

## **THE DAY BEFORE TOMORROW - ECOLITERACY AS A PREREQUISITE FOR SURVIVAL**

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### **Abstract**

In this paper we argue for the urgent need to establish ecoliteracy as a major part of our core curriculum. We suggest that there is a serious failure on the part of existing educational institutions in addressing the ‘environmental emergency’ that the current and next generation faces. We recognise both the difficulties and opportunities and propose the use of the Ecological Footprint metaphor and methodology as one useful way to promote ecoliteracy. The value of the Ecological Footprint model is contrasted with the ambiguity that increasingly adheres to the term “sustainability”. We conclude the paper with some observations on our preliminary experiences with the Ecological Footprint model in schools and some of the plans for 2005.

### **The Need for Ecoliteracy**

We are becoming increasingly aware that we are facing an environmental emergency, although the real urgency entailed in such awareness is only now coming home to us.

In terms of current popular culture, we are living the “day before tomorrow” – and we know what the day after tomorrow might entail.

As graphically pointed out by David Orr as early as 1993 (Orr, 1993:1) “The generation now being educated will have to do what we, the present generation, have been unable or unwilling to do”, including:

- stabilising a world population that is increasing at a rate of nearly 2 million a week;
- stabilising and then reducing greenhouse emissions to minimise the potentially disastrous impact of global warming;
- protecting biodiversity, currently declining at a rate of between 100 and 200 species per day;
- preventing and then reversing the destruction of rainforests currently being lost at the rate of more than 100 square miles per day;
- conserving and improving soils currently being eroded at a rate of more than 60 million tonnes a day in addition to growing salinity and other destructive processes;
- conserving and increasing healthy water supplies for human communities as well as for the environment;
- reducing, and eventually eradicating, contaminating and polluting industrial and agricultural practices;

And the list goes on.

As Orr concludes: “We are still educating the young as if there were no planetary emergency”.

Orr's colleague, Fritjof Capra (1999: 2,6) adds that

'Being ecologically literate, or ecoliterate, means, in our view, understanding the basic principles of ecology and being able to embody them in the daily life of human communities . . .

Teaching this ecological knowledge . . . will be the most important role of education in the next century.'

We agree with their basic arguments:

1. Current pedagogical frameworks are based on an instrumentalist, positivist, fragmented and largely functionalist set of assumptions, which fail to achieve the learning outcomes we claim to agree on;
2. Current schooling frequently limits learning to teacher-directed cerebral activities, often limiting experiential and student-directed learning;
3. Universities have generally failed to provide critical learning frameworks and opportunities, preferring to chase the narrow instrumentalist courses for which government and corporate funding is relatively easy to obtain;
4. Instead of critical theory universities have promoted positivist, linear and rationalist modes of thought as the only valid mode of thinking. They lead us through a maze of dichotomous doctrines (such as rational & spiritual; good & bad; knowledge & belief; quantity & quality; and, in Capra's own discourse, measurement & mapping). The more encompassing dialectical modes of thought, modes far more congruent with actual human experience, are largely ignored;
5. Only a major overhaul of our pedagogical theory and practice can turn our universities and schools into the kinds of places where ecoliteracy can occur;
6. But without a major program for producing widespread ecoliteracy in the community, especially, but not exclusively, in the young, human society is facing an accelerating fall into disaster.

The serious environmental issues the next generation will have to face (especially if we fail to reduce their burden by refusing to act responsibly today), and for which we have a responsibility to prepare them, may yet be obscured by the smoke of disaster rising from the impending oil-price crisis.

Increasing evidence of the imminent *Peak Oil crisis* has led a range of well-informed, and rather conservative, commentators (including members of the Bush regime) to warn that the impact of the peaking of oil supplies (which is different to the actual shortage of oil, which is still several decades away) may be catastrophic for the global economy (and especially the US economy). Predictions of economic decline of much greater magnitude than the Great Depression, and the likely 'energy wars' that may result, are increasingly being taken seriously in the US corridors of

power. The impact of this over the next two decades may overshadow all other environmental concerns.

Regardless of where one stands on such issues, the only way that we, and our children, will be able to cope with the changing reality facing human society is to have a sound understanding of the ecological pressures and limitations we face. To manage this we need to have a solid grasp of the language and meaning of ecological reality - to be ecoliterate.

### *It Won't be Easy*

While the core of ecoliteracy is a sound understanding of the systemic interrelationships between the elements of the natural environment and the lifestyles of human beings, a fundamental aspect of that understanding is that human society has transgressed the boundaries of long-term survival and needs to reconstruct itself to become ecologically sustainable.

The difficulty with this aspect of ecoliteracy is that it is not a welcome message. Most people in the materially wealthy world do not want to hear that their lifestyle needs to be altered to ensure a reduction in the energy and material resources they consume, by a factor of about 4, before the year 2030, if the world is to have a chance to become sustainable. This is an almost inconceivable attack on our comfortable lifestyles which we would prefer not to know about, let alone understand and act on.

For many people ignorance is bliss – until reality catches up.

The purpose of a sound approach to ecoliteracy will include the promotion of more sustainable perceptions of what is a “good life”. Factor 4 reductions will only be acceptable to people who can see alternative ways to achieve comforts and joys, even if these are differently perceived in the future than they are now.

For these reasons it is crucial to include in ecoliteracy the ideas of genuine progress, as distinct from trivial consumerism and GDP; the kind of ideas promoted by *Redefining Progress* in their “Genuine Progress Indicator”. The ability to show people that not everything is gloom and doom, and to avoid demoralisation, will be crucial to the future development of ecoliteracy. We need to help this, and the next, generation appreciate that real well-being can be achieved, and probably better achieved, in a less material consumer society. To replace high energy and intense material products with greater time, more enjoyable social environments and more humane services and products will enable greater comfort and happiness, not less.

Unfortunately, in an economy predicated on unlimited and escalating, growth, catalysed by a blindly consumerist advertising industry and mass media, this understanding will take time to penetrate.

In this context we have to recognise the failure of our political and educational institutions to adequately prepare society to deal with the future. There has been, and continues to be, a serious failure of political leadership and courage, especially in the Governments of the English-speaking world. Politicians may bleat about sustainability when community awareness has been sufficiently raised to make this opportune, but they will not take the difficult steps required to seriously tackle the issue. Instead they will either hide behind a plethora of white-wash and

green-wash or, in the case of the more ‘progressive’ governments, tackle the relatively easy environmental projects without dealing with the reality of sustainability.

Equally failing are our universities and schools. Despite claiming to be responsible for preparing the next generation to be intelligent, understanding, compassionate and valuable citizens, the vast bulk of their activities still aim at providing a range of vocational skills for industries and organizations that are themselves unsustainable, and which choose to remain ignorant of this fact.

The exceptions to these failures often find themselves isolated, ridiculed and under-resourced, and frequently give up and re-join the mainstream failures.

### *The Opportunities*

If the previous discussion appears to full of gloom and doom we should equally stress the opportunities for avoiding some, and ameliorating other, impacts of the environmental emergency facing us. Without a realistic understanding of the current situation and risks, something which we believe most social institutions are refusing to face, there is little chance of seizing the opportunities for avoiding the worst impacts of the emergency.

An obvious example of this, one raised by several year 9 students only a few weeks ago, is the need to realistically assess the impending Peak Oil situation. If it proves correct that we are facing a permanent and accelerating decline in the supply of cheap oil, then our strategy should be to use the remaining cheap oil to facilitate the transition to alternative, mainly renewable, energy sources. Given that such a strategy also accords with the need to seriously reduce greenhouse emissions, we would be very stupid not to manage the Peak Oil risks in this manner.

If secondary students can come to this conclusion with very little prompting, we must wonder at our community leaders’ inability, or unwillingness, to do the same.

In reality, the serious development of alternative energy sources and alternative lifestyles will go a long way towards averting the worst consequences. This is a promising, and challenging, scenario with a great deal of benefit to the environment, the community, and ultimately to the economy.

The communities, countries, institutions and businesses which seize the opportunities entailed in becoming ecologically sustainable will be the ones that most strongly survive and thrive over the next few decades.

### *The Need for Ecoliteracy as Core Curriculum*

At present schools focus on English, mathematics and science literacy as core elements of the learning program. The urgent need for the next generation to understand the environmental difficulties facing the world means that schools should also include a commitment to ecoliteracy in their philosophy and curriculum. Failure to do so will seriously jeopardise community understanding of the problems and possible solutions for achieving ecological sustainability. Such failure will in turn make the task of government and environmental agencies increasingly difficult.

There are both theoretical and practical reasons for establishing ecoliteracy as core curriculum rather than continuing the current practice of seeing it as an ‘add on’ and, in many cases, a luxury.

Although the curriculum is regularly “reviewed” and updated, and despite the myriad changes and additions that have occurred over the past two decades, **nowhere is there a focus on the lifestyles required to reduce our impact on the earth and to live sustainably.**

In stark contrast to sustainability, the school system largely reflects the consumption-dominated culture in which we live: a culture that strongly supports excess consumption of resources and in which most media messages are about the latest technology and products. Success and happiness are measured in material terms. These are the icons of our society.

In direct contrast, the sustainability and EcoFootprint message we are offering is that we have to significantly reduce our resource use if we are to have a sustainable future. Such an unwelcome message is often seen as an unnecessary imposition on an already crowded curriculum.

### *The Role of Government*

Central to the issue is the role of Government and relevant authorities in being prepared to highlight, argue, legislate and push the issue of sustainability.

Governments and government agencies have a responsibility and the ability to provide leadership and effective action. This was shown recently in the case of the drought and water crisis in Victoria:

Significant below-average rainfall in Victoria had been evident for six years from 1998 to 2003. Over that period of time there was severe hardship in country areas as dams dried up and water restrictions became essential. Yet at the same time in 2001 and 2002 Melbourne’s water supply was still reasonable because of the size of the water reserves.

Over that period there was the anomaly of severe droughts in the country and consequent restrictions, but no overall message to conserve water and no water restrictions in Melbourne. Part of the argument appeared to be commercial – water restrictions would hurt some particular industries and probably reduce the income of water supply companies and part was political – water restrictions would not be popular with the electorate, or so it was believed.

It was only in 2002/2003 that restrictions were finally imposed. At the same time there was extensive advertising, education programs, a new water ministry established and essentially a high priority to an issue that was recognised as central to our existence.

Consequently, it seems that the save water message is getting through. New attitudes, new practices, water saving technology, a community agreement that saving water is essential and that our society needs to be serious about the question. The acceptance of long-term water restrictions for example is a signal of concrete change.

This example raises a number of salient points:

1. It took the direct threat of water shortages to Melbourne to galvanise political action beyond short term statements;
2. Despite the looming shortages commercial and political considerations still created pressure on water authorities to reduce the intensity of restrictions;
3. Water reserves are a very tangible and measurable item. This makes it much easier to argue that there is a need for action.
4. The changes required of people were not onerous. We waste a lot of water and simply astute use and the sacrifice of some lawns appears sufficient to address the issue, at least in the short term.

Unfortunately the overall issue of our Ecological impact is far more complex than the single water issue. There is no direct current ecological threat to our lifestyle – even though we can see other places already being affected and those with a greater level of ecoliteracy understand the crisis that is looming just over the horizon.

The changes required to reduce our ecological impact are far more profound than simply reducing waste (such as the Factor 4/10 reduction in resource use). As a consequence there would be severe commercial and political pressures against any such moves.

In the public mind there are no easily understood, critical measures of sustainability, like those for water, that we can monitor. For example, while smoggy air or polluted waters are (potentially) easily noticed and directly tackled, global warming, and the storms, droughts and weather extremes that are part of this phenomenon, can only be noticed as part of the ‘background’.

In this context it is important that Government, through the various educational departments and institutions, plays a leading role in ensuring that ecoliteracy becomes a central part of the next generation’s education, not a mere add-on, that will inevitably be placed in the ‘too hard’ basket in most schools.

One of the overriding pressures in all schools is the commitment to previously decided curriculum goals and consequent classroom activities. Our work with schools during the pilot project showed that, in most cases the Ecofootprint project, while in some ways a legitimate part of the curriculum, was also an addition to what may be considered “the real work”.

Ecoliteracy must be integral to curriculum. It should not be presented as a side issue or ‘enriching curriculum’. Therefore ecoliteracy should not be introduced externally but, once the appropriate pilot work has been done, become a core component of curriculum throughout the school system.

### *Two Options*

The approach of Orr and Capra is to argue for an interdisciplinary approach wherein ecoliteracy is a recognised element in all core subject areas or disciplines. Their arguments reflect the pedagogical arguments for interdisciplinary studies that were prevalent in the seventies.

The experiences of the seventies were mixed but, with few some notable exceptions, we failed to make interdisciplinary studies a successful approach. There were many reasons for this,

including the difficulties in reconceptualising learning and retraining teachers to implement interdisciplinary approaches. But perhaps the main reason was that without a passionate commitment to such an approach by a majority of teachers there was never much likelihood of widespread success.

The same problems will arise again if we put all our eggs in the interdisciplinary basket.

Alternatively, there is the option of establishing a core subject area (perhaps called ‘sustainability studies’ or ‘survival studies’ or simply ‘ecoliteracy’) as an integral part of the K-12 curriculum. This has the advantage of requiring everyone to undertake such studies and therefore requires the appropriate resources for teacher training, PD course, etc.

In reality, what is required is an appropriate mix of both core and interdisciplinary approaches to ensure that ecoliteracy achieves its appropriate status in the curriculum over the next few years.

### *The Ecological Footprint as a vehicle for Ecoliteracy*

The Ecological Footprint is a valuable and internationally acceptable tool to measure and communicate environmental impacts and facilitate environmental improvements in an integrated way.

There are many ways that our environmental impact can be described or measured, including a broad range of “sustainability indicators”, biodiversity measures and “urban metabolism” methods of measurement. All of these can be valuable approaches to understanding the impact we have on our environment and how we might improve our environmental performance. The Ecological Footprint should be seen as another valuable tool in this armoury.

The Ecological Footprint (EF) is a measure of the environmental impact of a nation, a region, a company or an organisation such as a school or a hospital. It determines the land and sea area required each year to sustainably maintain current consumption and lifestyle patterns assuming prevailing technology. The Ecological Footprint methodology can provide valuable guidelines and priorities for reducing our environmental impact.

Using the EF calculations it can be shown that Australians have one of the highest Ecological Footprints, requiring approximately 3 - 5 planets Earth to maintain our current lifestyles.

The Ecological Footprint therefore provides a major tool for both education and analysis and is especially suited for use in schools and universities as an exciting educational platform.

### *Why the Ecological Footprint?*

‘Since its introduction in the early 1980s, the concept of sustainability has often been distorted, co-opted, and even trivialized by being used without the ecological context that gives it its proper meaning.’

Fritjof Capra (1999: 1)

The Ecological Footprint has some distinct advantages over other methods, especially for purposes of raising awareness and changing people’s attitudes and behaviour:

- Unlike the term “sustainability”, which has been seriously overused and misused over the past decade, the Ecological Footprint is not readily co-opted or tokenised. The EF has a solid scientific and mathematical basis that protects it from this risk;
- The theoretical underpinnings and solid measures of the Ecological Footprint provide an international basis for understanding and comparison;
- It provides a coherent framework for the many elements of ecological sustainability and for sustainability indicators. This serves to improve understanding of the interconnectedness of these elements and enables effective accumulation of the many small improvements we can make in our schools, workplaces and community settings;
- It provides an accessible and appealing metaphor for ecological sustainability. As such it can provide a coherent and lasting basis for ecoliteracy from primary school through to tertiary level.

### *Plans for 2005*

We are currently planning a series of activities for 2005 to promote ecoliteracy through the Ecological Footprint Project.

We intend to expand our activities from the current group of 8 – 10 schools to cover a much broader area (hopefully a range of schools across the state at one level or other).

The following plans are already taking shape:

- Establishment of several ‘flagship activities’ for EcoFootprinting, e.g.:
  - Walk to School Day - an opportunity for curriculum work on energy, climate change and transport
  - Zero Waste Week for Schools – opportunity to work towards better understanding of the resource issues involved in our lifestyles
  - Water Week for Schools – opportunity to consider local and global water issues – could work in partnership with water providers/retailers (e.g. Melbourne Water Open Day, etc.)
  - Tree Day for Schools – a major opportunity to involve schools in the biodiversity aspects of EcoFootprint
  - EcoFootprint Week - opportunity to display school achievements as well as involve the broad community, industry, government, etc. in the issues

### *UN Decade of Education for Sustainable development*

A major commitment should be made to promote ecoliteracy and the Ecological Footprint Project through the forthcoming Decade of Education for Sustainable Development established by the UN to commence from 1 January 2005, extending to the end of the year 2015:

‘Education for Sustainable Development is an investment in our future... each respective country should ensure that appropriate resources are made available for its development’

World Summit on Sustainable Development: Plan of Implementation (2002).

The UN Decade of Education for Sustainable Development provides a useful vehicle for promoting ecoliteracy and gaining Government support and resources. The Ecological Footprint Project will be working to promote the Decade for ESD and obtain Government support over the next twelve months.

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### **Presenter biographies**

Joe Natoli taught in secondary schools in Victoria and interstate for 18 years. He then developed an energy consultancy practice assisting clients reduce energy use and costs.

Joe re-entered the education field as project worker for the CERES Worming into the Community project. Over three years this project created a student and teacher lead program which integrated organic waste recycling into schools and local communities.

Joe's next project was initiating and developing Schools for a Sustainable Future in 1997. SFSF created a framework for schools to bring together the then disparate waste, energy and water saving programs into the one theme of sustainability – and to encourage schools to be prime movers in educating the community on the need for practical and important changes in lifestyle.

Currently Joe is the Ecological Footprint Project Manager, based at the Western Region Environment Centre in Victoria.

Harry van Moorst is an environmental and community activist of many years experience and has been heavily involved in campaigns against war and poverty as well as environmental campaigns. He was senior lecturer in social research at Victoria University until campaigning to stop a toxic dump in Werribee forced him to go to part-time lecturing. He is currently the Director of the Western Region Environment Centre. His work includes developing models for calculating the Ecological Footprint of schools, local government and industries.