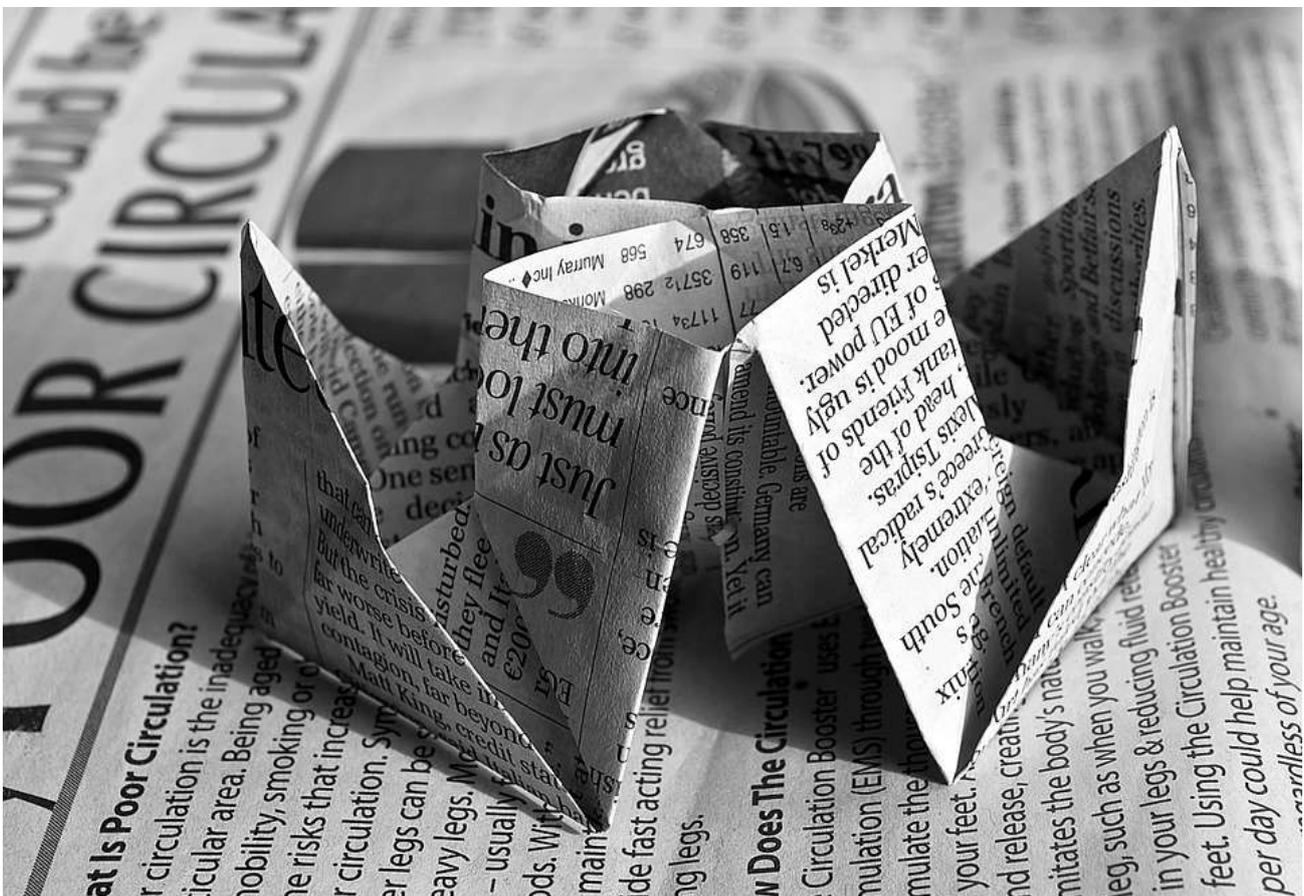




## Sustainability and Financial Management in Schools

Paul Cabrelli



St. Julian's School, Lisbon

February 10 & 11 2017

**Useful Websites:** <https://www.leadingarchitecture.co.za/three-south-african-schools-feature-in-top-green-architectural-award/>

**Sustainable Schools – Click on the images below to follow the links**

**Lebone II College of the Royal Bafokeng, South Africa**



The facility is optimized for learning based on research revealing that people learn best in environments that provide - A sense of belonging and emotional security, flexibility in the learning environment allows for multiple different teaching methods and styles, an open and transparent learning environment stimulates sharing and accountability, physical comfort and balance nutrition for prolonged concentration. The architecture of Lebone provides these in the L shaped class rooms clustered together in a "village".

**Vele Secondary School in Limpopo, South Africa - It offers the following innovative features:**



- Rainwater harvesting and storage
- Food gardens at the heart of the school campus
- Solar energy for computers and water pumping
- Electricity sub-metering and display for energy management and education
- Green roofs for insulation and celebration of indigenous flora
- Dry composting toilets

Biogas digesters for cooking

Passive low energy design for thermal comfort, natural lighting and ventilation

A campus layout the facilities the sharing of amenities with the community and surrounding schools



NAC Architecture's Machias Elementary School, Snohomish, Washington State, United States is a Symbol of Sustainability and Rural Heritage



The 79,778 square-foot **Machias Elementary School** in Snohomish, Washington has won four architectural awards since being completed in December of 2010.

Among the recent awards that the designers at **NAC Architecture** took home was a **2012 Merit Award** from the AIA Washington Civic Design Awards.

The school is very sustainable and matches the **Snohomish School District's** desire for self-sufficiency with the use of a 100kW photovoltaic array, ground-loop heat exchangers, triple glazing, and a super-insulated building envelope. The building also serves educational tool. A touch screen at the entrance to the school allows students and visitors to check the building's energy performance throughout the day. Also, the designers at NAC Architecture installed a visual cut into a portion of an interior wall in order to educate the public on construction. The students and staff will be able to enjoy the sustainability of the building, both academically and physically, for years to come.

## Howe Dell Primary School, Hatfield, England



AWARDS: ECO Green Flag accreditation

Selected by BREEAM as one of eight projects used during the development of the 'BREEAM for Schools' initiative

2008 --Building Magazine Sustainable Building of the Year – Runner-up --

2008 ACE Awards 'Sustainable Technologies' – Highly Commended

## Maosi Ecological Primary School, China

Earth is becoming increasingly popular in contemporary architecture: hundreds of projects of high aesthetic and technical quality are emerging across five continents. This material, which has low embodied energy, is readily available and appropriate for participatory buildings.



## Handmade School, Bangladesh

School Handmade showcases the potential of good planning and design, from the arrangement of the building on the site to the realisation of aspects in detail. Furthermore it demonstrates the possibilities of building with earth and bamboo using simple methods as the continuation of a local rural building tradition and can serve as an example for future building developments in the area.

Click on the image below to have a look at 6 exceptional Eco Schools





## Examples of sustainability

### Recycling Bins



Involving

teachers and children in recycling schemes and other activities to improve the environment can be a lot of fun. Educating children about the importance of recycling and the environment provides a path to a greener future.

### Recycling Schemes

There are almost 34,000 schools in the UK and they play a vital role in dealing with waste. Recycling schemes in schools help to improve the environment and can reduce money spent by the school on waste disposal.

### Paper Recycling

- Paper is the main form of waste created by schools, making up at least a quarter of all its rubbish.
- Contact your local council and ask them to provide your school with a paper-recycling bin.
- Set up a paper collection scheme for each classroom by making 'paper only' boxes for the children and teachers to put used paper in. Make sure they are clearly labelled and placed in an obvious place.
- Involve pupils by allowing them to create posters and bright labels for the recycle bins.
- Brief the teachers about the recycling scheme and hold assemblies to inform the pupils.
- Make sure that the teachers and staff understand the importance of recycling, and this should filter down to the pupils.

### Metal Recycling

- Metal recycling schemes are good for schools with vending machines.
- Contact your local council and ask them to provide your school with a recycling bin for cans.
- Place the bins next to the vending machines and make sure they are clearly labelled.
- Make sure that both teachers and pupils understand on the importance of recycling.
- Find out if there is a 'cash for cans' program running in your area.
- Buy recycled print cartridges whenever possible.

## Composting Scheme

- Contact your local council who may be able to provide a compost bin for your school, in some cases, compost bins are provided free of charge. Your councils recycling officer will be able to advise you further.
- Teachers and children can be involved in making the compost by adding items such as tea bags, coffee granules, fruit and vegetable cuttings from the cafeteria.
- If your school has a garden, then you can add leaves, plant cuttings and grass trimmings to the compost heap.

## Educational Activities

There are a number of fun activities for pupils that will educate them about recycling and its importance to the environment. Below are some suggestions of activities that can be carried out in school:

- Role Plays are a good way of allowing children to express their opinions on recycling and encourage debate.
- Word search puzzles allow the pupils to explore the different terms related to recycling.
- Name that symbol is a game where pupils can become familiar with recycling symbols.
- Arts and crafts are an excellent way of recycling materials, and can demonstrate to the pupils that recycling can be fun.
- The magnetism test of aluminium and steel cans can aid in teaching the pupils about different recyclable materials.
- Questionnaires allow the pupils to use their brain to show what they know about recycling.
- Discussions. Hold class discussions that allow pupils to express their opinions on recycling.

From: The *Recycling Guide* - [www.recycling-guide.org.uk](http://www.recycling-guide.org.uk)

## Recycling paper in the classroom



Bokashi Bins – [Click on the bucket to find out more](#)

The **Bokashi** Bran is enriched with effective micro-organisms (EMs) and molasses which ferments the food waste and neutralises smells. Once fermented in the **Bokashi Bucket** it can then be dug into the soil as an excellent conditioner, added to a compost pile or **bin**, or introduced to a wormery.



## Passive Buildings

*“A Passive House is a building, for which thermal comfort (ISO 7730) can be achieved solely by post-heating or post-cooling of the fresh air mass, which is required to achieve sufficient indoor air quality conditions – without the need for additional recirculation of air.”*



[Click on the image to look at Montrottier Primary School, France](#)

The project was designed by **Tekhnê Architects**

## MINERGIE LABEL – [Click on the image to find out more](#)



### Swiss International Science School, Dubai

SISD is an eco-friendly campus that consumes one third of the energy of standard school buildings. It has been awarded the MINERGIE label, a renowned international certificate for the pursuit of sustainable standards and reflects SISD's commitment

to providing students with a comfortable and healthy interior climate.

The Federal Institute of Technology Lausanne (EPFL), Sorane S.A., WME Consultants and Al Ahmadiyah Contracting & Trading have collaborated in developing the concept, overseeing the design and constructing the first MINERGIE standard building in the MENA region

#### SISD MINERGIE building in brief:

- 1<sup>st</sup> low energy building in the Middle East
- Prioritizing the well-being of students
- Meeting the highest standards of energy consumption
- Reducing the circulation of cold air into our classrooms
- Using high natural light levels only when necessary
- Providing a healthier and comfortable environment to your children
- We believe that social, cultural, economic and environmental awareness prepare us to play our part in shaping a better future for ourselves and those around us.
- Our school campus is eco-friendly, using less energy to deliver a more comfortable, healthier environment.

## Organic and Fairtrade Produce



**Fair Trade** does promote **organic** farming with training for farmers and by offering a higher price for **organic** products. Many producers invest their **Fair Trade** premium funds in **organic** certification, which has led to outstanding results: nearly half of all **Fair Trade** Certified imports were also **organic**.

[Click on the Fairtrade logo to find out more](#)



Fairtrade certified (Fairtrade International)



Fair Trade certified (Fair Trade USA)

## Wateraid

WaterAid is an *international organisation* whose mission is to transform the lives of the *poorest and most marginalised people* by improving access to *safe water, sanitation and hygiene*.



Through our partners, we reached 2 million people with safe water and 3 million people with sanitation last year.

Everything we do is shaped by our six values: respect, accountability, courage, collaboration, innovation and integrity.

[Click on the Wateraid logo above to follow the link](#)

## Eco-Schools Programme

‘Ensure young people have power to be the change for sustainability that our world needs by engaging them in fun, action-orientated and socially responsible learning.’

Click on the image below to watch the video



WWFMy

Published on Mar 13, 2012

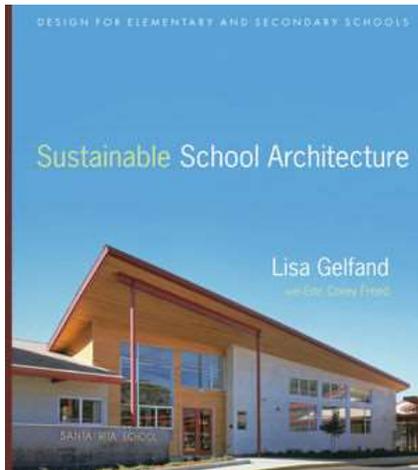
Find out more about the Eco-Schools Programme co-ordinated by WWF-Malaysia in this video produced by Sunny Stories, with drawings by artist Eve Yap.

‘Each school follows a seven step change process and empowers their young people to lead processes and actions wherever they can.’

<http://www.ecoschools.global/>

Books for your library – [Click on the book covers to follow a link to Amazon](#)

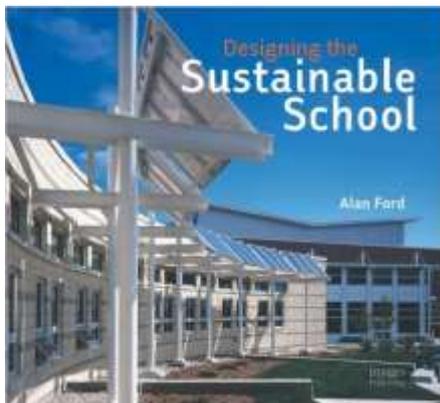
## Sustainable School Architecture: Design for Elementary and Secondary Schools by [Lisa Gelfand](#) with [Eric Corey Freed](#)



**Get the comprehensive guide to the sustainable design of schools.**

The elementary and secondary school buildings and campuses built today are the schools of the future. Sustainable School Architecture is a guide to the planning, architecture, and design of schools that are healthy, stimulating, and will conserve energy and resources. Written with the needs of architects, construction professionals, educators, and school administration in mind, the book provides a road map for sustainable planning, design, construction, and operations.

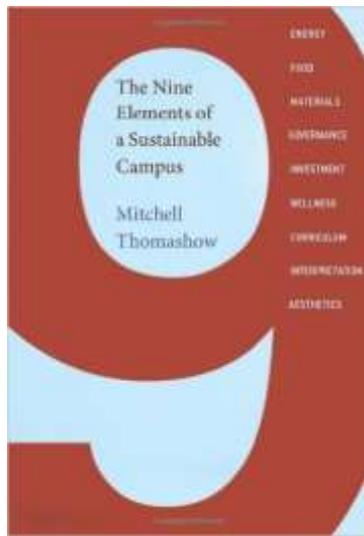
## Designing the Sustainable School by [Alan Ford](#) (Author)



This book presents a survey of K-12 schools from around the world that combine the best in aesthetics, sustainability, and high-performance design. K-12 school construction currently represents one of the largest sectors of new construction of any building type. Considering rising energy costs and concerns for the environment, there has never been more attention focused on the need to design schools responsibly. It highlights the work that the best architects are doing to respond to those needs while still creating beautiful schools for enhanced learning. Author Alan Ford has

designed more than 75 K-12 schools projects, and with a longstanding commitment to sustainability and a passion for architecture, he is perfectly positioned to present this illuminating collection of sustainable school projects from around the world.

## The Nine Elements of a Sustainable Campus (MIT Press) Hardcover by [Mitchell Thomashow](#) (Author), [Anthony Cortese](#) (Afterword)

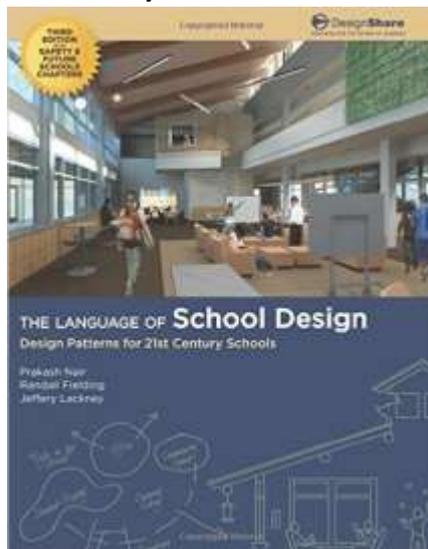


Colleges and universities offer our best hope for raising awareness about the climate crisis and the other environmental threats. But most college and university administrations need guidance on the path to sustainability.

In *The Nine Elements of a Sustainable Campus*, Mitchell Thomashow, a former college president, provides just that. Drawing on his experiences at Unity College in Maine, he identifies nine elements for a sustainability agenda: energy, food, and materials (aspects of infrastructure); governance, investment, and wellness (aspects of community); and curriculum, interpretation, and aesthetics (aspects of learning).

He then describes how Unity put these elements into practice. Connecting his experiences to broader concerns, Thomashow links the campus to the planet, reminding us that local efforts, taken together, can have a global impact.

## The Language of School Design: Design Patterns for 21st Century Schools.



The Language of School design is a seminal work because it defines a new graphic vocabulary that synthesizes learning research with best practice in school planning and design. But it is more than a book about ideas.

**It is also a practical tool and a must-have resource for all school stakeholders involved in planning, designing and constructing new and renovated schools and evaluating the educational adequacy of existing school facilities.**