

The Waste Wise Schools Program: Evidence of Educational, Environmental, Social and Economic Outcomes at the School and Community Level

Patricia Armstrong[†], Brian Sharpley & Stephen Malcolm
Gould League

Abstract The Waste Wise Schools Program was established by EcoRecycle Victoria to implement waste and litter education in Victorian schools. It is now operating in over 900 schools in Victoria and 300 schools in other Australian states / territories. This paper provides detailed case studies of two active schools in the Waste Wise Schools Program and considers for each school how the Program started, what it meant to the school, the environmental, educational, social and economic outcomes of the Program and the key success factors. It discusses evidence that the Program has changed the thinking and behaviour of many families at the schools, suggesting that the children may be acting as catalysts to influence their parent's waste wise behaviour, i.e. having an intergenerational influence. Guidelines for promoting this influence are proposed.

Introduction

The Waste Wise Schools Program has been adopted by over 900 schools in Victoria and 300 schools in two other Australian states / territories. Earlier papers (Armstrong, Sharpley & Malcolm, 2003; Armstrong et al., 2004) have described the achievements and results of this Program. In summary, these papers describe how the Waste Wise Schools Program has:

- promoted widespread and lasting cultural change in many schools (involving local ownership and effective action as distinct from simply awareness and factual knowledge);
- influenced adult as well as student behaviour;
- achieved long-term participation in learning programs for sustainability (rather than just short-term activities);
- led to many outcomes and benefits to schools (environmental, educational, social and economic);
- achieved, in regard to sustainable resource use, effective action at the "high end" of the waste minimisation hierarchy (reduce and reuse, rather than just recycle); and
- provided a framework for planning, implementation and monitoring that has allowed schools to move on to other areas of sustainability.

[†]*Address for correspondence:* Patricia Armstrong, Deputy CEO, Gould League, PO Box 1117, Moorabbin, Victoria 3189, Australia. Email: pata@gould.edu.au

This paper looks in more detail at some of these achievements and results through in-depth case studies of two schools – one primary and one secondary. For each school, the following questions have been considered:

- How did Waste Wise Schools start in the school?
- What changes have occurred since starting the Program?
- What has it meant to the school?
- What have been some of the outcomes?
- What have been the key success factors? and
- Are there indications that the program is influencing the parents? Are students acting as catalysts for this change?

A number of researchers have considered the importance of students as catalysts for changing adult behaviour (Ballantyne, Connell, & Fien 1998a, 1998b; Ballantyne, Fien & Packer, 2001; Uzzell, 1994, 1999; Uzzell & Rutland, 1993a, 1993b). For example: “The importance of intergenerational processes cannot be underestimated as a means of ‘multiplying’ the impact of the school environmental education programmes beyond the boundaries of the classroom.” (Ballantyne, Connell & Fien, 1998a, p. 286).

Uzell (1999) discussed early studies that indicated ‘educational programmes alone are insufficient to bring about change.’ (p. 407) For children to influence parents, schools need “to work simultaneously with both the child and the parent(s) in order to support the both the children and parents in the catalytic process.” (p. 407) He proposed a number of models, including “The School as a Social Agent” in which schools and the community work in partnership, with “barriers broken down through cooperation and through dialogue between the school and the local community on concrete local environmental issues and their possible solutions” (p. 412).

Ballantyne, Connell, & Fien (1998a) in a review of social science and environmental education literature reported a number of studies that demonstrated the influence of students on their parent’s environmental behaviour, although they identified that the processes and factors involved were still unclear.

Research reported by Ballantyne, Connell & Fien (1998b) and later Ballantyne, Fien & Packer (2001) have identified some of the factors that contribute to fostering deep discussion between students and their parents and environmental actions in the home.

This paper will also look at some of the evidence for students acting as catalysts for intergenerational influence in the two case studies.

Background

The Waste Wise Schools Program, funded by EcoRecycle Victoria, is managed in conjunction by EcoRecycle and the Gould League. It is delivered through the combined efforts of a state-wide consortium, headed by the Gould League and CERES, and including a network of education officers from waste regions, local government and the waste industry. It is an integral element of EcoRecycle’s overall Waste Wise Program for whole-community change (see EcoRecycle Victoria (2004) for a description of the program).

In Victoria, the Program offers an integrated package of services: professional development through workshops, funding towards teacher release for professional development and curriculum development, a comprehensive Waste Wise Schools Kit, a network of Support Schools, accreditation, awards and backup service.

The Program has been comprehensively evaluated (e.g., Sharpley, 2001, 2003b, 2004).

Methodology

Data for these two case studies were obtained from several sources.

Most of the data for Cobden Technical School were obtained from research conducted in 2002/2003 through formal and telephone interviews, questionnaires and student activities (Sharpley, 2003a). In this study, parental views and attitudes were investigated using a questionnaire distributed to parents of Year 7 and 8 students. A total of 49 families responded to the survey, with a response rate of around 40%. Student views and attitudes were investigated in three ways: role-plays, a questionnaire and discussion groups. Sixty-one Year 7 students completed the questionnaire. Finally, interviews were conducted with the Principal, the Waste Wise Coordinator and two key science teachers. Additional data have since been obtained through school-based interviews and telephone interviews with the Waste Wise Coordinator (Kosterlitz, 2004) and the Principal (Rock, 2004).

Most of the data from Rutherglen Primary School were obtained during research in 2000 from a parent questionnaire (Sharpley, 2000). Seventy families responded to the survey. This represented over half of the school community. Additional data have since been obtained from school-based interviews and telephone interviews with the Principal and the Waste Wise Schools Coordinator (Armstrong, 2001, 2004).

Results

Cobden Technical School

How it started

Cobden Technical School is located in Cobden, a small rural town in south west rural Victoria, about 200 km from Melbourne. Although a small secondary school with only 350 students, it is a leading Waste Wise School and the winner of many awards.

The school joined the Waste Wise Schools Program in 1999 after a teacher attended a regional Waste Wise Schools workshop. The school has since moved into other areas of sustainability including energy, water and school grounds / biodiversity and is now participating in a broader initiative called Sustainable Schools.

What it has meant to the school

There have been significant changes since joining the Waste Wise Schools Program, including:

- A sustainability ethos has evolved at the school and the Program has contributed to the development of this ethos.

I can't really say that it is just because of Waste Wise, but it is a very positive program. It adds to the other positive things that happen ...
(Teacher);

- Waste Wise has been incorporated into many curriculum areas of the school, providing students with practical, hands-on experiences;
- Many students and families reported that the school's waste wise program has changed their waste wise behaviour;
- Through regular newsletters and Awards, the Waste Wise Schools Program provides positive feedback to the teachers and students and this helps to boost their self-esteem;

It gives them a sense of accomplishment and pride. It boosts their self-esteem. (Teacher)

- The school has established links with businesses to share and recycle materials; and
- There is low student and staff absenteeism and high parent opinion of the school environment.

It is difficult to nail down the exact reason ... but my feeling is that with all the factors ... people feel that they have a sense of the school and ... that general caring feeling that the Waste Wise Program elicits – it's got to help. It is a brilliant, absolutely brilliant program. It's achieved so much for this school. (Principal)

Curriculum

The Waste Wise Schools workshop gave the school a framework to plan, implement and monitor their school's waste and litter program. This has involved students in a range of activities including waste and litter surveys and assessments. Waste Wise has also been the starting point for other topics of sustainability, such as energy, water and school grounds / biodiversity.

Students

The Program fosters involvement and engagement of students in practical, hands-on activities. As an example, the Waste Wise Schools Coordinator explains how the Waste Wise Schools Program took hold at the school:

If you look at how the program started in one classroom. The students were engaged; they were enjoying what they were doing. Other students wanted to be involved and so other teachers started to do it. I think that was because the other groups wanted to be involved. If they are happy in what they are doing, then they are happier being here. If you don't like what you are doing then you can think of other places you'd like to be. While they are engaged and they enjoy what they are doing it keeps them happy and while they are happy it is easier to learn and to succeed. (Waste Wise Coordinator)

The students are involved in communicating the school's waste wise program to other schools and waste wise messages to community groups. This has, according to the coordinator, improved leadership, communication and presentation skills. Teachers believe that students involved in the waste wise activities gain confidence in working with others and this improves their self-esteem.

There is evidence that student waste wise behaviour towards the 3Rs and composting has changed as a result of the school's waste wise program. As shown in Figure 1, a high percentage of students reported that they had changed their behaviour towards the 3Rs and composting and at a higher level than that reported by their parents.

Teachers

There is a strong sense of belonging with the staff and, in some cases, the school's waste wise program has revitalised teacher enthusiasm.

It's given some of the teachers another lease on life. It has given them a goal ... For some people it has reinvigorated them. It has certainly raised staff awareness of environmental issues as well. (Principal)

Families

Most parents were supportive of the school's Waste Wise program: 96% of parents agreed or strongly agreed with the statement "I strongly support the Waste Wise

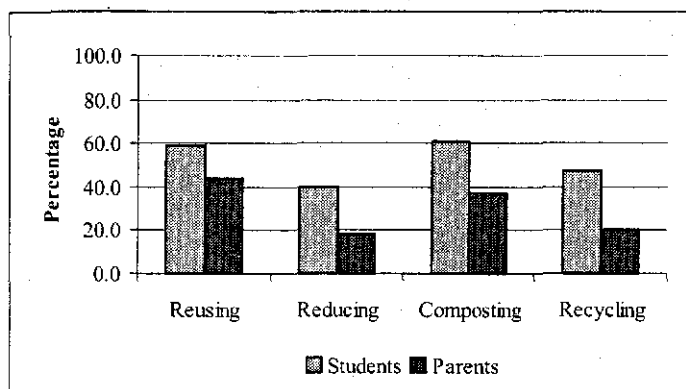


FIGURE 1: Parents and students' responses to the question: Has the program at Cobden Technical School changed what you do in the following waste wise areas? (Students, n= 61, parents, n=49)

program at Cobden Technical School."

Many parents indicated that the Waste Wise program had changed their behaviour, although this is less than that reported by the students (Figure 1). However, many parents indicated that although the school program had some influence, they were already doing a range of waste wise activities.

Outcomes

Key reasons for success

According to the Principal and teachers, there are many reasons

for the success of the waste wise program in this school. These include:

- The Principal has been very supportive;
- The Waste Wise Schools Program provided a framework for planning, action and monitoring and on-going support;
- A dedicated and inspirational teacher introduced the Program and engaged parents, staff and students;
- Teachers have engaged students in practical science activities and have integrated waste and litter across all areas of the curriculum;
- There has been strong student and parent involvement and participation; and
- The Waste Wise Schools Awards have provided incentives and positive feedback.

Rutherglen Primary School

How it started

Rutherglen Primary School, a small rural primary school of 233 students, is located in north eastern Victoria. The school joined Waste Wise Schools in 1998 and has since developed an exemplary waste and litter education program that has won numerous awards.

The school has developed a simple, but effective system to deal with its waste. Paper, bottles and cans for recycling are collected in 240 litre wheelie bins, food scraps are collected in buckets for the school compost bin and worm farm, and the remaining rubbish is collected in small bins. Rubbish to landfill has been reduced from two skips each week in 1998 to about two skips a term. This rubbish reduction of about 90-95% has been maintained since 1999. Paper use in the school has been reduced by about 50%. The students eat either in the classrooms or in a designated area and this simple policy has led to almost no litter in the schoolyard.

The school recently joined Sustainable Schools and has expanded its environmental program to cover the four themes of waste and litter, water, energy and school grounds / biodiversity.

What it has meant to the school

According to the Principal and Waste Wise Coordinator, there have been many changes to the school since starting Waste Wise Schools. These include:

- The school has a common vision of being a more Waste Wise and Sustainable School and has an ethos as a supportive and caring school;
Waste Wise Schools has given us the opportunity to help with creating a special ethos in our school: supportive, politeness, happiness, positive outlook and a clean, pleasant and safe environment (Teacher);
- The grounds have become cleaner and more pleasant, and student behaviour and morale have improved;
Waste wise is part of the culture of the school. (Principal)
- There is less vandalism and less damage to the gardens;
- The school now produces very little garbage and hardly any litter;
- Many families of the students have changed their waste wise behaviour;
- The school has developed strong links with families and local community groups; and
- The school has a high reputation as a Waste Wise School.

The Waste Wise Schools Program has been a real plus for our school ... it is a working canvas and we just keep on adding to it. (Principal)

Curriculum

The teachers have developed a P-6 sustainability package for each of the sustainability themes of water, waste, energy and school grounds / biodiversity. Teachers develop the package for their own level, covering resources, outcomes and scope and sequence, and negotiate with other teachers to ensure continuity and a sequential development of the themes. The program is reviewed annually, so that there are regular improvements and refinements.

Students

According to the Principal, there is a strong culture of environmental awareness in the students. The program is driven largely by the students and, according to the Principal, as they have become more responsible, they have become more connected to the school.

The culture of waste wise gives our students a meaningful way to connect to the school. (Principal)

The Principal believes that the children are concerned about the environment, and the school waste wise program aligns with the children's concerns and gives them things that they can do to address these concerns.

The students want and need to do the right thing for the environment. (Principal)

Students are involved in many ways: they provide input to the Waste Wise Schools Committee; they design and conduct school waste wise awards and competitions (e.g., Lunch Box Lotto); and they give presentations to visiting schools and to the local community.

The students have become the major waste wise communicators in the school and the community. (Teacher)

Teachers

According to the Principal, Waste Wise Schools has helped individual teachers to develop leadership and teaching skills and this has boosted their self esteem. It does this by providing the teachers with a way of connecting to the students.

Children today are so much smarter about the environment than we were at their age. They are worried about all kinds of things – pollution, greenhouse effect, litter, ... It is our duty as teachers to help these children. Through waste wise, we can help the students find some answers, to feel that they are doing something concrete, something positive to help. (Waste Wise Coordinator)

According to the Waste Wise Coordinator, most teachers are very committed to the waste wise and sustainability programs and this has improved over time. Student surveys indicate that the waste wise program has influenced the teachers to change their own waste wise behaviour.

Families

There is evidence of changes in the thinking and behaviour of families as a result of the school program (Sharpley, 2000). Survey results showed that:

- About 17% of the families reported that they were waste wise before the program and that the program had not changed either their thinking or their behaviour; and
- Of the remaining households, a large number (50-60%) indicated that they had changed their thinking as a result of the school's Waste Wise program in the areas of reducing, reusing, recycling and composting. Additional comments provided by the families of how they had changed their thinking, gave evidence that their behaviour had changed as well.

Figure 2 shows the survey results. Most families (90% in 2000) support the school's waste wise program, with the strongest support from those families who had been influenced by the program to change their practices.

Outcomes

Key factors in the school's success

According to the Principal and Waste Wise Schools Coordinator, some of the key reasons for the success of the Waste Wise Schools Program in the school include:

- strong support from the administration (Principal, school council);
- involving everyone in the decision-making process and giving clear guidelines about how to use the system;
- passion and commitment by a group of teachers, supported by an active committee, with representatives from all Key Learning Areas and levels;

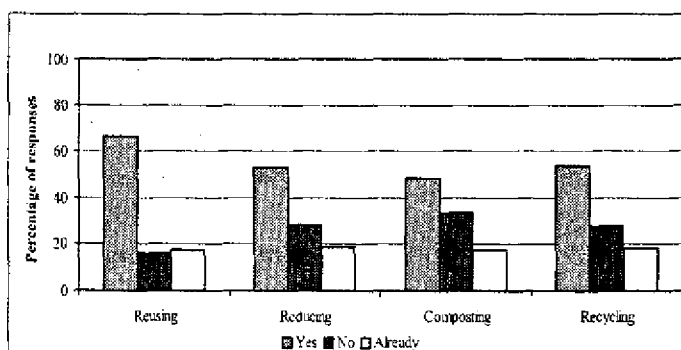


FIGURE 2: Family responses to the question "Has the program at Rutherglen Primary School changed your thinking about the following areas of being waste wise?"

- support and participation by all members of the school community (students, parents and local community);
- a simple and easy to use waste system; and
 Keep it small, keep it simple, do it constantly and remind the kids every day. (Teacher).
- recognising that the students “owned” the program and contributed to the design and management.

They make sure that the staff are doing the right thing. (Principal)

The great thing about Waste Wise Schools is that it taught us a process ... We learnt that it was important to focus on one thing at a time and to do it well. We have now moved on to other areas, such as water, and find that we can use the same process. (Teacher)

Discussion

In both schools many changes have occurred since staff attended the Waste Wise Schools workshop. Many of these changes can be directly attributed to the planning and conceptual thinking provided at the workshop. Whilst it is difficult to establish a strong causal link with broader social changes that are occurring at the schools, teachers and principals at both schools believe that the Waste Wise Schools Program has contributed to these changes.

In both schools, there have been many outcomes (economic, environmental, educational and social) and again teachers and principals at both schools believe that the Program has contributed to these outcomes. These outcomes are consistent with those reported by Gough (2004) in an evaluation of six schools participating in the stormwater theme of Sustainable Schools.

Lieberman & Hoody (1998) conducted a qualitative study of 40 schools in the United States using the “Environment as the Integrating Context for Learning (EIC)”. Some of the findings of the learning effects of these programs included “... increased engagement and enthusiasm for learning; and greater pride and ownership in accomplishments” (p. 22). These effects were also observed in both case study schools. The Principals at both schools believe that Waste Wise Schools is contributing factor in these outcomes.

A supportive Principal, participation by the whole school community and involvement by the students were important aspects of the Program at the two case study schools. Gough’s (2004) evaluation of Sustainable Schools also identified “support of the leadership team”. “... broad ownership ...” and “Student involvement ...” among the key success factors. (p. 4)

The two case study schools also appear to be examples of Uzell’s (1998) model of “The School as a Social Agent” (p. 412) in which the school and the community are working in partnership.

One notable feature of both schools was that many families of students reported that the school’s waste wise program had changed their thinking and behaviour. This indicates that the children are taking home information and / or activities that are influencing the parents. A number of parents from Rutherglen Primary School referred to the impact the program was having on both the school and the wider community. One parent commented that:

This is a great program and it makes parents think about being waste wise if their kids practice it! (Sharpley, 2000, p. 2)

These results seem to be consistent with the findings of Ballantyne, Fien & Packer (2001) that "... the extent to which students enjoy a program contributes significantly to the likelihood that they will discuss the program at home ..." but that these discussions maybe superficial. For "deeper" discussion leading to action, "... environmental testing/monitoring activities or student projects and presentations that involve parents as partners in student learning at home need to be built into the program" (p. 5).

At both schools, the Principal and Waste Wise Coordinators report that students enjoy and are engaged in the waste and litter program, participate in environmental testing/monitoring activities and student projects and have given numerous presentations. At Cobden Technical School the Waste Wise Coordinator observed that:

While they are engaged and they enjoy what they are doing it keeps them happy and while they are happy it is easier to learn and to succeed. (Sharpley, 2003a, p. 10)

At Rutherglen Primary School, parents are involved in the packing of rubbish free lunches for the children. Parents report that this has changed their thinking and behaviour towards the packing of their own lunches (Sharpley, 2000).

Although this study is limited to two case studies, the following guidelines are proposed for promoting intergenerational influence:

- give the students ownership of the program and opportunities for leadership;
- engage the students with activities that encourage enjoyment of the program through problem solving, critical thinking, environmental surveys and assessments, creativity and innovation;
- encourage the involvement of the whole school community, including staff, parents and students with the design, implementation and monitoring of the program;
- provide home activities and projects that involve co-learning of students and their parents (The Waste Wise Schools Program provides a flier to schools giving guidelines for promoting Waste Wise to the home and community.);
- give regular feedback to parents on the achievements of the program and useful hints;
- encourage students to give presentations to outside groups; and
- build the environmental operations into the curriculum, giving relevance and meaning to the program.

Ballantyne, Fien & Packer (2001) noted a finding that older students discussed environmental issues with parents less often than younger students. As the study at Cobden Technical School was restricted to Years 7&8 students (age approximately 12-14 years), this finding was not investigated at that school. It would be interesting to repeat the study with older students in this school and other schools to see if the finding of Ballantyne and colleagues was also the case with the Waste Wise Schools Program.

In both schools, the principals report that their school's Waste Wise program has revitalised teacher enthusiasm. This supports the findings of the qualitative study by Lieberman & Hoody (1998) of 40 schools in the United States schools who use the "Environment as the Integrating Context for Learning (EIC)" (pp. 71-77).

Both case study schools are now involved in many other areas of sustainability. Both report that Waste Wise Schools has been the starting point for a broader approach to sustainability in the curriculum, with the framework or process provided by the Program transferable to these other areas. This supports the prediction of Ballantyne,

Fien & Packer (2001) of the multiplier effect of the gains of environmental programs as students become more deeply involved.

Conclusions

The two case studies described in this paper provide insights into how the Waste Wise Schools Program can bring about change in school organisation, practice and curriculum delivery, with numerous environmental, educational, social and economic outcomes for the schools and their local communities. These case studies are consistent with other research and case studies (e.g. Lomdahl & Belissimo, 2003). There is evidence that the Program has changed the thinking and behaviour of many families at the schools, suggesting that the children are influencing their parent's waste wise behaviour, i.e., having an intergenerational influence.

Further research is required to look in greater depth at the outcomes of cultural change programs, such as Waste Wise Schools, especially social outcomes. The influence of students and student home activities on family waste wise behaviour in schools in other local communities should also be explored.

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