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‘Teacher Perspectives on the Role of the Green Schools Programme in Supporting the Environmental Literacy of Primary School Pupils’

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Abstract

Despite its popularity, little evidence exists to support the impact of the Green Schools programme on pupils' environmental literacy. This paper sought to discover how impactful the programme is. A mixed methodology was used, and research focused on the perspectives of teachers involved with the programme. Participants strongly agreed that the programme impacts pupils' environmental literacy, that it provided pupils with opportunities to make significant environmental contributions and to influence the environmental decisions of others. This contrasted with findings in other studies. Overall, it was found that the Green Schools programme is an impactful programme, worthy of consideration.

Table of Contents

Table of Figures	4
List of Abbreviations/Terms	5
Chapter 1: Introduction	6
1.1 Origin of the Dissertation.....	6
1.2 Background to the Project	6
1.3 Rationale	7
1.4 Dissertation Layout	7
1.5 Conclusion.....	8
Chapter 2: Literature Review:	9
2.1 Introduction	9
2.2 Effectiveness of Other Environmental Programmes	9
2.3 Eco Schools: Impacts on Environmental Knowledge and Awareness	10
2.4 Eco Schools: Impacts on Environmental Skills.....	10
2.5 Eco Schools: Impacts on Environmental Attitudes.....	11
2.6 Eco Schools: Impacts on Environmental Behaviours.....	12
2.7 Longevity of Impacts on Environmental Behaviours.....	12
2.8.1 Behaviour Theory.....	13
2.8.2 Locus of Control	14
2.8.3 Barriers to Environmental Behaviour	14
2.8.4 Self-Determination Theory.....	14
2.9.1 Role of Teaching Methodologies.....	15
2.9.2 Prioritisation of Targeted Areas	15
2.10 Difficulties in Assessment	16
2.11 Conclusion.....	16
Chapter 3: Methodology:	18
3.1 Introduction	18
3.2 Research Paradigm.....	18
3.3 Methodology.....	19
3.4.1 Approach.....	20
3.4.2 Research Methods	20

3.5 Sample and Participants.....	21
3.6 Data Analysis	22
3.7 Rigour	22
3.8 Limitations.....	23
3.9 Ethical Considerations.....	23
3.10 Conclusion.....	24
Chapter 4: Findings	25
4.1 Introduction	25
4.2 Background of Participants	25
4.3.1 Impacts on Pupils	25
4.3.2 Impacts on Pupils’ Environmental Knowledge.....	26
4.3.3 Impacts on Pupils’ Environmental Awareness	27
4.3.4 Impacts on Pupils’ Environmental Attitudes.....	28
4.3.5 Impacts on Pupils’ Environmental Behaviour	29
4.4 Longevity of Impacts	31
4.5 Pupil Participation Levels	32
4.6 Pupil Ability to Make Significant Contributions	34
4.7 Difficulties in Assessing Impacts	34
4.8 Conclusion.....	35
Chapter 5: Discussion	36
5.1 Introduction	36
5.2 Difficulties in Assessing Impacts of the Green Schools programme	36
5.3 Impacts on Environmental Knowledge and Awareness	37
5.4 Impacts on Environmental Attitudes	37
5.5 Impacts on Environmental Behaviours	38
5.6 Locus of Control and Ability of Pupils to Make Significant Environmental Contributions	39
5.7 Influences on Pupils and Influences of Pupils on Others.	39
5.8 Lasting Effects of the Programme	40
5.9 Conclusion.....	41
Chapter 6: Conclusion	43
6.1 Introduction	43
6.2 Principal Research Findings.....	43
6.3 Limitations.....	44
6.4 Policy Based Recommendations	44
6.5 Practical Recommendations.....	45

6.6 Concluding Comments	45
References:.....	46
Appendices.....	50
Appendix 1: Online Questionnaire.....	51
Appendix 2: Interview Topic Guide	56
Appendix 3: Research Topic Guide.....	58
Appendix 4: Consent Forms for School Principals and Participants.....	60
Appendix 5: Sample Page of Thematic Analysis of Interview Transcript	62

Table of Figures

Figure 1: Statements Related to Impacts on Environmental Knowledge.....	26
Figure 2: Statements Related to Impacts on Environmental Awareness	27
Figure 3: Statements Related to Impacts on Environmental Attitudes.....	29
Figure 4: Statements Related to Impacts on Environmental Behaviours.....	30
Figure 5: Statements Related to the Longevity of Impacts on Pupil Behaviour and Knowledge	32
Figure 6: Percentage of Pupils who Become Actively Involved in Environmental Activities as a Result of the Green Schools Programme	33

List of Abbreviations/Terms

Environmental Literacy: This term is used throughout as an umbrella term that incorporates environmental knowledge, environmental awareness, environmental attitudes, and environmental behaviours.

FEE: The Foundation for Environmental Education. The FEE coordinate the Eco Schools programme globally as an environmental education programme.

Green Schools Programme: This term relates to the Eco Schools programme as it is organised in the Republic of Ireland. The Green Schools programme is operated and coordinated by An Taisce.

Green Flags: Green flags are achieved on the successful completion of criteria related to specific environmental themes.

Chapter 1: Introduction

1.1 Origin of the Dissertation

Climate change has become one of the most pressing concerns for the future of humankind, and with the immediate impacts of heat waves, reduced agricultural outputs, depleted freshwater resources, melting ice caps, rising sea levels, and irreparable damage to ecosystems, the world as we know it is under immense threat unless societal changes are made in the near future (Travis, 2003; Wallace-Wells, 2019; WHO, 2021; Williamson et al., 2018). Major changes in the environmental behaviours of individuals and communities are required (IPPC, 2022). 90% of all Irish schools are involved in the Green Schools programme, which aims to make environmental awareness and action an intrinsic part of school life (An Taisce, 2016). As of November 2022, 3,559 schools in Ireland were registered with the Green Schools programme, and 3,132 schools were actively working on a specific theme (Kissane, 2022). During this researcher's experiences of working and completing school placements in a number of Irish primary schools, he witnessed the programme in action, and as a result felt the need to explore and evaluate the effectiveness of the programme. This chapter provides the background and rationale of this project, along with a brief outline of the layout of this paper.

1.2 Background to the Project

Despite the popularity of the Green Schools programme, little research has been conducted into the effectiveness and impact of the programme on primary school pupils (Spinola, 2015). There has only been one major study into the impacts of the programme on Irish primary school pupils, which produced mixed findings, suggesting the programme impacts pupils' environmental attitudes and behaviours but has little impact on their environmental knowledge or awareness (O'Mahony and Fitzgerald, 2001). Some studies have been conducted into the Eco Schools programme in other countries, but findings have varied and the use of studies from other countries may not be transferable to the Irish context due to

differences in education systems and curricula. A clear gap exists in the literature regarding the impacts of the programme on Irish pupils.

1.3 Rationale

The primary school curriculum states that through education, pupils should develop a sense of individual and community responsibility for environmental care (NCCA, 1999). As Irish primary schools and teachers make decisions about how best to teach this environmental education, it is important that they can make informed decisions about the suitability of the Green Schools programme in meeting their aims. Teachers must be certain that they are achieving real impacts on the environmental literacy of pupils, and not simply delivering content to be learned (Stanisic, 2016). Therefore, this study aims to explore the impact of the Green Schools programme on the environmental literacy of the pupils, and to investigate if such impacts last long-term and provide pupils with opportunities to make significant contributions to environmental activities and to influence the environmental choices of others.

1.4 Dissertation Layout

This paper is laid out in six main chapters. This first chapter introduces and provides the background and rationale for this research thesis. Chapter Two focuses on the theoretical framework, exploring the current literature on the Eco Schools programme. Chapter Three outlines the methodology that was employed as the research was conducted. Chapter Four highlights the key findings from the data, and presents key findings from the quantitative data in several graphs. The fifth chapter extracts meaning from the data, identifies ways in which the qualitative data supports and enhances the quantitative data, and compares these findings with the literature. Comparisons with the literature are made to highlight areas in which the literature supports or contrasts with the research findings, and explanations are provided as to why this may be the case. Chapter Six concludes the dissertation by providing a concise and succinct conclusion of the findings, limitations and recommendations of this research.

1.5 Conclusion

Whilst the Green Schools programme continues to grow in popularity in Irish primary schools, it remains crucial that the effectiveness of the programme should be explored so that the impacts of the programme are better understood by potential practitioners. This research project seeks to answer the following questions regarding the impacts of the Green Schools programme; ‘What impact does the Eco Schools programme have on the environmental knowledge, awareness, attitudes, and behaviours of primary school pupils in Ireland? Do the impacts of the programme last long-term? What proportion of pupils become directly involved in environmental activities as a result of the programme. Do pupils believe their actions can produce significant environmental results?’ The following chapter presents the theoretical framework in the form of a literature review.

Chapter 2: Literature Review:

2.1 Introduction

The Eco Schools programme has become a very popular choice for schools, yet as Spinola (2015) has noted, the programme has continued to grow in popularity without sufficient proof of its effectiveness in developing pupils' environmental literacy. This raises many questions about the impacts of the Eco Schools programme, as the decision to implement the Eco Schools programme must surely be grounded in the belief that it will benefit pupils' environmental education, and that it is not implemented for the sole aim of achieving a Green flag. This chapter examines the impacts of the Eco Schools programme, and other environmental programmes on pupils. This includes an exploration of the effectiveness of the Eco Schools programme in impacting the concepts that extend from environmental literacy, namely environmental knowledge, awareness, skills, attitudes and behaviours. The longevity of impacts and motivation level of those involved in the programme is explored and the role of behaviour theory relevant to the Eco Schools programme is examined. Finally, difficulties in teaching, assessing and evaluating impacts are explored.

2.2 Effectiveness of Other Environmental Programmes

Spinola (2015) declares there is insufficient proof that the Eco-Schools programme develops pupils' environmental literacy. Therefore, it is worth examining the effectiveness of other environmental programmes. Interestingly there also appears to be little evidence of the effectiveness of other environmental programmes. A study in England by Goodwin et al. (2010) concluded that there was no statistically significant difference in the environmental awareness of pupils that undertook a school-based intervention on environmental issues and of pupils that did not undertake the intervention. That does not mean that the pupils did not increase their level of environmental literacy, it may be that the non-participating schools simply developed their own environmental literacy at a similar rate through the standard curriculum. Stanistic (2016) states, it is not sufficient to simply provide environmental content and expect pupils to then develop environmental behaviours and

attitudes. With little proof of the effectiveness of alternative environmental programmes, a more targeted investigation of the Eco Schools programme is required.

2.3 Eco Schools: Impacts on Environmental Knowledge and Awareness

It is crucial to evaluate the impact of the Eco Schools programme in developing environmental knowledge and awareness. In a study of the Eco Schools programme in Ireland, it was concluded that the level of environmental knowledge and environmental awareness of 5th and 6th class pupils in Green Schools and Non-Green Schools was broadly similar (O'Mahony and Fitzgerald, 2001). Other international studies have provided similar findings, although some have shown slightly more positive results regarding environmental knowledge. A study in Portugal found that there was a slightly higher level of environmental knowledge and awareness amongst 9th grade pupils in Green Schools compared to those in Non-Green Schools (Spinola, 2015). However, this study also concluded that there was a deficiency in the programme regarding its reach and impact, with only one third of the 9th grade pupils answering that they had participated in environmental activities in the past years. A study in Slovenia also found that there was a slightly higher level of environmental knowledge in Green Schools in comparison to Non-Green Schools (Krnel and Naglic, 2009). However, the difference in the level of environmental awareness remained statistically insignificant. Such studies seem to suggest that the Eco Schools programme does not contribute significantly to the environmental knowledge and awareness of pupils, any more than curriculum content does.

2.4 Eco Schools: Impacts on Environmental Skills

Another important consideration is the impact of the Eco schools programme on pupils' environmental skills. Learning environmental content achieves little if pupils do not develop skills that are requisite for participation in environmental action. These skills range from critical thinking to debating skills, and conflict resolution techniques that allow children to develop the competence to collaborate and to reach a consensus. Education that provides pupils with problem solving skills can supply them with the skills and orientation to tackle environmental problems (Mathar, 2006). As Chawla and Cushing (2007) state, it is critical for

participants to learn how to resolve conflicts by talking them through, reaching consensuses, showing consideration and being willing to accept compromise. It may be possible to see the development of these skills by looking at the activities that have been achieved through their use. Research by O' Mahony and Fitzgerald (2001) convincingly demonstrated that schools that attained a Green Flag produced smaller amounts of waste, their pupils recycled more, participated more frequently in environmental project and held discussions about environmental issues. This seems to demonstrate environmental skills being put into action and being developed through such activities.

2.5 Eco Schools: Impacts on Environmental Attitudes

Environmental attitudes are another aspect of environmental literacy that appear to be crucial to the success of the Eco Schools programme. The environmental attitudes of pupils in Green Schools appears to be slightly more positive than that of pupils in schools not involved in the programme. O' Mahony and Fitzgerald (2001) found that 96% of Green School pupils in their study believed that they could do something about environmental issues, in comparison to just 91% of pupils within Non-Green Schools. Similarly, a study in Cyprus concluded that the Eco Schools programme led to the cultivation of positive environmental attitudes in Green Schools, scoring significantly higher in their study compared to pupils in the control schools (Kadji-Beltran, Barker and Raper, 2001). They concluded that much of this improvement in environmental attitudes may result from the sheer number and kind of activities that the pupils were involved in, along with the level of pupil participation in the programme. Another interesting report was based on an evaluation of the Eco Schools programme in Scotland. In this report, Pirrie et al. (2006) discovered that the pupils themselves rated the raising of awareness and the saving of resources as the two most important aspects of the Eco Schools programme. Interestingly, the status of the Eco School programme as a recognised award scheme was deemed the least important element of the programme by the pupils. This suggests that the pupils' attitudes towards the programme reflected the real aims and goals of the programme, and they did not simply view the Green flag itself as the ultimate goal. Clearly, there is some correlation between positive environmental attitudes and the Eco School programme.

2.6 Eco Schools: Impacts on Environmental Behaviours

An important area to examine is the impact of the Eco Schools programme on the environmental behaviours of pupils. To have a lasting effect on the pupils' environmental behaviours, the programme needs to cater for pupils' long-term development, which appears to be no small undertaking. Studies on the impact of the Eco Schools programme on environmental behaviour have produced varied findings. A study in Slovenia found there was no statistically significant difference in the environmental behaviour of pupils between Eco Schools and Non-Eco Schools (Krnjic and Naglic, 2009). Similarly, two studies of the Eco Schools programme in Belgium concluded that the programme had no effect on pupils' environmental behaviours (Boeve-de Pauw, and Van Petegem, 2011, Boeve-de Pauw and Van Petegem, 2013). Environmental behaviour in Eco Schools in the Madeira region of Portugal was found to be slightly better than in Non-Eco Schools (Spinola, 2015). However, studies in other countries discovered significant impacts of the Eco Schools programme on pupils' environmental behaviours. In Ireland for instance, the level of environmental behaviour was found to be significantly higher, along with a higher level of opinion leadership reported amongst pupils in Eco Schools (O'Mahony and Fitzgerald, 2001). Pupils were found to be more likely to discuss environmental topics, more often, in more places and to encourage others to be environmentally friendly. A report in Scotland provides a positive evaluation of the impact of the programme on environmental behaviours. The report concluded that a general consensus exists that the programme had a positive impact on environmental behaviour and that there were increased levels of pupil participation in relevant initiatives, with pupils becoming actively involved in seeking social and environmental change in their localities (Pirrie et al., 2006).

2.7 Longevity of Impacts on Environmental Behaviours

If the Eco Schools programme does have positive impacts on environmental behaviours, do these impacts last? Findings from a study of Eco Schools in the Czech Republic suggest that environmental behaviours may wane once initial interest in the programme subsides. It found that there was a statistically higher level of environmental behaviour in pupils of

schools new to the Eco Schools programme compared to pupils of schools that have already been awarded Eco Schools status (Cincera et al., 2012). Similarly, a study in Slovakia discovered that pupils from schools new to the programme had higher environmental awareness than pupils of schools that had already been awarded Eco School status (Cincera et al., 2012). These studies indicate that there is a higher motivation towards the programme at the beginning of its implementation, which may gradually wane, perhaps due to the setting of unrealistic goals (Cincera et al., 2012). This could result from many different factors, such as teachers losing motivation and energy for the programme. As Heimlich and Ardoin (2008) state, without continual reinforcement, it is common for enthusiasm towards a new behaviour to wane.

2.8.1 Behaviour Theory

The transfer of knowledge or attitudes does not imply behavioural change (Cincera and Krajhanzi, 2013). If the ultimate aim of environmental education is to impact pupils' environmental behaviours in order to create active environmental citizens, then Behaviour Theory may highlight features that are necessary for environmental programmes, such as the Green Schools programme. Behaviour theorists have produced numerous theories to explain the conditions that are requisite to develop desired behaviours. Early behaviour models proposed a linear model. They suggested a linear progression from environmental knowledge to environmental awareness, leading to environmental behaviours (Krnal and Naglic, 2009). However, such models have been proven wrong, as it is possible to observe people who possess environmental knowledge and attitudes but fail to develop positive environmental behaviours (Darner, 2009). Other models consider a wider range of factors and appear more worthy of consideration. Prime among these is the Hines model of responsible environmental behaviour. This is a more complex model in which numerous constructs are synthesized into a single model. These include skills and knowledge along with personal factors that consist of attitudes, personal responsibility and locus of control (Darner, 2009). These factors interact to provide the intention to act, yet the actual behaviour must then be triggered by situational factors (Krnal and Naglic, 2009).

2.8.2 Locus of Control

The locus of control is a particularly interesting factor and appears to have a definite relevance to the environmental education of children. The locus of control relates to the level in which an individual believes that a desired outcome can be achieved through a particular behaviour. If desired outcomes are achieved, they act to reinforce the belief of an individual's efficacy (Heimlich and Ardoin, 2008). This suggests children need to feel that they can make a difference if they are to develop pro-environmental behaviour.

2.8.3 Barriers to Environmental Behaviour

It has also been acknowledged that there are barriers to environmental behaviour that need to be included in environmental behaviour models. Kollmuss and Agyeman (2002) identified numerous potential barriers, such as a lack of internal incentives and negative or insufficient feedback about behaviour. However, it is the potential barrier of old habits that they emphasise the most. They argue that this is often overlooked in theories about environmental behaviour. This barrier is significant if the behaviour that is prevalent in the home is significantly different from the behaviour being taught from the Eco Schools programme. Put simply, the environmental influences from the home and from informal activities have a direct effect on pupils' environmental behaviours (Shay-Margalit and Rubin, 2017).

2.8.4 Self-Determination Theory

The theory of Self-Determination is also worth consideration. Self-Determination Theory suggests what is needed for pupils to embed new environmental behaviours and what may prevent the internalisation of these behaviours. This theory is based on the belief that human behaviours are not intrinsically motivated (Darner, 2009). Instead people learn to internalise behaviours that allow for a smoother existence in social relationships. Three needs are identified as necessary to support Self-Determination Theory; the need for competence, the need to control outcomes and the need for autonomy or self-determination (Darner, 2009). This theory could explain why the effectiveness of environmental education programmes may wane over time, because as Darner (2009) notes,

when external incentives or rewards for environmental behaviour are removed the behaviour will not continue unless it has been internalised. Therefore, if the reward of achieving a new Green flag does not exist, it seems likely that the environmental behaviours may decline. Literature on environmental behaviour theory is far from conclusive and this serves to highlight the task that faces teachers in developing environmental behaviours through the Eco Schools programme.

2.9.1 Role of Teaching Methodologies

Does the manner in which the Eco Schools programme is taught influence its impact? Stanistic (2016) observed that environmental education in Serbia is still mostly taught using didactic teaching methods, with teachers providing content for pupils to absorb. Stanistic (2016) suggests that such teaching methods are ineffectual and improvements in teaching methods for environmental education are not being considered. Instead discussions on environmental education remain focused on adding or altering content, rather than improving methodologies. This seems to fail pupils. For environmental education to succeed Chawla and Cushing (2007) argue that it is crucial for pupils to be actively involved, have their actions taken seriously and experience success with some of their goals. This is an important lesson for teachers implementing the Eco-Schools programme. Teachers should also try to develop links with the families of pupils in order to communicate the role of democratic parenting, to highlight pupil contributions and to seek parents' support and involvement in environmental projects (Chawla and Cushing, 2007). It is also important for teachers to make use of guest speakers to encourage the motivation and engagement of pupils and to provide opportunities for meaningful learning (Kadji-Beltran, Barker and Raper, 2001).

2.9.2 Prioritisation of Targeted Areas

Teachers must also evaluate if it is more worthy to teach environmental content and behaviour or to teach and develop skills and actions that can produce pupils with skills to act on environmental issues (Cincera et al., 2012). As Dolan (2021) states, resources can be created or acquired that focus specifically on the development of environmental skills, such

as critical thinking and debating skills. Furthermore, McNaughton (2004) found that Drama can be used effectively to develop key environmental action skills. Clearly teachers must find a suitable balance between teaching content and skills if they are to successfully implement environmental education programmes in effective ways.

2.10 Difficulties in Assessment

Assessing the impact of the Eco Schools programme remains difficult, and some impacts may simply be unmeasurable (Gough, 2020). Pupils' environmental literacy can be developed from other school lessons and from sources outside of the school, and therefore it remains difficult to isolate impacts of the Eco Schools programme. Evaluation of the outcomes of eco-friendly education is difficult to pinpoint as being the result of formal education or of informal educational products (Prabawania et al., 2017). In fact, a study in China found that although schools are major sources for the development of environmental education, pupils' environmental awareness still comes mainly from the media (Jinliang et al., 2004). This highlights the difficulty of attributing results in the development of environmental literacy and pro-environmental behaviours in pupils to one particular environmental education programme such as Eco Schools.

2.11 Conclusion

The impacts of the Eco Schools programme have yet to be definitely assessed, and whether the Eco-Schools programme has an effect on the values and actions of pupils remains relatively unknown (Boeve-de, and Van Petegem, 2013). A focus on outcomes rather than outputs is needed to provide a suitable assessment of the programme. Limited research has been conducted into the impact of the Eco Schools programme in Ireland and many questions about the impacts of the Green Schools programme on pupils arise from this literature review. The following research questions emerge from this review of the literature; 'What impact does the Eco Schools programme have on the environmental knowledge, awareness, attitudes and behaviours of primary school pupils in Ireland? Do the impacts of the programme last long-term? What proportion of pupils become directly involved in

environmental activities as a result of the programme? Do pupils believe their actions can produce significant environmental contributions?'

Chapter 3: Methodology:

3.1 Introduction

This chapter describes the research methodology selected for this study. A mixed methodology was chosen as the best fit for this study, with its main aim of evaluating the impact of the Green Schools programme on the environmental awareness, knowledge, attitudes and behaviours of primary school pupils. A mixed methodology was also deemed suitable for the other aims of this research, discovering if impacts of the Green Schools programme last long-term and if the programme provides pupils with opportunities to make significant environmental contributions and to influence the environmental choices decisions of others. The benefits of a mixed methodology are explained and the research design is explored and justified. The participant sample and methods of data analysis are rationalised and justified. Finally, the rigour, limitations and ethical issues of this research are considered.

3.2 Research Paradigm

The research paradigm selected was that of the pragmatist worldview. This fits comfortably with the researcher's worldview, and it was believed that this paradigm would produce the most useful research for this dissertation. The pragmatist is not committed to any one system or philosophy, and therefore may engage liberally with both quantitative and qualitative assumptions in research (Creswell, 2009). The pragmatist can select the best methods to fit particular pieces of research. However, the pragmatist must justify the rationale for mixing methods (Creswell, 2009). A pragmatist approach was deemed most suitable for this research, as qualitative research had the potential to enhance and complement the findings of the quantitative research. It was also possible that the qualitative aspect of the pragmatist approach could lead to broader understandings, than quantitative data alone.

3.3 Methodology

Following from the pragmatist paradigm, a mixed methodology was selected for this research. Belief that a dichotomy exists between quantitative and qualitative methodologies is now seen as false, and often research benefits from combining both methods (Ritchie et al., 2013). Mixed methodologies provide many benefits. Potentially, when both methods are analysed together they can produce more comprehensive understandings, enhancing validity and quality of findings (O’Cathain, Murphy and Nicholl, 2007). Mixed methodologies offer possibilities of enhancing logical findings produced through the analysis of qualitative research (Mason, 2006). Mixed methodologies can produce broader, self-supporting findings, which can be analysed more confidently. Crucially, a mixed methodology was also considered best suited to answer the research questions (Glogowska, 2011). A quantitative or qualitative approach alone would be inadequate to produce the richest answers to the research questions (Creswell, 2009). Quantitative research provided statistical data about the level of impacts of the Green Schools programme, but qualitative data had potential to uncover the causes of impacts, and provided participants the opportunity to supply viewpoints that had not yet been considered. Creswell (2009) identifies three general methods for mixed method studies, namely sequential, concurrent, and transformative mixed methods. Each method may benefit mixed methodology research, but it was concurrent mixed methods that were selected for this research. The ability to collect both data types simultaneously was well suited to the tight timeframe of this small-scale research project. However, this method does create challenges for the integration and interpretation of findings. Sequential mixed methods were also considered as they provide opportunities for responding to early research, with the aim of expanding and elaborating on findings. However, this requires larger timeframes for data collection and analysis, and was therefore unsuitable. Transformative methods were also unsuitable, as this project aimed to remain as objective as possible, seeking answers to questions, rather than advocating solutions to social problems (Sweetman, Badiee and Creswell, 2010). Whilst objectivity was sought, it is acknowledged that the qualitative aspect meant that the researcher brought a level of subjectivity, something often regarded as essential for qualitative research (Efron and Ravid, 2020). This reflexivity highlights the importance of acknowledging the researcher’s worldview, values, and beliefs. This researcher was aware of his pro-environmental views, and acknowledges that he has taken part in environmental initiatives such as *Clean Coasts*.

However, this researcher remained clear about the project aims and focused on carrying out research objectively.

3.4.1 Approach

The specific approach taken was fundamental to the success of this research. The research approach must complement the research questions, which in turn guide the selection of methods (Efron and Ravid, 2020). Research was conducted through a combination of surveys and short interviews. This consisted of twenty online surveys, and two interviews of twenty to thirty minutes duration. It was envisaged that qualitative data from interviews would complement and enhance the quantitative data. This mixed method approach produced a case study aimed at exploring teacher perspectives on impacts of the Green Schools programme.

3.4.2 Research Methods

Questionnaires and interviews formed the data collection methods due to their natural fit with Pragmatist paradigms and mixed methodologies. Questionnaires are useful for collecting information based on opinions, perceptions and attitudes (Efron, 2020). However, the researcher must remain cautious of questionnaires, as some respondents may not remain completely truthful and may select answers they perceive to be desired by the researcher, rather than those reflecting their beliefs (Efron and Ravid, 2020). The researcher remained cautious of claiming collected information to be undisputedly true. Questionnaires were created to ensure the questions would provide useful and relevant data that answered the research questions. Questions probed participants' beliefs about the impact of the Green Schools programme on pupils. The questions focused on impacts on environmental awareness, knowledge, attitudes and behaviours, along with the longevity and scope of the impacts. A five-point Likert scale was used for most questions. This was the most suitable question type for evaluating teachers' perspectives, and answers could be analysed relatively easily. Interview questions were selected to deal with the same themes as the questionnaires, but were created to be mostly open-ended, providing participants with opportunities to elaborate on their perspectives.

3.5 Sample and Participants

Sample selection impacts immensely on the quality of findings (Morse, 1991). Purposeful sampling was employed as it provided the most relevant sample for this topic. By matching the sample with the research aims and objectives, it was possible to produce more meaningful findings (Campbell et al., 2020). Other less suitable sample methods were rejected. Nominated sampling was rejected as it could lead to one participant having too much control over the identification of participants, and required a larger timeframe (Morse, 1991). Random sampling was rejected as it would not reliably lead to the selection of individuals with the requisite experiences. The research topic predetermined a necessity to carry out research with individuals with experience of teaching or implementing the Green Schools programme. The sample was restricted to teachers working in Green Schools with a minimum of one Green Flag accreditation. Interview participants were selected from teachers who had performed the role of Green School Coordinator within the schools. Questionnaire participants were chosen from teachers who have played any role in implementing the programme. Participants came from both urban and rural schools. Other factors, such as school size, religious ethos or socio-economic background were not considered relevant to this research. The survey sample consisted of twenty-one respondents, which resulted in a response rate of 37.5%. The two interview participants came from different schools to provide a wider range of experiences.

Before approaching schools, piloting of research methods was conducted with teachers known to the researcher, to identify areas for improvement. This resulted in slight alterations to the layout and questions in online surveys, to ensure greater clarity and to prevent participants from participating without first providing consent. No changes were made to the interview schedule, however the practice of interviewing provided the researcher with experience of how to deliver questions and respond to answers effectively. Subsequently, school principals were contacted, provided with information about the research and asked to provide consent for research to be conducted. Teachers within the school were then provided with information about the research and consent was sought. Online questionnaires were then distributed and arrangements were made for interviews.

3.6 Data Analysis

Data analysis was completed sequentially. Firstly, data from questionnaires was coded. Next, interview data was transcribed and coded thematically, with data sorted into predetermined categories and then into themes that became apparent. Then both data types were mixed. It is important to plan when data mixing will occur (Creswell, 2009). It was decided that data mixing would occur during the periods of data analysis and interpretation, but not during data collection. Data mixing can occur in various ways, ranging from data bases being kept separate but connected, integration of data bases through the transformation of qualitative data into numerical data that can then be compared, or the selection of one set of data to provide a secondary, more supportive role to the other database (Creswell, 2009). The researcher decided that quantitative data would form the primary data for analysis and qualitative data would then be processed to identify ways it supported or disclaimed the quantitative data findings. Statistical analysis was conducted, with Likert scale answers being easily comparable. Frequencies and averages of answers were calculated and responses were compared to identify trends or deviations (Campbell, 2004). Data from interviews was then analysed to identify ways it supported, disclaimed or enriched findings from the questionnaires.

3.7 Rigour

Ensuring validity and reliability of data collection tools, and identifying threats to validity was crucial (Creswell, 2012). Data was coded and sorted thematically, and the different data forms were compared to provide findings with greater validity. Triangulation was utilised to uphold validity. By obtaining data from both questionnaires and interviews, from both teachers with experience of the programme and from Green School Coordinators, it was envisaged that the research would benefit from the triangulation of varied perspectives and multiple methods (Efron and Ravid, 2020). Questionnaires were objective in nature, and interviews were conducted as objectively as possible. However, problems of validity and reliability cannot be fully eradicated (Cohen, Manion and Morrison, 2011). Reflexivity can be essential to the production of meaningful knowledge, and this researcher remained aware

of his own views, beliefs and potential biases during this project (Scott and Morrison, 2006). This researcher has pro-environmental views, but ensured that this was never declared to research participants, and all questions remained neutral in nature. The researcher used a reflective journal to record discoveries, and to help the researcher to reflect on the effectiveness of interviews and questionnaires.

3.8 Limitations

A sample of twenty surveys and two interviews, along with insufficient literature specific to the Irish experience, means caution must be exercised when considering the generalisability and transferability of findings to a wider population. Further research on a larger scale may be required to confirm the generalisability of findings. Concerns regarding reliability and validity of findings may exist due to the potential for bias within the sample. All participants have played a role in implementing the Green Schools programme, and therefore cannot be viewed as objective. Furthermore, as a mixed methodology was used, there may be limitations regarding the objectivity of the qualitative data obtained. However, the triangulation of data should benefit the validity of findings. Of course, throughout the process, researchers, whether consciously aware or not, possess a range of beliefs, assumptions and biases. Researchers' viewpoints can be unconscious and unarticulated, but the researcher must take all possible steps to make themselves aware of any tacit assumptions that underpin their perspectives and implicitly shape decisions made throughout the process (Efron and Ravid, 2020). This researcher remained aware of this throughout.

3.9 Ethical Considerations

Ethical considerations are paramount to any research. All available steps were taken to ensure this research was conducted ethically. Full ethical approval was received from the Ethics Committee of Hibernia College prior to the commencement of data collection. Permission was obtained from appropriate gatekeepers, in this instance school principals (Efron and Ravid, 2020). The interests, well-being and confidentiality of all participants was upheld and protected at all times (Stringer, 2014). All available steps were taken to ensure

adherence with the ethical guidelines of the British Educational Research Association (BERA) (BERA, 2018). This included, but was not limited to, the following steps. All research participants were treated equally, with dignity and were provided with consent forms and an explanation of how and why data was being sought and would be used. Participants were made aware that participation was voluntary, and consent could be removed at any stage. Participants were provided with a copy of findings at the completion of the research project (BERA, 2018). To ensure participants were protected and remained unidentifiable from the research, general descriptors were employed, and where possible, findings were focused on group results rather than individual results (Efron, 2020). Data was encrypted and stored in password protected electronic formats.

3.10 Conclusion

This chapter provided an outline of the methodological approaches of this research. The selection of a pragmatist paradigm, mixed methodology and appropriate research methods was discussed, justified and supported by literature. Methods of data analysis and sample selection were discussed. Finally, limitations of this research were acknowledged, and a synopsis of steps taken to ensure ethical standards was provided.

Chapter 4: Findings

4.1 Introduction

This chapter will present the research findings which are categorised thematically. The quantitative data from twenty-one online surveys and the qualitative data obtained from two interviews supported findings across numerous themes. These findings help to answer the research questions, namely what impact the Eco Schools programme has on the environmental knowledge, awareness, attitudes, and behaviours of Irish primary school pupils? Do the impacts last? What level of pupils become directly involved in environmental activities and do they believe that their actions produce significant environmental results? The findings will be presented under the following themes: The difficulty of assessing the impacts of the programme, the general viewpoint of teachers that the programme impacts positively on pupils' environmental knowledge, awareness, attitudes and behaviours, the longevity of impacts, the strong level of pupil participation in environmental activities, and the level to which pupils believe they can produce significant contributions. The trends from the quantitative data were mostly supported and enhanced by the qualitative data.

4.2 Background of Participants

All survey participants were teachers working in Irish primary schools involved with the Green Schools programme. The survey sample was 21, or $n=21$. The teachers who were interviewed for the qualitative data collection have worked, or currently work, as Green School Coordinators within primary schools.

4.3.1 Impacts on Pupils

The qualitative and quantitative data sets produced findings that explored teacher perspectives on the impacts of the Green Schools programme on pupils. The findings show a strong belief that the programme impacts positively on pupils' environmental literacy. Surveyed teachers recorded high levels of agreement with statements that suggest the programme impacts pupils' environmental knowledge, awareness, attitudes, and

behaviours. Regarding the qualitative data, both interviewees provided examples of impacts which back up the quantitative data findings and illustrate impacts on pupils.

4.3.2 Impacts on Pupils' Environmental Knowledge

Survey questions examined the impact of the Green Schools programme on pupils' environmental knowledge. These questions examined impacts on pupils' understandings of how to separate waste and identify ways to reduce energy consumption. As per Figure 1, all participants responded positively, either agreeing (33.3%) or strongly agreeing (66.7%) that pupils were more likely to understand and identify ways to achieve these goals due to the implementation of the programme.

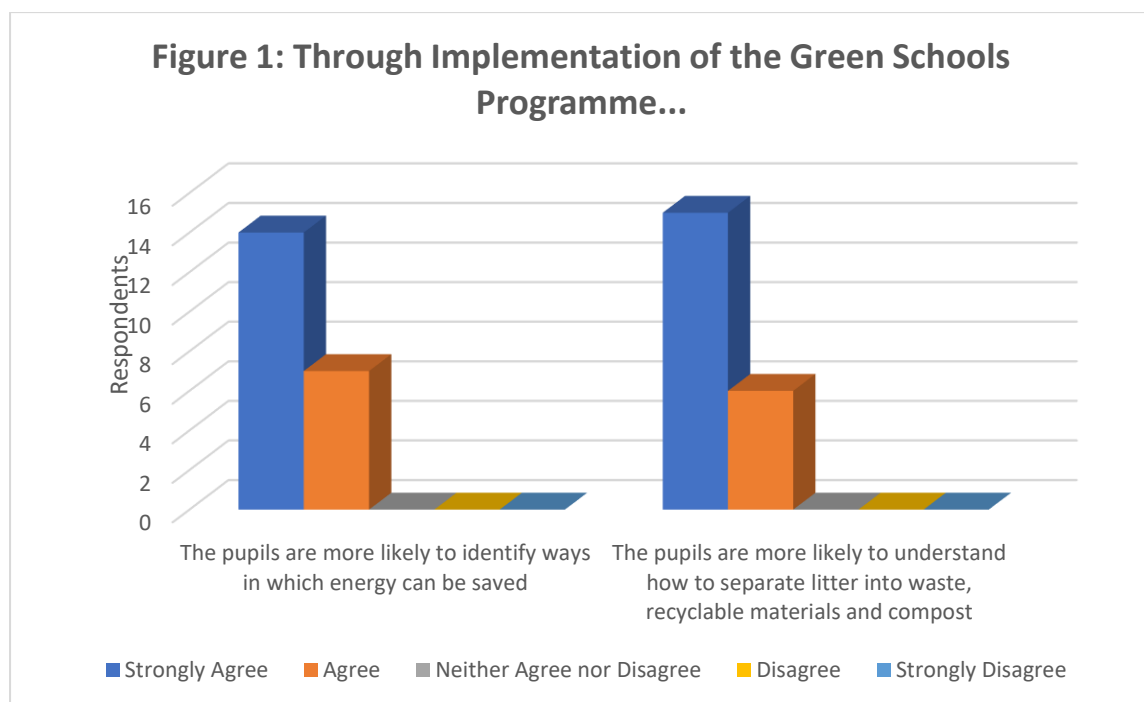


Figure 1: Statements Related to Impacts on Environmental Knowledge

This positive impact of the programme on pupils' environmental knowledge is supported by the qualitative data. Interviewee One described his/her belief that pupils are more knowledgeable on environmental issues because of the Green Schools programme. *'Students have become a lot more knowledgeable of sustainability, biodiversity...and yes the*

programme definitely impacts on that.' Interviewee Two described pupils as having good environmental knowledge because of experiences with the Green Schools programme, and noted that *'the older classes are more willing to go off and do their own research on it as well, particularly in the areas of energy conservation and waste.'*

4.3.3 Impacts on Pupils' Environmental Awareness

The quantitative data provided a similar picture regarding the impacts of the programme on pupils' environmental awareness. As per Figure 2, all survey participants responded by agreeing or strongly agreeing that pupils are more likely to be aware of the effects of litter, waste, and energy consumption on the environment, with a significant majority (71.4%) strongly agreeing that the programme leads to increased pupil awareness of the effect of litter and waste, and two thirds agreeing about increased pupil awareness of energy consumption.

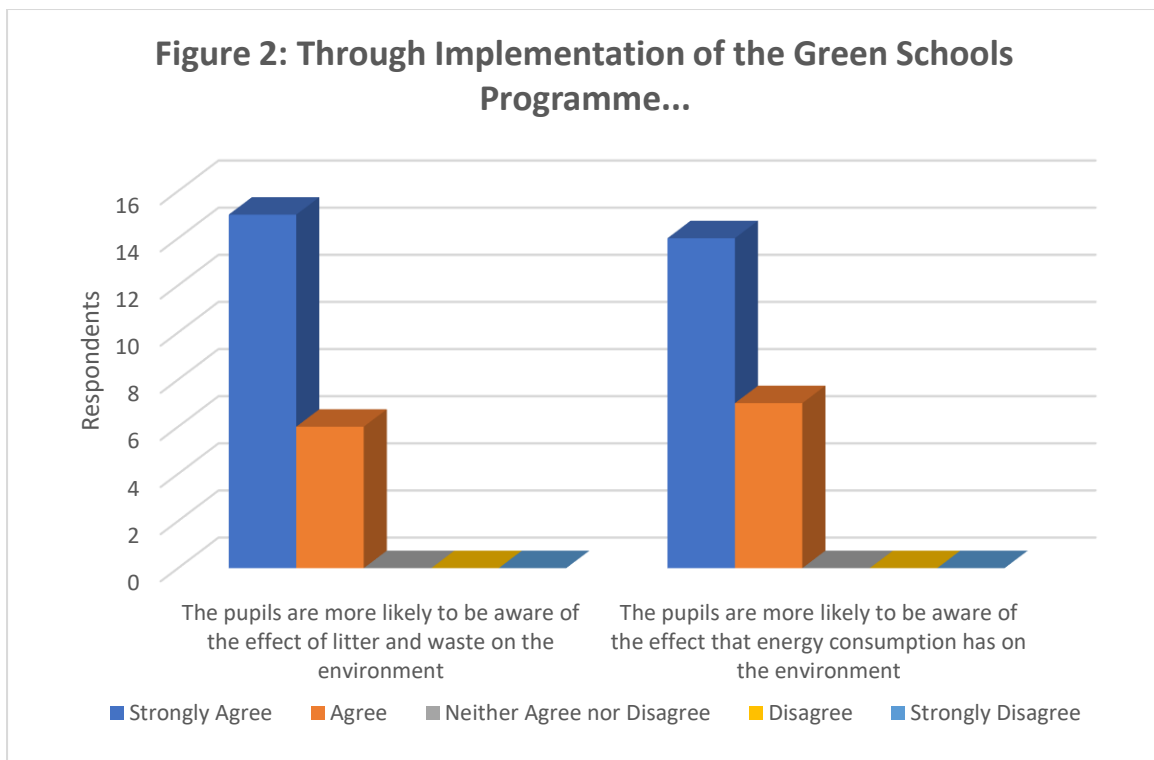


Figure 2: Statements Related to Impacts on Environmental Awareness

Interviewee Two provided anecdotal evidence of the impact of the programme on pupils' environmental awareness. This participant described pupils picking up litter at lunchtime, *'actively talking about areas'* in the locality that *'are impacted by litter'*, and undertaking litter picks in school and in the wider community, as a result of the Green Schools programme. Interviewee One believes changes to how the school dealt with litter and waste *'made the students more aware of packaging and single use plastics.'*

4.3.4 Impacts on Pupils' Environmental Attitudes

The quantitative data also demonstrated that the Green Schools programme positively impact pupils' environmental attitudes, but this finding was less strong than the previous findings. As per Figure 3, only one third of respondents strongly agreed that pupils want to make pro-environmental choices as a result of the programme's implementation, 61.9% selected agree, and 4.8% remained neutral. Furthermore, only around a quarter (23.8%) strongly agree that pupils are more likely to highlight the anti-environmental behaviour of others as a result of the programme, with 47.6% agreeing, 23.8% remaining neutral and 4.8% disagreeing with this statement. Although participants did not agree as strongly with these statements, there remained a strong conviction that the Green Schools programme impacts pupils' environmental attitudes.

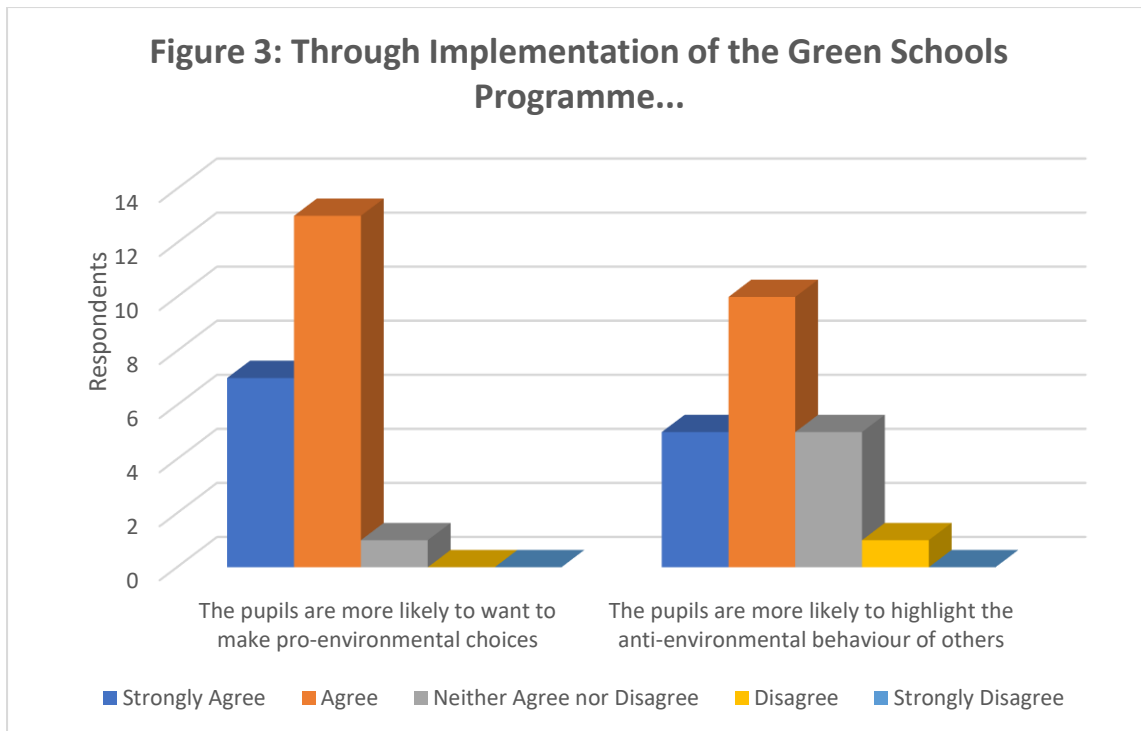


Figure 3: Statements Related to Impacts on Environmental Attitudes

The qualitative data, in comparison, produced strong findings that the programme impacts pupils’ environmental attitudes. Interviewee One was certain about this, providing an example of pupils reminding parents to turn off car engines if remaining in the carpark for a period. *‘I know from speaking to students that’s something they’re always reminding them (parents) of.’* Interviewee Two described pupils as being positive and identifying *‘themselves as having a role in protecting their local community, their county, and the world as a whole’*. This interviewee believes pupils recognise their responsibilities and are *‘eager to participate in different ways’*. Clearly these interviewees have experienced the development of positive environmental attitudes amongst pupils during implementation of the programme.

4.3.5 Impacts on Pupils’ Environmental Behaviour

Four survey questions probed teacher perspectives on the impacts of the programme on pupils’ environmental behaviour. As per Figure 4, all statements received strong support for the answers ‘agree’ or ‘strongly agree’. All participants agreed or strongly agreed that pupils were more likely to recycle as a result of the programme. In comparison, 19% remained

neutral when asked if the programme leads to pupils being more likely to reduce the number of resources they use by using resources more efficiently. Few participants disagreed with statements about impacts on pupil behaviours. Just 4.8% disagreed that the programme makes pupils more likely to volunteer to participate in a litter patrol, and only 9.5% disagreed that pupils are more likely to walk, cycle or carpool to school. However, the key finding is that four out of every five teachers surveyed agreed that the programme impacted pupils' environmental behaviours positively.

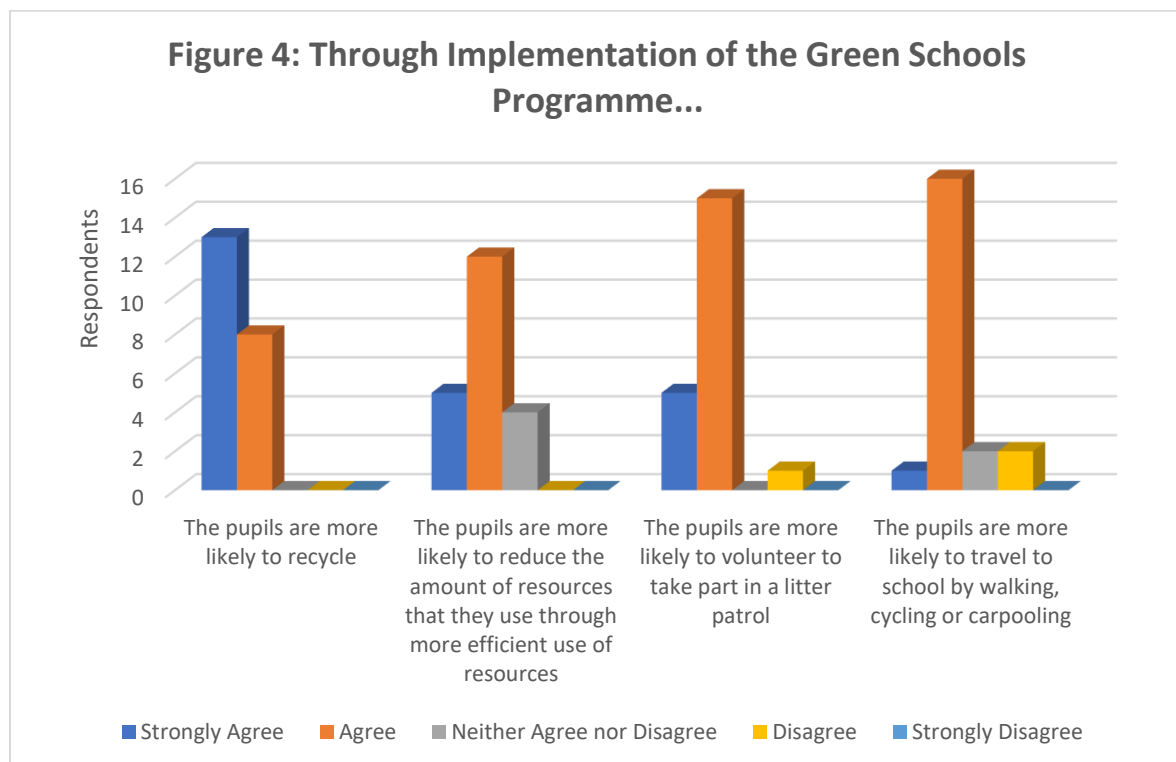


Figure 4: Statements Related to Impacts on Environmental Behaviours

Again, the qualitative data supported the quantitative data, with interviewees supporting the opinion that the programme positively impacts pupils' environmental behaviours. Interviewee Two stated that staff '*definitely notice...a big uptake on the amount of children who are actually walking, cycling or scooting to school.*' This interviewee also noted that pupils had themselves been responsible for planning, campaigning for, and succeeding in having a pedestrian crossing constructed, to help make these options of travel safer and more suitable. Interviewee One noted that during a month when the school

participated in the Big Travel Challenge, the numbers of pupils walking to school increased dramatically, from 1% of pupils from first to sixth class walking, to 68%. As previously mentioned, this interviewee also noted that pupils developed the behaviour of reminding parents to turn off car engines rather than letting them idle. A further example provided was that pupils developed the behaviour of turning off lights and projectors. This interviewee declared that *'over time it became the norm'*, and that *'it was funny how those small little things implemented, stayed in place after'*. However, it must be noted that Interviewee One acknowledged that it is difficult to gauge if they have been successful in impacting behaviours, and that *'all we can do is kind of plant that seed, give them the knowledge, eh, try and open their minds to it, but look they're very receptive to'*.

4.4 Longevity of Impacts

The data relating to teacher perspectives on the longevity of impacts of the Green Schools programme provided the most diverse range of responses in the surveys. As per Figure 5, when responding to a statement asking if pupils are more likely to behave pro-environmentally whilst working towards a flag, compared to those who have already achieved the flag, 14.3% strongly agreed, 42.9% agreed, 14.3% remained neutral, 23.8% disagreed, and 4.8% strongly disagreed. Analysis of the overall responses would indicate that the impacts of the Green Schools programme are greater when pupils are actively working towards the attainment of a Green Flag. However, regarding the longevity of impacts on pupils' environmental knowledge, a majority disagree that environmental knowledge declines after the attainment of the Green Flag. As per Figure 5, 14.3% strongly disagree, and 38.1% disagree that environmental knowledge declines after accreditation. Only one third agree that it declines. No participant strongly agreed that it declines. There is no overreaching consensus on this topic, which perhaps highlights difficulties in assessing long-term impacts.

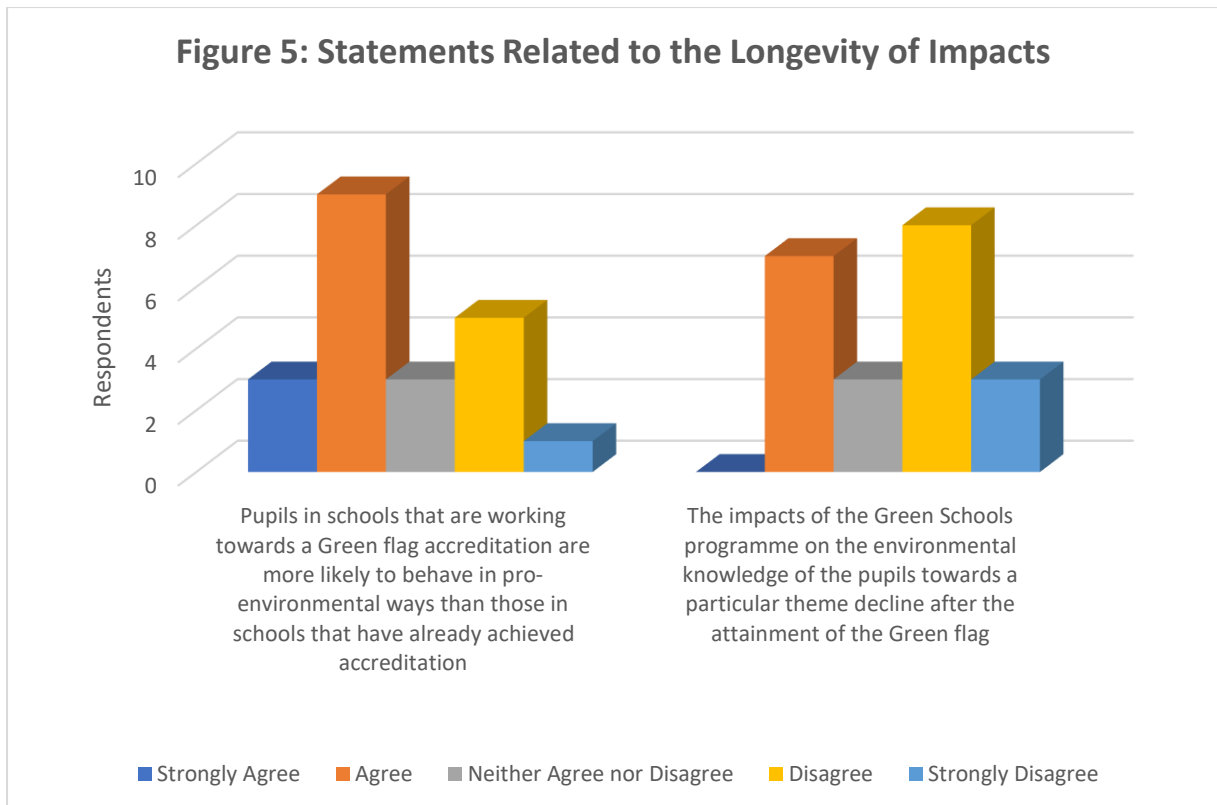


Figure 5: Statements Related to the Longevity of Impacts on Pupil Behaviour and Knowledge

Regarding the qualitative data, Interviewee One noted the development of small behaviours in pupils, such as turning off electrical items, sorting and disposing of waste and reducing water consumption. *‘Over time it became the norm’*. Interviewee Two also believes that much of the environmental behaviour and knowledge remains with pupils after Green Flag accreditation, particularly in areas like recycling, energy conservation, water conservation, active travel, and biodiversity. This participant acknowledged the possibility that some impacts may decline over time, but this can be solved with simple reminders or refreshers, and he/she stated that *‘in general a lot of the areas of work towards the different flags would last long-term and I would imagine with a significant amount of the pupils it would stay for them forever’*.

4.5 Pupil Participation Levels

Survey participants believe that a large proportion of pupils become actively involved in environmental activities during the implementation of the programme. A large majority of

participants (81%) stated that between 81% to 100% of pupils become actively involved in environmental activities. 9.5% of participants suggested that 61% to 80% of pupils becoming actively involved in environmental activities, and the remaining 9.5% chose 41% to 60%. No participant chose less than that figure.

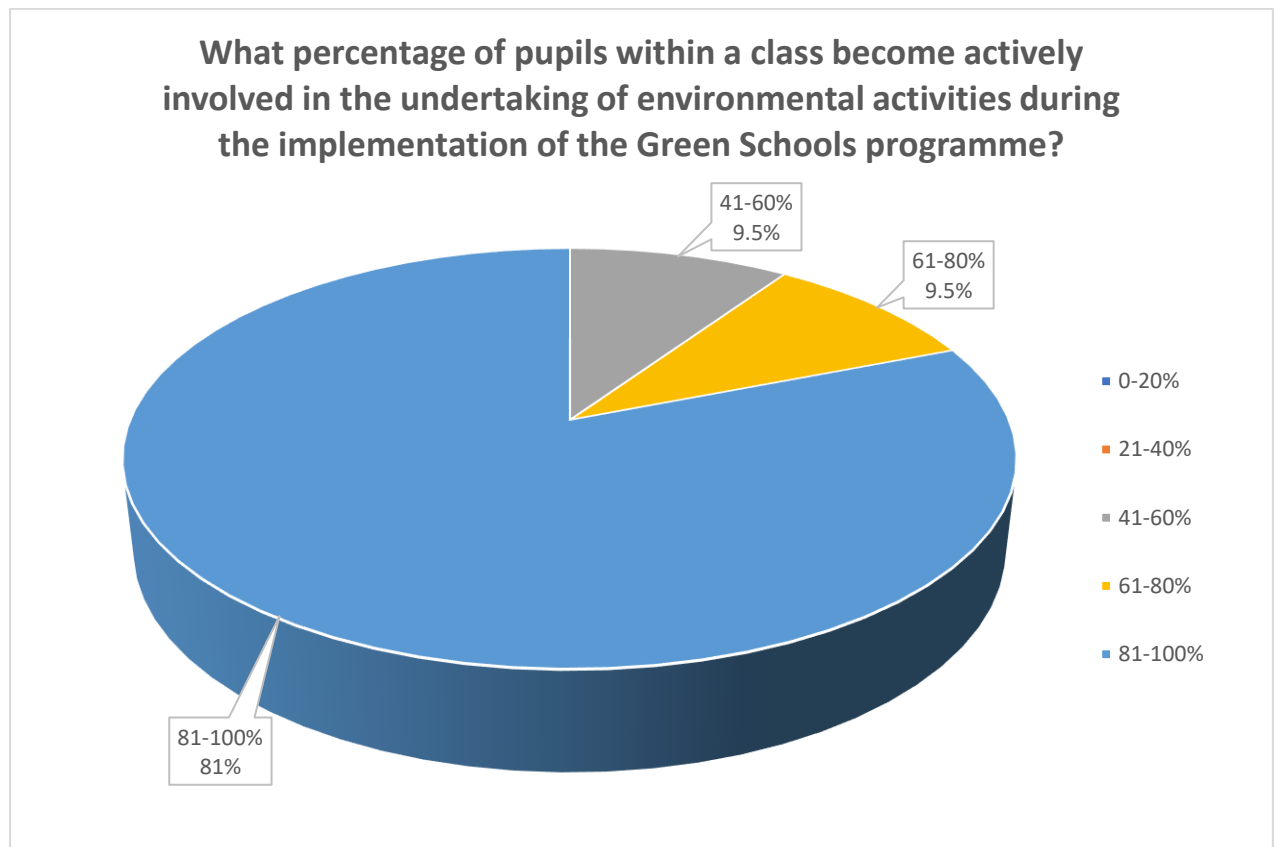


Figure 6: Percentage of Pupils who Become Actively Involved in Environmental Activities as a Result of the Green Schools Programme

The qualitative data reflects this view that a large proportion of pupils become actively involved in environmental activities during implementation of the Green Schools programme. Interviewee One stated that 68% of pupils had walked to school as part of the Big Travel Challenge and noted that approximately 80% of pupils wore reflective clothing to a Halloween Fashion show, as an initiative to highlight ways to make the option of walking to school safer. Interviewee Two believes *'all children are actively involved in it...because of the*

range of different activities that we have. So, we try to encourage as much involvement as possible.' However, this interviewee concedes that some pupils may be *'more involved...more hands on, and more eager to be involved than others.'* Clearly, the qualitative data supports the quantitative data in depicting a significantly high percentage of pupil participation in environmental activities.

4.6 Pupil Ability to Make Significant Contributions

The quantitative data produced an extremely high level of agreement that the Green Schools programme leads to pupils believing that they can make a significant contribution to the environment and that they possess the ability to influence the environmental choices of others. An overwhelming majority of participants (95.2%) agree that pupils believe they have the ability to make significant environmental contributions, as a result of the programme. Similarly, 95.3% of participants agree that pupils can influence the environmental choices of others, as a result of the programme.

Similar viewpoints are echoed throughout the qualitative data. Interviewee One noted that ideas are brought to pupils from the Green Schools programme, but the pupils discuss them, identify appropriate solutions, and implement them, such as the decision to operate a 'park and stride' during the Big Travel Challenge. *'They would decide how it could be implemented'*. This participant believes that *'young people can be as decisive as you want them to be'*, when given responsibility. Interviewee Two noted that pupils are actively talking to others about recycling, *'trying to encourage their families to dispose of the waste in the proper ways'*.

4.7 Difficulties in Assessing Impacts

A further finding that emerged from the qualitative data was that some difficulty exists with assessing impacts of the Green Schools programme on pupils. Whilst many examples of impacts were provided, both interviewees acknowledged that there are difficulties in assessing the impacts of the programme. As Interviewee One stated, it is *'a hard one to gauge....to establish whether you've been successful or not.'* Similarly, Interviewee Two used phrases such as *'I think a lot will stay with'* the pupils, and they will *'probably retain a lot.'*

Such statements reveal an amount of uncertainty from participants regarding the impacts of the programme.

4.8 Conclusion

This chapter presented findings from the data under a range of thematic headings. These themes focused on the impacts of the Green Schools Programme on pupils in primary schools. These impacts were broken into those that fall under the umbrella term of Environmental Literacy, namely environmental knowledge, awareness, attitudes, and behaviours. Other areas that were investigated included the longevity of impacts, the level of pupil participation in the implementation of the programme, and pupil belief in their ability to make significant environmental contributions and to influence the environmental choices of others.

Chapter 5: Discussion

5.1 Introduction

The findings from this research are discussed thematically in this chapter in order to answer the following research questions; ‘What impact does the Green Schools programme have on the environmental knowledge, awareness, attitudes, and behaviours of primary school pupils in Ireland? Do the impacts of the programme last long-term? What proportion of pupils become directly involved in environmental activities as a result of the programme and do pupils believe their actions can produce significant environmental results?’ Themes that emerged relate to the difficulties in assessing impacts of the programme, the positive impacts of the programme on the environmental knowledge, awareness, attitudes and behaviours of pupils, the role of the locus of control and pupil ability to make significant contributions to environmental activities, the ability of pupils to influence the environmental choices of others, and the longevity of impacts. The extent to which the literature supports or contradicts the findings is explored and interpreted throughout.

5.2 Difficulties in Assessing Impacts of the Green Schools programme

A theme that emerged from the qualitative data was that difficulties exist in assessing the impacts of the Green Schools programme on pupils. This challenge is supported by the literature, which acknowledged that difficulties exist with assessing the cause of environmental attitudes and behaviours. As Gough (2020) noted, not only can it be difficult to identify the causes of particular attitudes or behaviours, but it can also be even more difficult to apportion the level of cause of environmental programmes. The Green Schools programme is rarely, if ever, taught in isolation and therefore, it is difficult to understand and apportion the exact level of impact that it has. Studies by (Prabawania et al., 2017) and (Jinlang et al., 2014) also identified the role of other informal education products, such as the media in influencing the environmental knowledge and awareness of pupils, which make the apportioning of impacts of formal education more difficult. With the interviewees in the qualitative data acknowledging that it can be a ‘*hard one to gauge*’ and using phrases such

as pupils will '*probably retain a lot*' and '*I think a lot will stay with*' the pupils, it is clear that doubt exists as to how strongly impacts can be attributed to the programme. Clearly, it must be acknowledged that there are difficulties with assessing and pinpointing impacts of the Green Schools programme.

5.3 Impacts on Environmental Knowledge and Awareness

A key theme that emerged from the research was that the Green Schools programme significantly impacts pupils' environmental knowledge and awareness. Findings from the quantitative and qualitative data collected in this study overwhelmingly support this viewpoint. This contrasts, however, from the literature. The perspectives of teachers who were surveyed and interviewed are far more positive and certain that impacts are evident, compared to numerous studies that concluded that the Eco Schools programme leads to only slightly higher, or broadly similar levels of environmental knowledge and awareness (O'Mahony and Fitzgerald, 2001; Krnel and Naglic, 2009; Spinola, 2015). It may be that differences between the findings and the literature are a result of the types of participants studied. Whereas the studies from the literature focus on the opinions and knowledge of pupils, the findings from this research focus on the perspectives of teachers who are involved in the implementation of the programme. Of course, the fact that the research participants are involved with the implementation of the programme means the possibility exists that they possess a bias towards it. However, this exact experience places these participants in the best position to answer such questions.

5.4 Impacts on Environmental Attitudes

Findings on the impact of the Green Schools programme on pupils' environmental attitudes were again overwhelmingly positive. Large majorities agree that the programme resulted in pupils being more likely to want to make pro-environmental choices (95.2%) and to highlight anti-environmental behaviour of others (71.4%). These findings mirror results of other studies that have been conducted into the Eco Schools programme in Ireland, Scotland, and Cyprus, which all found that the programme led to higher levels of positive environmental attitudes amongst pupils (O'Mahony and Fitzgerald, 2001; Kadji-Beltran, Barker and Raper,

2001; Pirrie et al., 2006). Similarly, the qualitative data from this research highlighted the development of positive environmental attitudes amongst pupils as they implemented initiatives and made decisions on environmental activities to be undertaken. This correlation between both data sets of this research and the literature strongly suggests that the Green Schools programme does improve and develop pupils' environmental attitudes, as they become actively involved.

5.5 Impacts on Environmental Behaviours

The development of pro-environmental behaviours is another area in which the findings depict the Green Schools programme as having a strong, positive impact. The quantitative data provided a strong majority of participants who believe the programme impacts positively on pupils' environmental behaviours. All participants agreed that the programme leads to pupils being more likely to recycle. Seventeen participants (80.9%) agreed that the programme leads to pupils using resources more efficiently and being more likely to travel to school in environmentally friendly ways. Similarly, twenty participants (95.2%) agreed that the programme leads to pupils being more likely to volunteer to join a litter patrol. The qualitative data supported these findings with interviewees stating that they '*definitely notice*' a big uptake in environmentally friendly travel, that '*over time became the norm.*' These interviewees provided examples of the number of pupils walking to school rising from 1% to 68% as part of a travel initiative, and of pupils successfully campaigning for the installation of a pedestrian crossing to make such means of travel safe and viable options. Many studies support these findings, such as studies conducted in Ireland and Scotland, which found that the environmental behaviours of pupils involved in the programme were significantly higher than those not involved in the programme (O'Mahony and Fitzgerald, 2001; Pirrie et al., 2006). However, other European studies contradict this, with studies in Slovenia and Belgium concluding that the Eco Schools programme produced no statistically significant effects on pupils' environmental behaviours (Krnel and Naglic, 2009; Boeve-de Pauw and Van Petegem, 2011; Boeve-de Pauw and Van Petegem, 2013). It is difficult to pinpoint why this is the case, and perhaps it is significant that the study in Ireland, and in the neighbouring country Scotland, produced the most similar results to the findings of this

research. Perhaps a deeper exploration of the individual curricula of each country may provide further understandings.

5.6 Locus of Control and Ability of Pupils to Make Significant Environmental Contributions

A hugely significant finding from this research is the perception of teachers that pupils involved in the Green Schools programme come to believe in their ability to make significant contributions to the environment. This is the perception of 95.2% of survey respondents and this viewpoint is supported by the interviewees, who provided examples of pupils choosing actions to take and following through on them, such as operating a 'park and stride' and campaigning for a pedestrian crossing. As the literature suggests, such a locus of control is necessary to embed behaviours, with the achievement of desired outcomes reinforcing the efficacy of individual pupils (Heimlich and Ardoin, 2008). The achievement of environmental goals, such as campaigning for safe travel paths to provide genuine opportunities for environmentally friendly travel options appear crucial for the development of environmental behaviours. This research found numerous examples of such outcomes, suggesting the programme does aid the development of pro-environmental behaviours.

5.7 Influences on Pupils and Influences of Pupils on Others.

The research findings help to answer the research question 'Do pupils believe that they have the ability to make significant environmental contributions as a result of the Green Schools programme?' The findings show a belief that high percentages of pupils participate in meaningful environmental activities, and provided many examples of pupils influencing the environmental choices of others. Interviewees recalled pupils reminding teachers to turn off lights and projectors, reminding parents to turn off car engines when stationary, and convincing the local council to construct a pedestrian crossing to enable safe travel to school. These examples illustrate findings from the quantitative surveys, which found 95.3% of participants agree that the Green Schools programme leads to pupils believing in their ability to influence the environmental behaviours of others. This correlates with findings from O'Mahony and Fitzgerald (2001), that pupils involved in the Green Schools programme

were more likely to discuss environmental topics, more often, in more places, and to encourage others to behave in environmentally friendly ways. It seems that pupils believe they can influence others, and many are convincing others to change their behaviours. This is a highly significant outcome of the Green Schools programme. The literature highlights the role that others, particularly family, can have on pupils' behaviours. As Shay-Margalit and Rubin (2017) state, if behaviours at home differ significantly from behaviours taught at school, this can become a barrier to the development of the pupil's environmental behaviour. Whilst such differences between school and home life can prohibit environmental behaviour development, it may also be suggested that it provides meaningful opportunities for pupils to develop a locus of control and gain confidence and experience of influencing the environmental decisions of others. Experiences of influencing teachers and parents, as noted by the interviewees, may be the first step for pupils in becoming active environmental citizens, with the ability to influence friends, neighbours, and eventually governmental agencies. As Cincera et al., (2012) state, through such processes children develop the capacity to become democratic citizens who possess the competencies to participate in community decision making processes.

5.8 Lasting Effects of the Programme

To answer the research question 'Do the impacts of the programme have a lasting effect?' survey participants were asked if pupils' environmental knowledge and behaviour declines after the attainment of the Green Flags. This produced an array of responses. A small majority (57.2%) agree that pupils working towards a flag are more likely to behave pro-environmentally than those who have already achieved the flag. However, a similarly small majority (52.4%) disagree that environmental knowledge declines after the attainment of the flag. This may signal that behaviour is more difficult to embed than environmental knowledge. As Krnel and Naglic (2009) concluded, increased environmental knowledge may not simply lead to environmental behaviours, as individuals can be motivated by different things. However, the qualitative interviews contradict the view that environmental behaviours fade over time, as both interviewees believe behaviours such as recycling, energy saving, and active travel remain after the achievement of flags. Interviewee Two believes that many behaviours '*would stay with them forever.*' This is contradicted by studies in

Czechia and Slovakia, which found a tendency for environmental awareness and behaviour to wane after the achievement of Green Flags (Cincera et al., 2012). Enthusiasm towards new behaviours often wanes without continual reinforcement (Heimlich and Ardoin, 2008). There is a sharp contrast between the research findings and the literature regarding the longevity of Green School impacts. This may relate to curricula differences in various countries in which studies were conducted, but it may also highlight an area that requires further study. The fact that the participants of this study believe that impacts on environmental knowledge last after Green Flag accreditation, but environmental behaviours do wane, highlights the uncertainty that surrounds this topic.

5.9 Conclusion

To answer the research questions this chapter discussed the research results and compared them to the literature. It was acknowledged that difficulties exist in assessing impacts of the Green Schools programme. In response to the question 'What impact does the Eco Schools programme have on the environmental knowledge, awareness, attitudes and behaviours of primary school pupils in Ireland?' it was found that the research findings contrasted from the literature by finding a strong belief in the ability of the programme to impact pupils' environmental knowledge and awareness. As for the environmental behaviour of pupils, Irish and Scottish studies supported the findings that the programme impacts pupil's environmental behaviour, unlike other European studies that do not share this finding. This raises the possibility that differing national curricula, or other national factors may play a role in the ability of the programme to impact pupil behaviour. Interestingly, the findings of this research and the literature agree that the programme impacts pupils' environmental attitudes. The answer to the question 'What proportion of pupils become directly involved in environmental activities as a result of the programme?' is that a very high proportion of pupils do. More significantly, the answer to the question 'Do pupils believe their actions can produce broader environmental results?' is that they do come to believe in their ability to make significant contributions and to influence others. This is a crucial impact of the programme, as the literature suggests this is a necessity if behaviours are to become embedded. The final question, 'Do the impacts of the programme last long-term?' was more difficult to answer. The findings produced the belief that environmental knowledge lasts

long-term, but environmental behaviours may fade when pupils are not working towards the achievement of a Green flag. In comparison, the literature suggests that both environmental knowledge and behaviour wane over time, if pupils are not directly involved in activities based on attaining a flag.

Chapter 6: Conclusion

6.1 Introduction

This study set out to explore the impacts of the Green Schools programme on Irish primary schools pupils. The research aimed to answer the following research questions; ‘What impact does the Eco Schools programme have on the environmental knowledge, awareness, attitudes, and behaviours of primary school pupils in Ireland? Do the impacts of the programme last long-term? What proportion of pupils become directly involved in environmental activities as a result of the programme and do pupils believe their actions can produce significant environmental results?’ It was hoped that the findings could help teachers to understand the impacts of the Green Schools programme on pupil, to help them make informed decisions regarding the worthiness of pursuing this programme as a means of developing pupils’ environmental literacy. This study differed from others that have been conducted as it focused solely on teacher perspectives on the impacts on pupils, rather than studying the pupils themselves. This chapter outlines the principal findings, limitations and recommendations of this study.

6.2 Principal Research Findings

Whilst this study acknowledged the difficulties that exist in assessing the impacts of the Green Schools programme on pupils, it did provide numerous findings that suggest the programme is well worth consideration in primary schools. The programme seems to provide a large proportion of pupils with opportunities to make significant contributions towards environmental activities, and to develop a knowledge of environmental issues and actions that most likely lasts into their adult lives. There is a strong conviction amongst Irish primary school teachers that the programme effectively and meaningfully impacts pupils’ environmental awareness, knowledge, attitudes, and behaviours. However, there can be some barriers to long-term impacts on environmental behaviours, and this can be due to the influence of external factors on behaviour development, such as family, media, or lack of internal incentives or feedback (Shay-Margalit and Rubin, 2017; Kollmuss and Agyeman,

2002). That said, it was also found that the programme can result in pupils actively influencing the environmental choices of others, such as their families. If pupils' behaviours and attitudes are embedded in school it remains likely that they will influence their families (Ward, 1974).

6.3 Limitations

This research was conducted as a small-scale study with a relatively small sample size. Therefore, there may be limitations related to the generalisability of findings (Tipton et al., 2017). There is also the possibility that results may be biased towards the Green Schools programme. This researcher holds opinions that could be described as pro-environmental, and this presents the possibility of bias, although this researcher remained aware of this throughout the research and took steps to avoid influencing research participants (Efron and Ravid, 2020). Bias may also result from the fact that all research participants have played a role in the implementation of the Green Schools programme. This was unavoidable as this study sought teacher perspectives on the impacts of the Green Schools programme, and teachers who did not have experience with the programme would have been unable to provide meaningful data. However, participants were not swayed to respond positively towards the programme, and there is every possibility that no bias was obtained.

6.4 Policy Based Recommendations

An important finding relates to the difficulties that exist in assessing the impacts of the Green Schools programme on pupils. Whilst An Taisce does evaluate school environmental activities, there appears to be little guidance relating to the assessment of impacts on pupils (An Taisce, 2023). A recommendation that emerges from this is that those involved in the implementation of the programme should consider developing a set of common methods and standards for assessing the impacts of the programme on the pupils.

6.5 Practical Recommendations

This research focused solely on teacher perspectives on the impacts of the Green Schools programme. Future studies may benefit from carrying out research simultaneously on both teachers and pupils, combining results to enhance findings further. Future researchers may also benefit from undertaking a larger scale study, and to include Non-Green Schools where possible, to ensure generalisability and avoid the potential for bias.

6.6 Concluding Comments

Considering the findings of this study, it seems that the Green Schools programme is worth consideration for primary schools interested in developing their pupils' environmental literacy. The programme appears to impact all aspects of environmental literacy, whilst providing opportunities for large numbers of pupils to participate in meaningful environmental activities, leading them to develop a belief in their ability to contribute and to influence the environmental choices of others. The Green Schools programme appears to provide many of the factors required to develop the environmental citizens of the future.

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Appendices

Appendix 1: Online Questionnaire

Impact of the Green Schools Programme Questionnaire

This research seeks to contribute to our understanding of the impacts of the Eco Schools (Green Schools) programme on pupils within the Irish Primary School system. This research is being conducted as part of a Master's of Education qualification requirement with Hibernia College Dublin.

- 1.) Do you consent to participation in this questionnaire and for the collected data to be used as part of wider findings?**

Yes, I give my consent	<input type="checkbox"/>
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- 2.) Which classes have you been the class teacher of during the implementation, or continuation, of the Green Schools programme? (Tick all appropriate answers)**

Infants (Junior/Senior Infants)	<input type="checkbox"/>
Middle classes (1 st to 4 th)	<input type="checkbox"/>
Senior classes (5 th /6 th)	<input type="checkbox"/>

- 3.) Have you ever performed the role of Green School Coordinator for a primary school?**

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>

4.) Please tick which themes have Green Flags been achieved for in the school you are working in?

Litter and Waste	
Energy	
Water	
Travel	
Biodiversity	

Global Citizenship: Litter and Waste	
Global Citizenship: Energy	
Global Citizenship: Marine Environment	
Global Citizenship: Travel	
Global Citizenship: Food and Biodiversity	

5.) How many years has the current school that you are working in been involved in the Green Schools programme?

Two years or less	
Three to five years	
Six to eight years	
More than eight years	
Unsure	

6.) Please select the appropriate answer for each of the following statements:

Through the implementation of the Green School programme...	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
(a) The pupils are more likely to be aware of the effect of litter and waste on the environment.					
(b) The pupils are more likely to be aware of the effect that energy consumption plays on the environment.					
(c) The pupils are more likely to understand how to separate litter into waster, recyclable materials and compost.					
(d) The pupils are more likely to identify ways in which energy can be saved.					
(e) The pupils are more likely to want to make pro-environmental choices.					
(f) The pupils are more likely to highlight the anti-environmental behaviour of others.					
(g) The pupils are more likely to recycle.					
(h) The pupils are more likely to reduce the amount of resources that they use through more efficient use of the resources.					
(i) The pupils are more likely to volunteer to take part in a litter patrol.					
(j) The pupils are more likely to travel to school by walking, cycling or carpooling, as a result of the Green Schools programme.					

7.) Please select the appropriate response to the following statements:

(a) Pupils in schools that are working towards a Green flag accreditation are more likely to behave in pro-environmental ways than those in schools that have already achieved accreditation?

Strongly agree	
Agree	
Neither agree nor disagree	
Disagree	
Strongly disagree	

(b) The impacts of the Green Schools programme on the environmental knowledge of the pupils towards a particular theme decline after the attainment of the Green flag.

Strongly agree	
Agree	
Neither agree nor disagree	
Disagree	
Strongly disagree	

(c) During implementation of the Green Schools programme, pupils believe that they have the ability to make a significant contribution to the environment through their actions.

Strongly agree	
Agree	
Neither agree nor disagree	
Disagree	
Strongly disagree	

(d) From the implementation of the Green Schools programme, pupils believe that they have the ability to influence the environmental choices of others, such as family and friends.

Strongly agree	
Agree	
Neither agree nor disagree	
Disagree	
Strongly disagree	

8.) What percentage of pupils within a class become actively involved in the undertaking of environmental activities during the implementation of the Green Schools programme?

0-20%	
21-40%	
41-60%	
61-80%	
81-100%	

Thank you for your participation.

Appendix 2: Interview Topic Guide

Topic Guide	Question	Probe
Opener	How many years of experience have you had with the Green Schools programme?	How long have you been involved with the programme in this particular school? Which class levels have you been involved in implementing the Green Schools programme with?
Role Clarification	Have you ever had a direct role in the implementation of the programme, such as that of being a Green Schools coordinator for the school, or being on a committee?	What was the role? What did that role entail?
Achievement of Current School	Which of the green flag themes, such as litter and waste, energy, water etc. have been achieved to date by this school?	
Impact of Programme	Do you feel that the Green Schools programme has impacts on pupils that the curriculum alone does not?	What type of impacts on pupils have you noticed? Would you say that these impacts have a positive or a negative effect on the pupils?
Environmental Awareness	Do you feel that pupils develop a greater level of environmental awareness as a result of the Green Schools programme?	In what ways can this be noticed?
Environmental knowledge	Do you notice any changes in the levels of the environmental knowledge of pupils as a result of the programme?	Do the pupils possess a greater understanding of how to take pro-environmental actions, such as recycling or saving energy, as a direct result of the programme?
Environmental Attitudes	Are the attitudes of pupils towards the environment impacted on as a result of their experiences with the Green Schools programme?	In what way? Why do you feel that is the case?

Environmental Behaviours	Do you feel that the impacts of the Green Schools programme leads to changes in the environmental behaviours of the pupils?	What type of environmental behaviours do you notice a change/no change in?
Long-term Effects	Do the impacts of the Green Schools programme on pupils last long-term, or do they decline over time?	Why do you think that this is the case?
Locus of Control	To what extent do you feel that pupils have ownership of decisions made and actions taken on environmental activities and issues within the school, as a result of the Green Schools programme?	<p>Can you remember any examples of situations in which the pupils have identified environmental actions to take or environmental issues to explore?</p> <p>Do the pupils themselves believe that they can influence the environmental decisions of others, such as family and friends, as a result of their experiences with the Green Schools programme?</p>
Proportion of Pupils Involved	Regarding a typical class that you have taught, what percentage of pupils would you say become actively involved in the undertaking of at least one environmental activity that forms part of the implementation of the Green Schools Programme?	

Research Information Sheet for Participants

Researcher:	
Organisation:	Hibernia College Dublin Tel:
Title of Study:	Teacher perspectives on the role of the Eco Schools programme in supporting the environmental awareness of primary school pupils

Outline of research study:

Since its launch in 1994, the Eco Schools programme has developed in popularity as an environmental awareness programme. The programme has expanded globally to include 59,000 schools in 68 different countries (FEE, 2019). The programme is in operation in 93% of Irish schools (An Taisce, 2020). The aims of the programme include the development of environmentally conscious and sustainably minded citizens who will develop, maintain and pass on environmentally positive behaviours to further generations (FEE, 2019). However, the Eco Schools programme has grown in popularity without sufficient proof of its effectiveness in impacting on the environmental awareness, behaviours, attitudes and literacy of the pupils (Spinola, 2015). This research seeks to contribute to our understanding of the impacts of the Eco Schools programme on pupils within the Irish Primary School system.

Objectives of the project:

The objectives of this research are:

- To examine the perspectives of primary school teachers in Ireland with regards to the impacts that the Green School programme may have on the pupils, particularly with regards to impacts on their environmental knowledge, awareness, attitudes and behaviours.
- To explore teachers perspectives regarding the longevity of any impacts caused by the implementation of the Green Schools programme on pupils in Ireland.
- To investigate teacher perspectives on the number of pupils that become actively involved in environmental activities and are provided with a locus of control towards actions, as a result of the Green School programme.

What would I need you to do?

Your participation in this research project is greatly appreciated. This research project has received ethical approval from Hibernia College Dublin. If you agree to participate, you will participate in either a short semi-structured interview (approx. twenty to thirty minutes in duration) with the researcher, or you will complete an online survey. Any information you provide about your own identity or that of the school will be anonymous and confidential, and all personal data will be stored

as per GDPR guidelines. Quotes from the interview may be used and may also be published in the research however your name and the name of the school will not be published. The interview will be audio recorded and transcribed, and a copy of the transcript will be made available to you on request. This research will be used in a publication of a thesis for Hibernia College Dublin. It may also be used in conference proceedings or used in academic articles. You are free to withdraw from the study at any time.

What is the purpose of this research?

The purpose of the research is to complete a small-scale study which forms part of the final year of the Professional Master of Primary Education with Hibernia College Dublin.

Appendix 4: Consent Forms for School Principals and Participants

Consent Form for School Principal

I, _____ have read and understand the Letter of Information provided to me by (Researcher's name here). I agree that in order to conduct research about the impacts of the Green Schools programme in this school, he may request an interview with a teacher and upon receipt of their consent may conduct an interview on school premises at times convenient for the teacher and the school. Similarly, I agree that he may request up to ten teachers in this school to complete online surveys as part of this research, pending the receipt of their consent forms. I understand that participation is voluntary and that there are no physical or psychological risks associated with the study. I know that all answers provided during the interview will be used for the purposes of the study only and that all responses will identify no individual or the school itself.

Principal's name (printed): _____

Principal's signature: _____

Date: _____

Consent Form for Research Participants

Researcher's name:	
Organisation:	Hibernia College Dublin
Title of study:	Teacher perspectives on the role of the Eco Schools programme in supporting the Environmental Literacy of primary school pupils

Consent (to be completed by the participant) Please circle the correct answer:

Have you been fully informed/read the information sheet about this study? Yes / No

Have you had an opportunity to ask questions and discuss this study? Yes / No

Have you received satisfactory answers to all your questions? Yes / No

Do you understand that you are free to withdraw from this study at any time without giving a reason for withdrawing and without your withdrawal having an adverse effect for you? Yes / No

Do you agree to take part in this study, the results of which are likely to be published or presented at a conference? Yes / No

Have you been informed that a copy of this consent form will be kept by the researcher? Yes / No

Are you satisfied that any information you give to the researcher will be kept confidential? Your name and the name of the school will not appear in the research report. Yes / No

Participant's name (printed) _____

Participant's signature: _____ **Date:** _____

Researcher's signature: _____ **Date:** _____

Appendix 5: Sample Page of Thematic Analysis of Interview Transcript

Interviewee: Yeah, I think there is. You know, I suppose I'm only here as coordinator, this is my first year. I took over from a lady who is on maternity leave this year, but just on my experiences in the past and working as coordinator in another school. Procedures we put in place to get our, eh, travel, or to get our Waste flag or our Energy flag or our Water flag, they still, you know they continue to happen in the school. They were kind of implemented as long term change, so look, to give you a couple of simple examples, the water bottles stayed in the toilet cisterns, so we, we were saving water for the school, eh installed large water butts, erm and those water butts then are used for maintaining the landscape, the flowers, the lawns all around the school. So those were two achievable targets that, that continued to stay in place long after the flag was achieved. Then with the Energy flag the big takeaway from that was, we had a team, while we were going for that flag we had a team of students on the committee and we, we, we divided up the school in terms of rooms and we gave them the job of, at small break and lunch, of going round the classrooms and making sure that lights were turned off at lunch breaktimes, and also to that projectors, of the interactive whiteboards were turned off too. So at the start they would have had to do quite a lot of turning off lights and turning off projectors but over time it became the norm. Students, you know, would turn lights off if they were the last out of the room, or our teachers would do it as well too, so it became a big, big change. It was funny how one small, those small little things implemented, stayed in place after. So there's just a couple of examples of that. Hopefully we'd have the same then here, in terms of the Travel flag, that maybe we could get more carpooling in place or we could get the students that are, you know, less than a kilometre away to walk more often, or scoot or cycle.

Examples of long term impacts looking.

Behaviours become habits

Interviewer: Ok. Really Interesting. Erm, I suppose to what extent do you feel that the pupils themselves have ownership over decisions made and the actions taken, eh, on, on the environmental activities and the issues within the school, as a result of this programme?

Interviewee: Yeah, so I suppose the way it works at the moment, is erm, you know, I would coordinate with our Green Schools Travel Officer. Erm, and then, from there, I'd meet with the Green Schools Committee. And in the Green Schools Committee we've children from sixth to first class, and we also have a chairperson, and a secretary. So it's quite, it quite, er, uniformed and, we've a student who takes minutes for example. They, I would bring an idea to them and we would discuss then amongst the group, and they would decide how it could be implemented, with our school in mind and our area in mind. So for example, the Big Travel Challenge, we had, erm, you know this many choices allowed, there of how you can implement sustainable travel over a ten day period. You have cycle, buses, you have park and stride, you have scooting, erm, and look the students then decided in this school that a walking bus, or a park and stride, if you want to call it another name, was the most sustainable, and the most suitable route for us. So they really decided. I, I'd. I've a personal, my personal view is that students, and young people can be as decisive as you want them to be. So sometimes, teachers, er, well I wouldn't describe it as controlling but, you know, they like to, make decisions for students. I'd be a little bit different than that. I feel, I like to give them responsibility. And I think that's shown here in this school.

Specific roles

Examples of pupil decision making.

But does programme support this?

Interviewer: Very interesting. Erm. And then I suppose regarding a typical class that you've taught, whether it's your class currently or any other classes you've taught during the programme, what percentage of the pupils would you say become actively involved in the undertaking of at least one environmental activity, that forms part of the implementation of the Green Schools programme?

Interviewee: Well I suppose to go back to it there, in terms of the Green Schools programme, the most coveted seats are those in the committee. And here at the moment we have twelve on the committee. Erm, so look, we got three volunteers from each class. Everybody was interested in that. I had to run a little election in my own classroom for it. So look if I could've had twenty five seats in

High level of interest in participation.