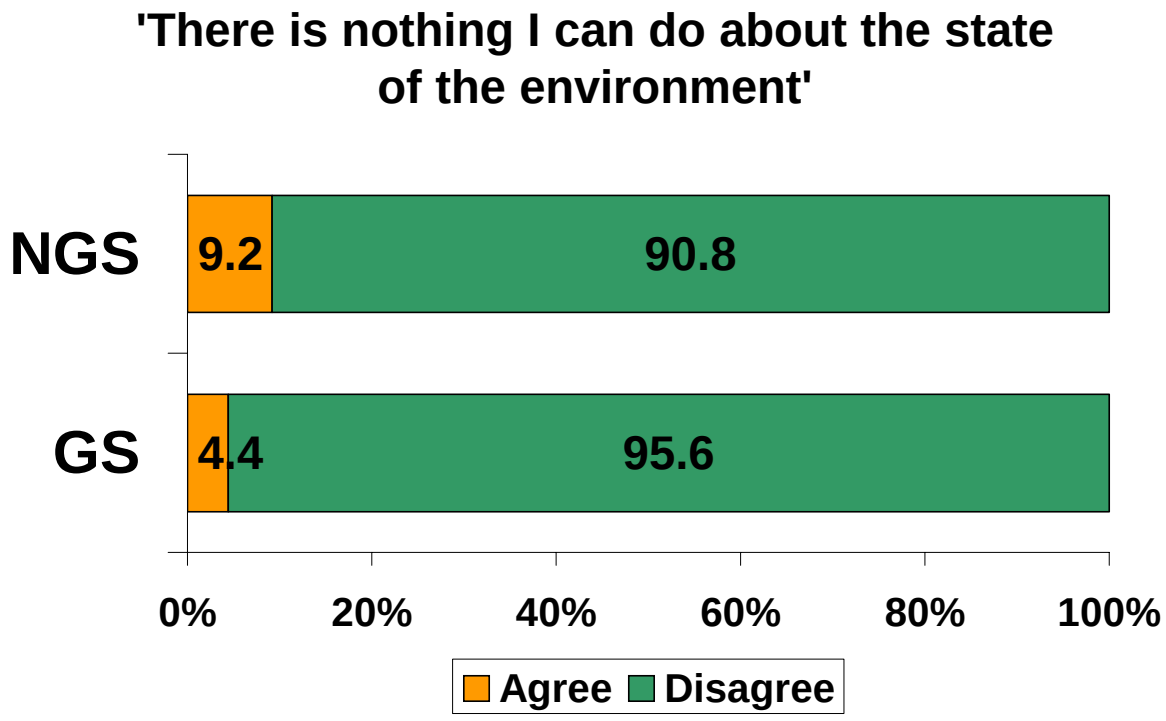

Fig. 5.7.4 (i) Levels of agreement and disagreement to the above statement among Green-Schools (GS) and Non-Green-Schools (NGS) students.

5.7.5 Major Concerns

Response rates to the optional, unprompted open-ended qualitative question on the students main environmental concerns were broadly similar with 53% of Green-Schools students responding and 48% of Non-Green-Schools students responding.

The major concern indicated by those that responded from both Green-School and Non-Green-Schools students was litter with 52% for Green-Schools and 48% of Non-Green-Schools students.

The concern about litter was followed in Green-Schools by;

- A lack of an environmentally friendly culture in Ireland (29%)
- Landfill (10%)
- The destruction of the ozone layer (10%)
- The lack of recycling facilities (9%)
- Car pollution (9%)
- Water pollution (9%)
- Air pollution (7%)
- Trees (7%)
- Excess packaging (5%)

Within Non-Green-Schools litter was followed by;

- The lack of recycling facilities (17%)
- Car pollution (15%)
- The lack of an environmentally friendly culture in Ireland (14%)
- Landfill (13%)
- Destruction of the ozone layer (13%)
- Air pollution (13%)
- Water Pollution (11%)
- Trees (9%)
- Local development (5%)
- Excess packaging (4%)

Other concerns (<5%) that were raised by both Non-Green-School students and Green-Schools students were global warming, burning plastics, George W. Bush's environmental policy, Irish government policy, toxic waste, energy and water wastage and the lack of local environmental projects.

Listed below are some examples of the responses of the students surveyed

'I think the government should ban cars and only have public transport like buses and trains and use helicopters and ambulances in medical cases otherwise I think people should walk, cycle or jog. It would be a lot healthier for you and the environment'

'There should be two bins at your house. A bin for rubbish and a bin for things that can be recycled. In Canada, while I lived there, we always had two and Canada is a very clean country. Please try to do this…for Ireland'

'There are not enough places to recycle paper. There are not enough clean ups. Not enough people recycle'

'People should recycle more and cycle to work etc. The government should make it a rule to recycle.'

'I think that supermarkets should stop giving out free plastic bags because they are dirtying the environment and they aren't biodegradable'

'Not enough people encouraging recycling'

'Litter is killing animals and polluting our world. Litter should be picked up and everyone should recycle, one person can make a small change but if everyone helped it would be a big change'

'Some people don't really care that much about the environment and sometimes say it is not going to do much to the environment if you drop a piece of paper on the ground but if you add up all the papers and rubbish you will be very surprised'

'I feel strongly about the waste of plastic e.g. the covering of blank video tapes which do not need any packaging at all and Persil and Ariel tablets which also only need boxes and shouldn't be individually wrapped.'

'Everyone needs to try to help but a lot of people don't care and think it's not their problem but it's everyone's'

'People should be fined more for throwing something on the ground that litters the place'.

'I feel strongly that trees shouldn't be cut down as we will not have enough oxygen. A lot of paper is wasted by people putting it out for the rubbish collection instead of getting it recycled so that it can be reused. A lot of people get rid of glass bottles that can be recycled which means companies have to make more'

5.8 Correlations

A number of correlations were carried out to elucidate any relationships between the three main traits of environmental knowledge/awareness, behaviour and opinion leadership. In essence, does higher awareness and knowledge translate into better behaviour, higher awareness translate into better opinion leadership and so on?

5.8.1 Environmental Awareness versus Environmental Behaviour

Analysis of the data would indicate there is a very slight positive relationship between these two traits (r (GS)=0.098687331, r (NGS)= 0.030983358). The relationship is statistically significant only among Green-Schools students. For Non-Green-Schools students the relationship is not statistically significant. In essence the students' level of environmental awareness does not appear to directly influence their behaviour towards the environment.

5.8.2 Environmental Awareness versus Opinion Leadership

Analysis of the data would indicate there is a slight positive relationship between these two traits (r (GS)= 0.121369194, r (NGS)= 0.095804933). In both cases this relationship is significant to 99%. In essence the more environmentally aware the student, the more likely they are to discuss the environment and encourage others to be environmentally friendly.

5.8.3 Environmental Behaviour versus Opinion Leadership

The r values for both Green-Schools and Non-Green-Schools indicate a moderate to strong significant positive relationship between behaviour and opinion leadership (NGS-0.422488919, GS-0.373836384). This is the strongest correlation between any of the traits in the current study. In essence students that discuss the environment and encourage others to be environmentally friendly are more likely to behave in a better manner towards the environment.

Chapter 6

Conclusions/Discussion

6 Conclusions/Discussions

6.1 Environmental Awareness & Knowledge

As regards awareness and knowledge about the environment and environmental issues the students from both Green-Schools and Non-Green-Schools have almost identical scores. Furthermore, the number of correct responses from each group to the individual questions is also very similar. However, as mentioned previously two of the awareness questions have been asked with a slightly different wording in a previous survey (Faughnan & McCabe 1998) which was assessing the environmental awareness levels within the Irish adult population. These questions in the current study scored the highest and lowest percentages of correct responses (see **Chapter 5-5.1**). The questions and percentages of correct answers are outlined in the table below:

Table 6.1 (a) Comparisons of percentage correct response of similarly worded questions from a previous survey (Faughnan & McCabe 1998).

Question in Current Study	NGS % Correct	GS % Correct	Question in Previous Study (Faughnan & McCabe 1998)	% Correct
'Cars are not a major cause of air pollution'	89% (n=654)	89% (n=654)	*'Cars are not really an important cause of air pollution'*	69.8% (n=932)
'The greenhouse effect is caused by the hole in the ozone layer'	19% (n=654)	21% (n=654)	*'The greenhouse effect is caused by a hole in the earth's atmosphere'*	12.0% (n=861)

This indicates that the students within the current study scored significantly higher than the adults in the previous 1998 study for similarly worded awareness/knowledge questions.

6.2 Behaviour

Behaviour towards the environment is significantly different between the Green-Schools and Non-Green-Schools students. Green-Schools students display higher scores in all

the behaviours assessed. This is most noticeable when it comes to participation in local environmental projects.

6.3 Opinion Leadership

The largest difference between Green-Schools and Non-Green-Schools students of any trait within the current study was in relation to environmental opinion leadership. Green-Schools students discuss the environment more often in more settings and encourage others to be environmentally friendly more often. This was particularly the case for student discussion in the classroom setting.

6.4 Personal Efficacy

Indications from the current study are that personal efficacy levels among both Green-Schools and Non-Green-Schools students are very high (90-95%). The survey of attitudes and awareness by Faughnan & McCabe (1998) also assessed personal efficacy levels among the Irish adult population. This was evaluated by the response to the following statement.

'It is just too difficult for someone like me to do something about the environment'

The choice of response was strongly agree, agree, neither agree or disagree, disagree or strongly disagree.

The results from this study were as follows:

Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
12.5%	34.6%	6%	37.2%	9.7%

These results would indicate, even though there is a different format for the assessment, that personal efficacy levels are higher among 11-13 year olds than among adults 15-65+. Furthermore, it is important to note that the Faughnan & McCabe (1998) study revealed a positive correlation between personal efficacy and behaviour.

6.5 Correlations

From the current study it appears that students' environmental awareness and knowledge level does not have a large impact on students' behaviour towards the environment. It was the trait of opinion leadership that displayed the strongest positive correlation with behaviour towards the environment. The same positive correlation of opinion leadership and behaviour was apparent among both Non-Green-Schools and Green-Schools students. There was no direct correlation between awareness and opinion leadership.

6.6 Conclusions

6.6.1 Effect on the student

It appears from the current study that the Green-Schools programme may be having a very slight effect on environmental awareness levels **but** is having a ***very significant*** effect on the environmental behaviour and opinion leadership levels among the participating students.

This difference appears to be achieved by the strong correlation of opinion leadership and behaviour. It is often illustrated that it is presumptuous to imply cause and affect to such correlations. However, this relationship (opinion leadership with behaviour) within the current study is common to both types of student (i.e. Green-Schools and Non-Green-Schools).

6.6.2 Effect on the classroom/school

Since discussion levels in the classroom are higher among Green-Schools students and the teacher is the main source of information it would indicate that the teacher is obviously playing a very important positive leadership role in the success of the programme. It appears that the teacher is animating the programme within the classroom and this effect cascades into the whole school community.

6.6.3 Effect on the wider community

This effect was not directly investigated in the current study. However, one impact on the wider community was assessed in the current study. This aspect was recycling levels within the student's home. The current study indicated that levels of home composting, recycling of glass, paper and aluminium were higher within the homes of Green-Schools students. However, the obvious question at this stage is whether this effect is home-based phenomenon or whether it is due to the translation of the Green-Schools programme into the wider community. From the current study the latter option is seen as a more viable model for the following reasons:

> From the current study opinion leadership with respect to the environment appears to be one of the major factors influencing behaviour towards the environment. The trait of opinion leadership was assessed in part by the amount of discussion undertaken in various settings about the environment. Discussion levels within the home and with family/friends were very similar among Green-Schools and Non-Green-Schools students. However, the discussion levels within the classroom setting were much higher among Green-Schools students. These would indicate that it more likely that the higher recycling levels recorded within the homes of Green-Schools students is a translation of positive behaviour (achieved by the Green-Schools programme) from the school to the home.

References

EC (European Commission), 1999b. Les Européens et l'Environnement en 1999. Enquête réalisée dans le cadre de l'Eurobaromètre 51.1. European Commission, Brussels.

Faughnan, P. & McCabe, B., 1998. Irish Citizens and the Environment. A Cross-national Study of Environmental Attitudes, Perceptions and Behaviours. Environmental Protection Agency.

APPENDIX 1

QUESTIONNAIRE

School Name & Address:_____

Date:_____

Are you a: Boy ☐ Girl ☐

What age are you?_____

1) ***Do you live in a*;**

a) City ☐ **b**) Town ☐ **c**) Village ☐ **d**) Rural Area ☐

2) How many people live in your household?

_____

3) Do <u>you</u> feel environmental problems are;

a) An urgent problem ☐ **b**) A problem for the future ☐

c) Not a problem ☐ **d**) Don't know ☐

4) <u>CAREFULLY</u> read the following statements and answer 'True', 'False' or 'Don't know';

a) ***'Human activity has no effect on the state of the environment'***

True ☐ False ☐ Don't know ☐

b) ***'The 'greenhouse effect' is caused by the hole in the ozone layer'***

True ☐ False ☐ Don't know ☐

c) ***'Cars are <u>not</u> a major cause of air pollution'***

True ☐ False ☐ Don't know ☐

d) ***'It is better to prevent waste than to recycle waste'***

True ☐ False ☐ Don't know ☐

e) ***'The greenhouse effect does <u>not</u> cause any changes to the earth's climate'***

True ☐ False ☐ Don't know ☐

5) Answer the following multiple choice questions;

How long does it take for an aluminium can to decompose?

1-2 year ☐ 20 - 30 years ☐ 80 –100 years ☐

What percentage of household waste in Ireland goes to landfill for disposal?

Around 10% ☐ Around 50% ☐ Around 90% ☐

Paper & cardboard make up what proportion of Irish household waste?

Around 10% ☐ Around 30% ☐ Around 70% ☐

On average how much paper does an Irish person use per year?

Around 7kg ☐ Around 70 kg ☐ Around 170kg ☐

How do you hear/find out about environmental issues?

Newspapers/Magazines/Books ☐ TV/Radio ☐

Teachers ☐ Family/Friends ☐

Internet ☐ Other ☐

If other please state_____

6) Do you do any of the following at home;

Composting? Yes ☐ No ☐ Don't know ☐

Recycling? Yes ☐ No ☐ Don't know ☐

What things are recycled? Paper/Cardboard ☐ Aluminum Cans ☐

Glass Bottles ☐ Other ☐ Please state_____

7) Have you discussed environmental issues in the last month;

At home ☐ With your friends ☐ In the classroom ☐ Not at all ☐

8) Do <u>you</u> encourage others (e.g. family, friends, classmates, etc.) to be more environmentally friendly?

Always ☐ Sometimes ☐ Never ☐

9) Do you own a mobile phone?

Yes ☐ No ☐

10) Do you have access to the Internet at home?

Yes ☐ No ☐

11) Answer the following questions;

a) Do you drop litter on the ground?	Always ☐ Sometimes ☐ Never ☐
b) Do you take part in a local environmental projects (e.g. clean up a beach, park, street etc.)?	Always ☐ Sometimes ☐ Never ☐
c) Do you try to save tap water?	Always ☐ Sometimes ☐ Never ☐
d) Do you turn off lights when leaving a room for a short time?	Always ☐ Sometimes ☐ Never ☐
e) Do you buy products that are environmentally friendly?	Always ☐ Sometimes ☐ Never ☐

12) How do you get to and from school everyday?

Walk ☐ Cycle ☐ Car ☐ School Bus ☐

13) What do <u>you</u> think of the following statement:

'THERE IS NOTHING I CAN DO ABOUT THE STATE OF THE ENVIRONMENT'

Do you : Agree ☐ Disagree ☐

If there are any environmental issues that you feel strongly about please mention them in the space provided below

APPENDIX 2

SURVEY PROCEDURE

Survey Procedure

The survey questionnaire was personally issued by the researcher within the classroom setting. Each classroom typically contained 25-30 students. However, in smaller schools the number of students within the classroom relevant to the study (e.g. 5th and 6th class) may have been as low as five.

The following classroom procedure was used in the current survey:

1. The researcher introduced himself to the class and distributed the questionnaires. Instructions and information were then issued on the survey questionnaire. These included an outline of the types of questions within the questionnaire (e.g. true or false questions, multiple choice questions, questions with a single response, questions with a multiple responses, optional questions).
2. The students were also instructed that if they couldn't answer or respond to a question due to the wordage or otherwise they were to put an 'X' beside the question and continue through the questionnaire. These questions were to be left until the end and were explained in simpler wordage by the researcher until the student could respond.
3. It was emphasized that the questionnaire was for **a survey not a test**.
4. It was pointed out that the questionnaires were anonymous and therefore responses were to be as honest as possible.

The survey questionnaire generally took 10-15 minutes to be filled out by the students. Once the questionnaires were collected the researcher went through the awareness questions and revealed the correct answers to the students. A short discussion also took place about the responses to the optional question regarding the student's own environmental issues.