

Sustainable Schools: Renovating Educational Processes

Annette Gough, *RMIT University, Bundoora, Victoria, Australia*

This article discusses findings from a recent evaluation of the experiences of six Sustainable Schools engaged in Stormwater Action Project in terms of their achievement of educational, environmental, economic, and social indicators of quality education. It also discusses the change strategies of the Sustainable Schools initiative within the broader context of quality education for a sustainable future, and the relationship between visions of environmental education/education for sustainable development and visions of quality education. The article concludes that Sustainable Schools is a most appropriate strategy for renovating educational processes and achieving quality education.

The United Nations Decade of Education for Sustainable Development started on 1 January 2005 and will continue until 31 December 2014. What will its vision of a quality environment and a focus on “quality of life¹ for all” mean for quality education?

Education for Sustainable Development (ESD) is “a dynamic concept that utilizes all aspects of public awareness, education and training to create or enhance an understanding of the linkages among the issues of sustainable development and to develop the knowledge,

skills, perspectives, and values which will empower people of all ages to assume responsibility for creating and enjoying a sustainable future.” (UNESCO, 2004a). Implementing ESD in schools involves approaches to teaching and learning that integrate goals for conservation, social justice, appropriate development and democracy into a vision and a mission of personal and social change. It also involves developing the kinds of civic virtues and skills that can empower all citizens and, through them, our social institutions, to play leading roles in the transition to a sustainable future. As such, ESD encompasses a vision for global society that is not only ecologically sustainable but also one that is socially and economically sustainable (UNESCO, 2004b). Thus, ESD recognizes the importance of economic viability and productive employment at the community, regional, national, and international scales and provides students with the life skills they need to be constructive and active citizens, capable of and committed to contributing to a peaceful, abundant and sustainable future.

Address correspondence to **Annette Gough**, School of Education, RMIT University, P.O. Box 71, Bundoora, Victoria, Australia 3083. E-mail: annette.gough@rmit.edu.au

¹Quality of life is the standard of life that an individual enjoys. It goes beyond simply meaning the material things that make parts of our everyday lives more pleasant or less onerous. It includes such things as environmental health, the satisfaction of relationships with others, dignifying work. It recognizes that for any development to be sustainable it must benefit people in an equitable way. It is about improving everybody's lives.

The Sustainable Schools program in Victoria, Australia, is concerned with developing learning environments and learning experiences that will enable students to work towards having a good quality of life in a sustainable environment. The experiences of schools in the Sustainable Schools Program provide some guidance on how to develop a quality education that achieves such goals for the development of students. This article discusses findings from a recent evaluation of the experiences of six Sustainable Schools in terms of their achievement of educational, environmental, economic, and social indicators of quality education.

ABOUT SUSTAINABLE SCHOOLS

Sustainable Schools in Victoria is an initiative of the Gould League and the Centre for Education and Research in Environmental Strategies (CERES) Community Environment Park designed to provide an holistic education program for schools on sustainability. Building on the expertise of the many different groups already working in this field, the program is essentially a framework or guided process for facilitating cultural and behavioral change towards sustainability in schools (Gould League with CERES, 2004). Sustainable Schools integrates changes to the practical operations of the school with sustainability issues in the curriculum and helps to build links to local communities. It provides participating schools with:

- Customized professional development, in which schools choose the Core unit and the sequence for the four optional themes;
- The Core unit (“Schools Becoming Sustainable”), which includes stimulating professional development for teachers about the direction and purpose of education for

sustainability and strategies to develop an overall, long-term plan for sustainability for the school;

- Coordination, guidance and support; and
- Specialist consultants in each of the four optional themes (Water, Waste, Energy, and School Grounds/Biodiversity)².

Central to the Sustainable Schools process is the Ten-Step plan which is designed as an action research process to ensure commitment and ownership of the initiative by the whole school community, not just an enthusiastic individual (and so is much more likely to be sustainable). These steps are:

1. Make a commitment, form a committee/working group;
2. Adopt a whole school approach, involving students;
3. Conduct an audit;
4. Write a policy;
5. Set targets;
6. Prepare an action plan including
 - Operations,
 - Curriculum,
 - Whole school involvement;
7. Write curriculum plan, integrating operations;
8. Implement the program;
9. Monitor, evaluate, and provide feedback; and
10. Achieve goals and targets, continuously improve program.

This ten step plan is followed through the implementation of the core module and each of the four resource modules. When schools have

²The four optional themes are: “Waste” (waste and litter minimization, green purchasing, recycling, and composting), “Energy” (energy efficiency, renewable energy, and reduction in greenhouse gas emissions), “Water” (water conservation, stormwater control, and freshwater ecology), and “School Grounds/Biodiversity” (developing a whole school Masterplan which may include indigenous gardens that attract native butterflies and birds and special theme gardens and habitats). Participating schools are able to choose all or some of the four optional themes.

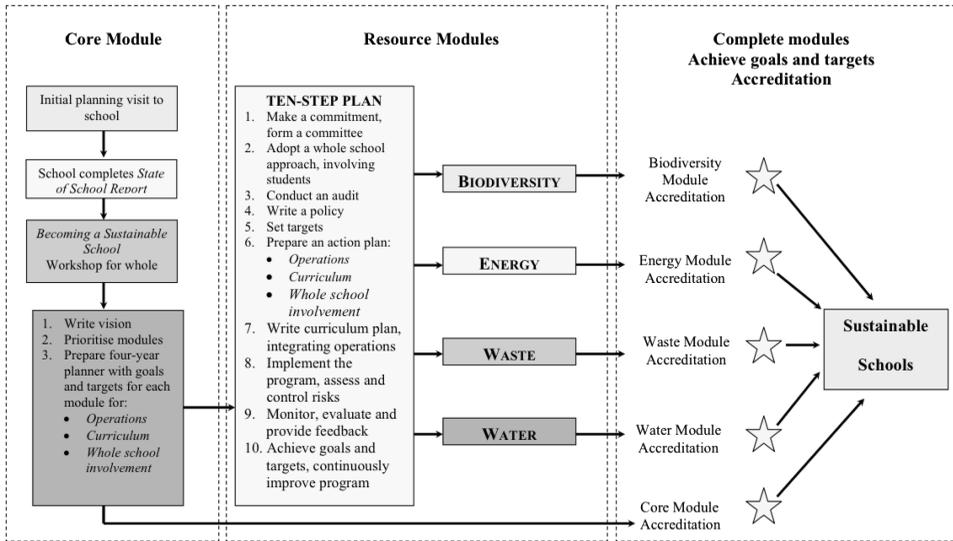


Fig. 1. The Sustainable Schools Process (Armstrong & Bottomley, 2003, p. 14).

completed a module and achieved their goals and targets they apply for accreditation. This process is summarized in Figure 1.

QUALITY EDUCATION AND ENVIRONMENTAL EDUCATION

Stormwater Action Project

In 2002, the Victorian Environment Protection Authority, through the Victorian Stormwater Action Project, provided funding to the Gould League and CERES Community Environment Park for a number of water-related projects. Two of these projects related to trialing the implementation of water/stormwater related themes in schools, and six schools received funding to retrofit stormwater equipment to support their water/stormwater programs as well as trial the Sustainable Schools Water theme or trial the Waste or Biodiversity or Water themes with stormwater as an integrated component. This article is based on an evaluation of these initiatives in the schools that was conducted in mid 2004 (A. Gough, 2004), but it also looks at the change strategy of Sustainable Schools within the broader context of quality education for a sustainable future.

Since its early conceptions environmental education has been envisaged as having a role in promoting educational change. For example, the *Tbilisi Declaration* (UNESCO, 1978, p. 24) states that environmental education

should involve the individual in an active problem-solving process within the context of specific realities, and it should encourage initiative, a sense of responsibility and commitment to build a better tomorrow. By its very nature, environmental education can make a powerful contribution to the renovation of the educational process.

However, until recently, there were only a few environmental education initiatives in Australia in the past 25 years that went beyond just focusing on changing the curriculum content to incorporate environmental education and took up the challenge of changing the whole educational process (for examples of these initiatives see Greenall, 1980; N. Gough, 1992; Department of Education Queensland, 1993; A. Gough, 1997).

Many initiatives have conceived of environmental education as traditionally concerned with the natural environment (UNESCO, 2004b, p. 16). For example, The Adelaide Declaration on National Goals for Schooling in the Twentyfirst Century (MCEETYA, 1999), a national education statement for Australia, states that: “When students leave school, they should have an understanding of, and concern for, stewardship of the natural environment, and the knowledge to contribute to ecologically sustainable development.”

Others have discussed the compatibility of environmental education with socially critical pedagogy (see, for example, Greenall Gough et al., 1993; A. Gough, 1997) and have followed the guiding principles for environmental education from the Tbilisi conference—that “Environmental education should consider the environment in its totality—natural and built, technological and social (economic, political, technological, cultural-historical, moral, aesthetic)” (UNESCO, 1978, p. 27)—and pursued a more holistic approach, recognizing the need for changing approaches to curriculum, pedagogy, and school operations in order to achieve the goals of environmental education (N. Gough, 1992; Department of Education Queensland, 1993; Education Victoria, 1998; NSW DET, 2001).

During the 1990s education for sustainability (or sustainable development) emerged as a successor to environmental education. For example, the Education chapter of *Agenda 21*, the report of the 1992 United Nations Conference on Environment and Development (UNCED), has as its priority “reorienting education towards sustainable development” and argues that (UNCED, 1992, Chapter 36, p. 2):

Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues... It is also critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development and for effective public participation in decision-making.

Education for sustainable development (ESD)³ has a broader focus than environmental education in that it “recognises that human rights and social justice are just as essential to sustainable development as environmental sustainability” (Parliamentary Commissioner for the Environment, 2004, p. 49). It still has much in common with earlier conceptions of environmental education, including objectives encouraging critical thinking, values analysis and active citizenship in environmental contexts, but differs in that ESD is “ultimately about education and capacity building and only secondly about environmental problem-solving” (Fien, 2001, p. 19).

The broader vision of ESD outlined in UNESCO Decade of Education for Sustainable Development documents, and on the website, is very much one of quality education: “The basic **vision** of the DESD is a world where everyone has the opportunity to benefit from education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation.” (UNESCO, 2004b, p. 4, emphasis in original), and

ESD mirrors the concern for education of high quality, demonstrating **characteristics**: such as:

- Interdisciplinary and holistic: learning for sustainable development embedded in the whole curriculum, not as a separate subject;

³According to Lang (2004, p. 7), education for sustainable development and education for sustainability should not be used interchangeably “as the concepts encode different emphases;” “education for sustainable development focuses on the learning process required to support sustainable development” whereas “education for sustainability has its emphasis in building capacity to live more sustainably.” In Australia (see, for example, Fien, 2001; New South Wales Council on Environmental Education, 2002; Henderson & Tilbury, 2004) and New Zealand (see, for example, Parliamentary Commissioner for the Environment, 2004) the frequently used term is “education for sustainability,” especially in government documents. Because of its popular use internationally, however, (Department for Education and Skills, 2003; Office for Standards in Education, 2003; Qualifications and Curriculum Authority, 2003; United Nations Economic Commission for Europe, 2004; UNESCO, 2004a, 2004b), this article will refer to “education for sustainable development” (ESD).

- Values-driven: sharing the values and principles underpinning sustainable development;
- Critical thinking and problem solving: leading to confidence in addressing the dilemmas and challenges of sustainable development;
- Multi-method: word, art, drama, debate, experience, ... different pedagogies which model the processes;
- Participatory decision-making: learners participate in decisions on how they are to learn;
- Locally relevant: addressing local as well as global issues, and using the language(s) which learners most commonly use. (UNESCO, 2004b, pp. 4–5, emphasis in original).

It is a vision like this that underpins the Sustainable Schools initiative, but it is one that aims to involve the whole school community, not just teaching and learning, and the curriculum.

A WHOLE SCHOOL APPROACH

The Sustainable Schools initiative in Australia—and its equivalents in other countries such as Eco Schools, Green Schools, and Enviro-schools (see Henderson and Tilbury, 2004)—embodies a different vision of education and administration of schools. School grounds development projects (such as *Learning through Landscapes* (Adams, 1990), *Landscape* (www.learnscapes.org) and *Bringing School Grounds Alive* (Smith, 1975) shifted the emphasis for environmental education in schools from the curriculum to also consider the educational context, but it was not until innovations such as the Gould League's Waste Wise Schools program⁴ that there was a focus on promoting cultural change across the whole school community (in this instance by providing teachers with a framework for the whole school community to introduce and maintain effectively a waste and litter

minimization program in a school) (Armstrong et al., 2003)).

The approach adopted in both the Waste Wise Schools and Sustainable Schools programs is consistent with ESD developments overseas. For example, the key elements of Education for Sustainable Development listed by the English Qualifications and Curriculum Authority (2003) are curriculum planning, curriculum content, teaching approaches, learning experiences and whole school approaches. With respect to whole school approaches, the characteristics are very similar to those incorporated in the Sustainable Schools 10-step plan:

The ethos of the school and the school's management policies should reflect ESD aims. Whole school characteristics that promote ESD are:

policies: ESD is embedded in school policies which have been developed by pupils, staff, parents and the community, and which are shared widely and updated regularly;

coherence: there is coherence between the formal curriculum and the hidden curriculum, eg in the school's policy on behaviour and in the management of buildings and grounds;

transparency: the school is able to demonstrate that it practices what it teaches in the way it is managed and run, eg through its purchasing decisions and improvements in energy efficiency;

practice: pupils are given opportunities to participate in decisions that affect how the school is run in a sustainable way, eg through schools councils;

continuing professional development: schools recognise the importance of ongoing training and professional development in ESD for all staff;

and litter programs, covering both curriculum and school operating practices. This support includes a comprehensive resource kit; funding towards teacher release for professional development; professional development for teachers and waste educators; ongoing access to specialist advice; a network of support schools to provide working examples of best practice approaches; a website (www.gould.edu.au/wastewise); annual Awards; and Waste Wise Schools accreditation. The aim of the program is that all schools in Victoria will, sometime in the near future, actively engage in waste wise and other environmentally sustainable practices as part of their school program. The Waste Wise Schools Program is seen as an important vehicle by which this can be achieved. A key part of the Program is to encourage and support schools to work directly with their local communities to achieve learning and action for a sustainable future.

⁴The Waste Wise Schools Program, which began in Victoria in 1998, offers a package of support services to schools to assist them to develop and run their own waste

evaluation: schools regularly evaluate their progress towards ESD (QCA, 2003).

In addition, a recent survey of international literature in environmental education for the New Zealand Ministry of Education noted that “whole-school approaches are advocated as best supporting the implementation of environmental education in a way that reflects the goals, aims, and purposes of this area. . . Whole school approaches also appear to be most successful when they build on the existing culture, priorities, and values of schools and their communities” (Bolstad et al., 2004, p. 95).

TOWARDS A SUSTAINABLE FUTURE

The six schools I evaluated in mid 2004 are all working towards a sustainable future through their school operations, curriculum, and whole school involvement. The focus for my evaluation was their work in the area of water management (Stormwater Action Project), but this was within the broader context of the process of their engaging with the whole Sustainable Schools program. As noted previously, the evaluation related to the schools’ experiences in trialing the implementation of water/stormwater related themes in their curriculum and operations, and retrofitting stormwater equipment to support their water/stormwater programs.

In the following sections, I discuss the achievements of the schools, the success factors for the program, and the limiting factors.

About the Schools

The six schools that received funding from the Stormwater Action Project included urban (4) and rural (2) schools from a range of socioeconomic levels (working class to middle class). The two rural schools had a constant popula-

tion of itinerants due to their local social contexts. Two of the schools (one urban and one rural) were well resourced by their communities, three of the others were of average status and the one secondary school was on the edge of an affluent area but was about to be demolished and rebuilt (as an energy efficient lighthouse school). Absenteeism was not a big issue in any of the schools. The percentage of the school day devoted to being a “Sustainable School” also varied between the schools. In all cases, the Sustainable School philosophy permeated the school’s management; students, and teachers at all levels of the schools were active in environmental committees, but the percentage of the school day devoted to sustainable schools content varied from topic to topic and teacher to teacher.

Each school had applied for funding under the Stormwater Action Project and was already active under either the Waste Wise Schools or Sustainable Schools program prior to receiving this funding.

About the Evaluation

Data for the evaluation was generated from a range of sources:

- Interviews with the six Sustainable Schools Coordinators,
- Interviews with the Principals of the six schools,
- Analysis of school reports on their involvement in Sustainable Schools,
- Interviews with key stakeholders (Gould League and CERES Project Managers and Facilitators),
- Analysis of Sustainable Schools program documents, and
- Observation visits to each school.

The interviews with the Principals and Sustainable Schools Coordinators were conducted in person to provide contextual information for the case studies. All but one of the key stakeholders was also interviewed in person. Prior

to their interview each interviewee was sent an explanation of the evaluation of the Stormwater Action Project, a letter of invitation to be interviewed together with a list of the interview questions, and a consent form for participating in the evaluation. These consent forms were signed by each interviewee prior to the interview commencing.

At the time of the evaluation all of the schools were meant to have finalized their retrofitting for stormwater, but this was not the case in two schools due to technical problems.

School Achievements

Their involvement in Sustainable Schools, and particularly the Stormwater Action Project, has led to each school achieving economic, educational, environmental, and social outcomes (see Table 1), together with achievements such as:

- embedding Sustainable Schools in their school operations and curriculum across all Key Learning Areas,
- engaging student learning,
- involving students in working towards a sustainable future,
- developing extensive links with their local (and often broader) communities,
- high staff and student morale in the school, and
- establishing a basis for future development as a Sustainable School and model for others.

Table 1 summarizes the findings from the evaluation in terms of the economic, educational, environmental, and social outcomes in the six schools. In the next section the limiting factors are discussed.

Success Factors

There are a number of common factors for the success of Sustainable Schools in the six Stormwater Action Project schools. The following factors were common across the six schools:

- Broad ownership of and engagement with Sustainable Schools across the school,
- Teachers, students and parents share the vision of the environment having a high profile in the school,
- Support of the school leadership team,
- Enthusiastic and committed staff,
- Immersion of all staff in the Core unit,
- The structure of Sustainable Schools made it easy to implement,
- Integrating sustainability into school operations and across the curriculum,
- Student involvement in the day to day sustainability operations in the school,
- The availability of funds to enable the development of visible sustainability infrastructure (such as rainwater tanks), and
- There is a school grounds master plan that helps bring together all aspects of achieving a Sustainable School.

There are also key success factors for Sustainable Schools as a whole:

- It uses an ecological approach, shifting emphasis from “relationships based on separation, control and manipulation towards those based on participation, empowerment and self-organisation” (Sterling, 2001, p. 49), rather than a behaviorist or mechanistic approach;
- It encourages a transformative, instead of transmissive, approach to education;
- The focus is on facilitating a culture change process for improved learning and action;
- It is a framework for change, not a program, allowing schools to proceed at their own pace to identify issues, set goals and targets, plan an approach, and take actions to achieve these targets;
- The Core unit assists schools to develop a common purpose and vision for the school;
- The collection of baseline data gives a strong reference base against which future change can be measured;
- The guided process leads to the program being embedded in the culture of the school (as shown by the program being part of the

Table 1
economic, educational, environmental, and social outcomes in the schools

Economic outcomes	<ul style="list-style-type: none"> • Savings from reduced water consumption (by having gardens rather than lawns and through using stored water for garden use). • Savings from reduced amount of waste sent to landfill (using fewer commercial skips). • Savings from reduced power consumption (through a “lights off” competition). • Potential income from running excursions into the school for other schools to learn about the wetlands. • The chickens pay for themselves through egg sales. • The school sells the vegetables produced in the vegetable garden. • Students are actively involved in learning about the environment.
Educational outcomes	<ul style="list-style-type: none"> • Students learning has been enhanced through an action-based project that has involved cross curricula teaching and learning. • The stormwater retrofit is an invaluable resource for continuing and expanding the school’s environmental education program. • School infrastructure is used as an on-going educational tool and resource for the teaching of sustainable principles, water consumption and management, and ecological interrelationships. • There is a richer curriculum with hands on activities across all Key Learning Areas. • Students have been involved in data collection, mapping and tabulation, as well as refining of scientific analysis, evaluation and testing techniques. • Students have opportunities to become aware, passionate, and enthusiastic about the environment. • Modeling water conservation principles to the community. • School has a community education role—home management plans have been sent home to help parents act more environmentally friendly. • Wetlands are used as a teaching resource with integrated units from P–6. • Improved student presentation skills, • The children are excited and motivated by the program. • The children have a more positive attitude to schooling. • The environment has been used to link and drive literacy, numeracy, and boys issues. • There has been skills development in literacy for boys. • Environmental education has been incorporated across the curriculum and across age groups. • The science focus in the curriculum has made use of the school grounds and increased student interest in schooling. • Problem children can be diverted to hands on garden activities. • Students have learned the skills to plant plants properly and have engaged in community plantings. • The rice paddy will support the Indonesian language program. • The animals and vegetable patch programs have provided an additional educational site for the integration program. • The local nature reserves are incorporated into school programs.
Environmental outcomes	<ul style="list-style-type: none"> • Enhanced biodiversity on the school site. • Extensive waste recycling in the school—paper, plastic, food scraps, garden waste. • School grounds development. • Monitoring and management of immediate coastal environment. • Reduction of school water consumption. • The school has environmentally-minded gardeners who work in with the worm farms and composting. • Propagation of local indigenous plants for local needs. • There is an indigenous plant nursery on site which has increased its partnerships with the community and government groups. • Water quality improvement of Jawbone Marine Sanctuary. • Through the Growling Grassfrog program students are contributing to a national database on this species. • The aesthetics of the school grounds. • Stormwater collected by rainwater tank and used in wetlands and/or vegetable gardens and/or toilets. • Reestablishment of the vegetable gardens.

Table 1
Economic, educational, environmental, and social outcomes in the schools

Social outcomes	<ul style="list-style-type: none"> • Students write water saving hints for the school newsletter. • Students have produced a drain stenciling brochure. • The frog ponds are fed by stormwater and thus prevent loss to the system. • There are indigenous plants and a bush tucker garden. • Food scraps are used in the worm farm and the compost is used on the gardens. • 50% reduction in landfill waste—much of which is providing food for hens and worms. • Students, staff, community, and experts have been involved in the program and have ownership of it. • Partnerships have been developed with the community, such as links with local environmental and community groups, parents, and projects. • Increased student leadership and social responsibility, plus self esteem, a sense of belonging and ownership. • Modeling of stormwater practices to the community through the visibility of the large water tank and rainfill fed toilet system. • Community involvement in planning and creation of the wetlands. • Student involvement in the community such as revegetating sand dunes. • Students are more confident and enjoy group work in the garden (building social capital). • Students have positions of responsibility and have become community environmental watchdogs (e.g., monitoring household garden watering against restrictions). • Parents are taking on sustainability practices at home (e.g., waste free lunches) and are involved in many aspects of the school's sustainability program. • Students work as Stormwater Ambassadors working with the council Stormwater Officer. • Mentoring of young students. • The access to the oval for disabled students following stormwater retention work has been greatly appreciated. • Student absences have declined, and behavior has improved. • The whole school community has pride in the school. • There is not a lot of vandalism and very little garden damage. • The animals program has provided an additional venue for student activities at lunch time.
--------------------	---

curriculum, incorporated as a school policy and a focus or emphasis of the school charter);

- It is customized to the needs of individual schools, but recognizes that behavioral change is a long-term process requiring the commitment and engagement of the whole school;
- It involves colearning, i.e., facilitators, teachers, students and parents learn from each other;
- It encourages teachers, students, and parents to take ownership of the program, leading to highly innovative solutions and approaches by schools;
- It fosters partnerships with many different groups and links with local communities;
- It engages students in meaningful learning;
- It is learner-centered and engages people cognitively and emotionally;
- It is outcomes-based (Educational, Economic, Social, and Environmental).

Limiting Factors

Although the schools reported a large number of achievements they also were realistic about the limiting factors for the successful implementation of Sustainable Schools, and particularly the Stormwater Action Project. The perennial limiting factors of time and money were, of course, mentioned: “More money to make things happen faster and more things happen (or happen at all)” (in A. Gough, 2004, p. 11).

Some of the schools also felt the pressures of being at the leading edge of an innovation and would have liked exemplars of policies and experiential stories from other schools rather than seeing themselves as providing the exemplars and stories.

There were also limiting factors specific to the Stormwater Action Project as the schools were involved in activities outside of the usual for schools. For example, the schools were keen

to have guidelines on seeking quotes, lists of suitable contractors (especially green plumbers) and instructions on how to build a wetlands (particularly guidelines for safety aspects such as fencing off the water from easy child access). Some teachers also felt the need for more curriculum and teacher resources and lists of contacts (again they felt they were at the leading edge and needed more support).

TOWARDS QUALITY EDUCATION

Quality learning is about developing “new, transformative, approaches to education—at all levels—that constitute a systematic and reflective response to the needs of diverse learners and educators” (Deakin University, 2004). It addresses new understandings of what it means to be a student, teacher or member of society (local, national or global), opens up positive

experiences of education, recognizes new social patterns, new relationships, and new opportunities, and develops innovations in pedagogy, curriculum, and assessment. It is also about supporting “interventions designed to transform, in some way, existing educational practices and their outcomes” (Deakin University, 2004).

As indicated in the earlier discussion, Sustainable Schools is very much about developing a new, transformative, approach to education, and, in particular, transforming educational practices and outcomes by addressing school operations, curriculum, and whole school involvement as a package. The educational model underpinning Sustainable Schools is outlined in Figure 2 (below). The traditional model for implementing environmental education in schools is isolated individuals working to make the school more sustainable while the rest of the school is engaged in activities (curriculum and operations) that make it less sustainable. However, in the Sustainable Schools initiative, the whole school has a commitment to

CHANGING SCHOOLS

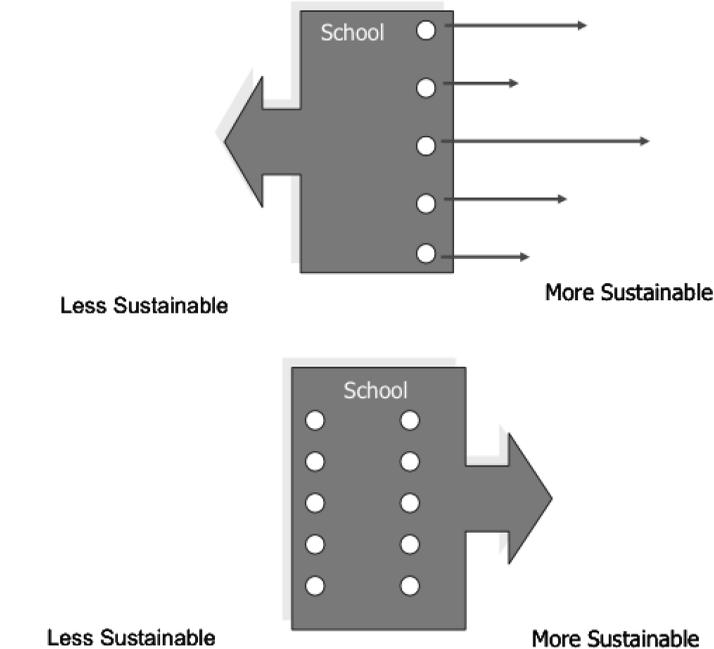


Fig. 2. Sustainable Schools Changing Schools Models (Gould League with CERES, 2004, p. 2).

sustainability and the action research process that underpins the 10-step plan (through monitoring, reflecting, and replanning for continuous quality improvement) ensures that the whole school is working together to achieve a shift in culture of the school community, including curriculum and operations. Even where there is resistance to the Sustainable Schools initiative in the school, this is mitigated by the groundswell of the cultural change in the school community.

The Sustainable Schools in this evaluation are all also achieving in other aspects of quality learning. All of the schools commented on the benefits to student learning in terms of

- A positive attitude towards learning
- Fundamental skills in literacy, numeracy and self-expression, which will enable them to be successful across all areas of learning
- High level personal, communication and social competencies to work independently and within groups
- Experience in innovation, creativity and problem-solving
- Confidence to deal with technological and cultural change
- Skill sets in the wider community and changing workplace
- Ability to access information and reflect upon it. (Department of Education and Training, 2003, p. 13).

The initiative also addressed new meanings about what it means to be a student, teacher or member of society by developing students' leadership skills, relationship skills, social responsibility, self-esteem and sense of belonging. Teachers have developed new pedagogical skills and knowledge and strategies for working with the community. The whole school community has also developed new social patterns through working together, new social relationships, new opportunities and, most importantly, ownership and pride in the school—

as well as adopting sustainability practices at home.

CONCLUSION

Education for a sustainable future is a focus for the next decade, and quality education is very much part of that through initiatives such as Sustainable Schools. This program is not the total answer for achieving a sustainable future, but it is certainly a step in the right direction and one that is consistent with those early visions which saw environmental education as making "a powerful contribution to the renovation of the educational process" (UNESCO, 1978, p. 24).

The experiences of the six schools reported in this study indicate that the Sustainable Schools program is a most appropriate strategy for renovating educational processes and achieving quality education. As discussed in this article, the Sustainable Schools strategy shifts the focus from the enthusiastic individual as the instigator of change to the more successfully sustainable commitment and ownership of the initiative by the whole school community. The implications of this for other practitioners are that they should also endeavor to work towards whole school community and involvement in education for sustainability initiatives rather than working alone. There are many programs around the world that parallel the Victorian Sustainable Schools initiative (see Henderson & Tilbury, 2004) that are worthy of consideration and implementation.

The next stages in this research are to investigate the impact of the school embodying sustainable practices on the practices of the students and parents at home, and the long term sustainability of the initiatives in the schools themselves. The economic and environmental benefits to the schools may sustain the involvement, but the social factors could also be significant and warrant monitoring.

REFERENCES

- Adams, E. (1990). *Learning through landscapes: A report on the use, design, management and development of school grounds*. Winchester, England: Learning Through Landscapes Trust.
- Armstrong, P., & Bottomley, E. (2003). Sustainable Schools Program—A one-stop shop for sustainability education. Paper presented at the annual conference of the North American Association for Environmental Education, Anchorage, Alaska, USA. http://www.gould.org.au/downloads/conferences/SusSchools_NAAEE_2003_Alaska.pdf (accessed 11 November 2004).
- Armstrong, P., Sharpley, B., & Malcolm, S. (2003). Waste Wise Schools: Cultural change through successful partnerships. Paper presented at the annual conference of the North American Association for Environmental Education, Anchorage, Alaska, USA. http://www.gould.org.au/downloads/conferences/WWS_NAAEE_2003_Alaska.pdf (accessed 11 November 2004).
- Bolstad, R., Baker, R., Barker, M., & Keown, P. (2004). *Environmental education in New Zealand schools: Research into current practices and future possibilities. Volume 2: A review of national and international research literature on environmental education practices*. Wellington, New Zealand: Ministry of Education. <http://www.minedu.govt.nz> (accessed on 3 July 2004).
- Deakin University. (2004). *Quality Learning Research Priority Area*. http://www.deakin.edu.au/education/quality_learning/ (accessed 10 November 2004).
- Department of Education Queensland. (1993). P-12 *Environmental education curriculum guide*. Brisbane, Queensland: Department of Education.
- Department for Education and Skills (DfES). (2003). *Sustainable development action plan for education and skills*. London: Department for Education and Skills. <http://www.dfes.gov.uk/sd/action.html> (accessed on 27 July 2004).
- Department of Education and Training. (2003). *Blueprint for government schools: Future directions for education in the Victorian Government School System*. Melbourne, Victoria: Department of Education and Training. <http://www.deet.vic.gov.au/deet/resources/blueprint.htm> (accessed on 1 February 2004).
- Education Victoria. (1998). *Investing in the future: Environmental education for victoria's schools*. Melbourne, Victoria: Department of Education. <http://www.sofweb.vic.edu.au/enviro/pdfs/environ1.pdf> (accessed 11 November 2004).
- Fien, J. (2001). *Education for sustainability: Reorienting Australian schools for a sustainable future*. Tela series. Fitzroy, Victoria: Australian Conservation Foundation. <http://www.acfonline.org.au> (accessed on 3 July 2004).
- Gough, A. (1997). *Education and the environment: Policy, trends and the problems of marginalisation*. Australian Education Review Series No.39. Melbourne, Victoria: Australian Council for Educational Research.
- Gough, A. (2004). *Report of evaluation of the Sustainable Schools Program Stormwater Action Project*. Deakin University Faculty of Education Consultancy and Development Unit for the Gould League, June 2004. http://www.gould.org.au/QBL_outcomes.htm (accessed 2 November 2004).
- Gough, N. (1992). *Blueprints for greening schools*. Melbourne, Victoria: Gould League of Victoria.
- Gould League with CERES. (2004). *What is sustainable schools?* <http://www.gould.org.au/downloads/WhatsSustainableSchools.pdf> (accessed 25 October 2004).
- Greenall, A. (1980). *Environmental education for schools or how to catch environmental education*. Canberra: Curriculum Development Centre.
- Greenall Gough, A., & Robottom, I. (1993). Towards a socially critical environmental education: Water quality studies in a coastal school. *Journal of Curriculum Studies*, 25(4), 301–316.
- Henderson, K., & Tilbury, D. (2004). *Whole school approaches to sustainability: An international review of sustainable school programs*. Report prepared by Macquarie University for the Australian Government Department of the Environment and Heritage. Sydney, NSW: Macquarie University. <http://www.aries.mq.edu.au/project.htm> (accessed 1 July 2005).
- Lang, J. R. (2004). Environmental Education, Education for Sustainability and UN Decade of Education for Sustainable Development. Paper presented at the International Seminar/Workshop on *Quality environmental education in schools for a sustainable society*. 24–28 August, Cheongju, South Korea.
- Ministerial Council on Education, Employment, Training and Youth Affairs. (MCEETYA). (1999). The Adelaide Declaration on National Goals for Schooling in the Twenty-first Century. <http://www.dest.gov.au/schools/adealide/adelaide.htm> (accessed on 4 July 2004).
- New South Wales Department of Education and Training Curriculum Support Directorate (NSW DET). (2001). *Environmental education policy for schools*. Sydney, NSW: New South Wales Department of Education and Training. http://www.schools.nsw.edu.au/media/downloads/schoolsenviron/environ_policy.pdf (accessed 21 February 2004).
- New South Wales Council on Environmental Education. (2002). *Learning for sustainability: NSW Environmental Education Plan 2002–05*. Sydney South, NSW: NSW Council on Environmental Education. <http://www.epa.nsw.gov.au/cee> (accessed on 20 February 2004).
- Office for Standards in Education (OSE). (2003). *Taking the first step forward... towards an education for sustainable development*. HMI 1658. London: Office for Standards in Education. <http://www.ofsted.gov.uk> (accessed on 5 May 2004).

- Parliamentary Commissioner for the Environment (PCE). (2004). *See change: Learning and education for sustainability*. Wellington, New Zealand: PCE. <http://www.pce.govt.nz> (accessed 4 February 2004).
- Qualifications and Curriculum Authority (QCA). (2003). Education for sustainable development: What are the key elements and characteristics of ESD?. http://www.nc.uk.net/esd/gq3.htm#curriculum_content (accessed on 4 June 2004).
- Smith, J. H. (1975). *Bringing school grounds alive*. Adelaide, South Australia: Wattle Park Teachers Centre.
- Sterling, S. (2001). *Sustainable education: Revisioning learning and change* (Schumacher Briefings). Totnes, Devon, UK: Green Books.
- United Nations Economic Commission for Europe (UNECE). (2004). Draft UNECE Strategy for Education for Sustainable Development. CEP/AC.13/2004/8. <http://www.unece.org/env/documents/2004/cep/ac.13/cep.ac.13.2004.8.add.2.e.pdf> (accessed 2 August 2004).
- United Nations Conference on Environment and Development. (UNCED). (1992). *Agenda 21*. Rio de Janeiro, Brazil: UNCED. <http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21chapter36.htm> (accessed 11 November 2004).
- UNESCO. (1978). *Intergovernmental Conference on Environmental Education: Tbilisi (USSR)*, 14–26 October 1977. *Final Report*. Paris: UNESCO.
- UNESCO. (2004a). *Education for sustainable development—United Nations Decade 2005–2014—Objectives*. http://portal.unesco.org/education/en/ev.php-URL_ID=23295&URL_DO=DO_TOPIC&URL_SECTION=201.html (accessed on 13 September 2004).
- UNESCO. (2004b). United Nations Decade of Education for Sustainable Development 2005–2014. Draft Implementation Scheme. October 2004. http://portal.unesco.org/education/en/file_download.php/03f375b07798a2a55dc39db7aa8211Final+IIS.pdf (accessed 22 October 2004).