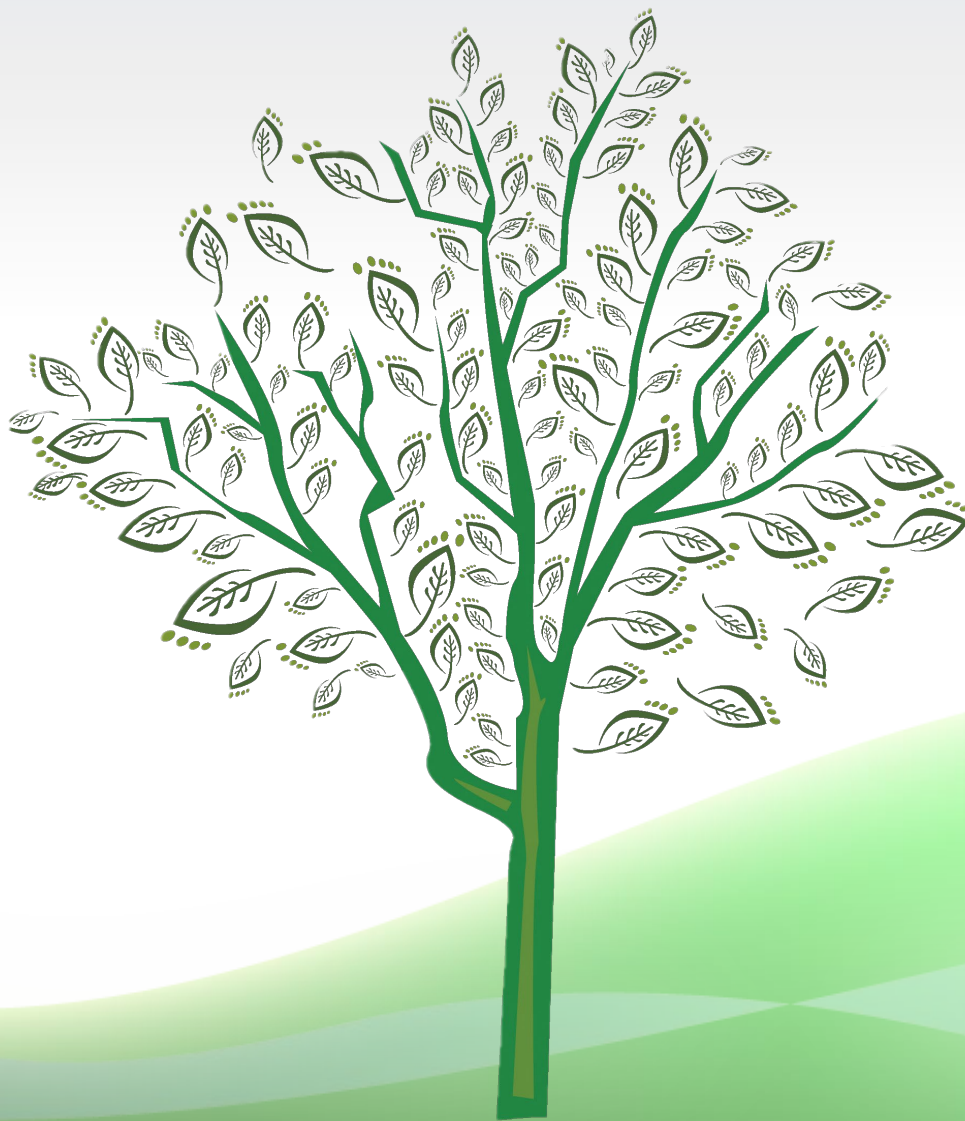


Green Footprint 2012



Foreword

In recent years, the effects of global warming have been witnessed over the world. Studies point to human action, like pollution and deforestation, as key reasons for global warming and adverse climate changes. There is an urgent need for all of us, individually and collectively, to become more aware of our environmental responsibilities.

ITE has introduced an Environmental Sustainability Framework, with a systematic approach to help develop a culture and mindset that is conducive for sustainable green practices.

Green Footprint is a comprehensive collection of 'green education' programmes and activities within ITE. It chronicles initiatives and illustrates the enthusiasm of staff and students in our green journey over the past two years.

We hope this e-Book will encourage staff and students, and other readers, to push ahead in our green journey together. Let's make Singapore a cleaner and greener place to *Live, Learn and Love*.

Happy reading!



BRUCE POH
Director and Chief Executive Officer
Institute of Technical Education



Contents

Foreword	2
About ITE	4
Environmental Sustainability Initiatives	5
Environmental Sustainability Policy	5
Environmental Sustainability Framework	6
Environmental Sustainability Strategy	7
Environmental Sustainability Outcome	7
Environmental Sustainability Infrastructure	8
ITE College East – BCA Green Mark Gold	8
ITE College West – BCA Green Mark Platinum	9
ITE College Central & headquarters	9
Environmental Sustainability Culture	11
Environmental Sustainability Competencies – Curriculum	24
Environmental Sustainability Competencies – Technology & Innovation	26
Environmental Sustainability Competencies – Creativity & Outreach	29
Environmental Sustainability Competencies – Mass Awareness	30
Environmental Sustainability Competencies – Learning Journey	31
Environmental Sustainability Competencies –Share & Learn	32
Environmental Sustainability Competencies – Industry Partnership	34
Environmental Sustainability Competencies – Community Partnership	38
Outcomes For The Environmental Sustainability Programme	43
Awards & Recognitions	44
Environmental Sustainability Plans For The Future	54
Editorial Team	55
Acknowledgement	56



About ITE

One ITE System, Three Colleges Governance and Education Model



The Institute of Technical Education is a post-secondary institution in Singapore that provides pre-employment training to secondary school leavers as well as continuing education and training to working adults. It takes in 25% of the annual school-leavers cohort or an overall enrolment of 25,000 students per year.

As part of the Government's plan to develop ITE as a world-class technical education institution and to meet the challenges of the global economy, ITE has adopted a *One ITE System, Three Colleges Governance and Education Model*.

Under this model, ITE headquarters will oversee system and policy changes and ensure the delivery of consistent standards and quality programmes. However, the three colleges i.e. ITE College East, ITE College West and ITE College Central are empowered to develop niche areas of excellence that will enhance the attractiveness of ITE education and responsiveness to industry and student needs.

<http://www.ite.edu.sg>



About ITE's Environmental Sustainability Initiatives

ITE promotes environmental sustainability with an integrated, multi-faceted, forward-looking and dynamic approach. It combines long-term strategic plans with regular ground activities while engaging both the community and innovative commercial enterprises.

The main objectives for this embarkation are:

- To establish ITE as an innovative technical institution, and thus providing a dynamic environment for its staff and students.
- To connect with industry players, enabling ITE to provide an authentic learning experience.
- To be well attuned to topical issues including environmental and community sustainability.

Environmental Sustainability Policy



“We use our resources and skills to care for the community and build a sustainable environment.”

ITE has adopted the above statement as a guide to its environmental sustainability strategy and practices, and to communicate the institution's policy on going green.



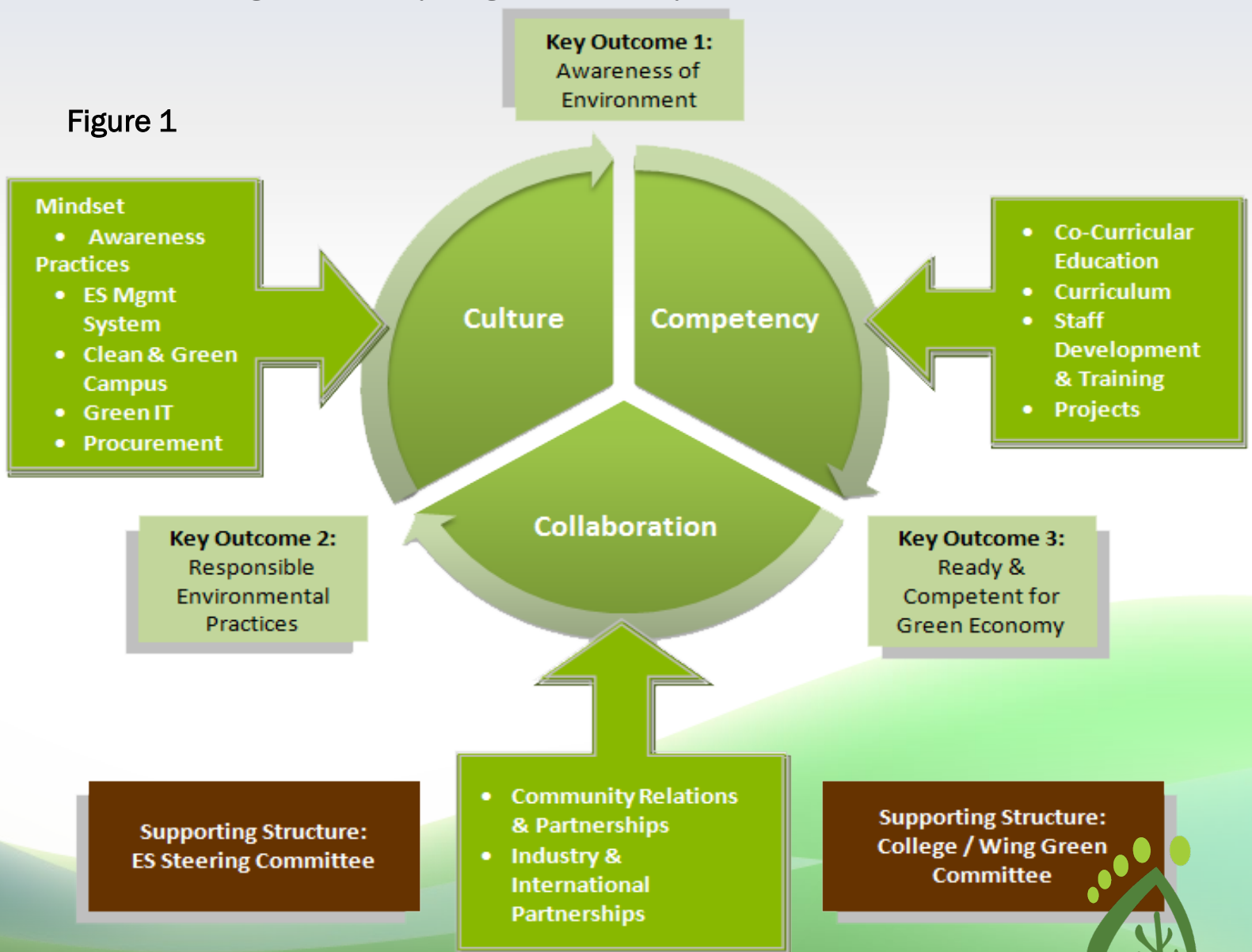
Environmental Sustainability Framework

ITE has incorporated environmental sustainability as one of the key strategic programmes under the new *ITE INNOVATE Plan 2010 - 2015*, which aims at instilling greater awareness among ITE's stakeholders, embracing green practices and developing new competencies for the green economy.

With the objectives in mind, the environmental sustainability framework (Figure 1) is created based on a three-prong formulation of culture, competency and industry collaboration. This framework will serve to deliver the following key outcomes of:

- Creating awareness of environmental sustainability issues, and related global and industry development.
- Instilling responsible environmental sustainability practices.
- Developing competency for green economy.

Figure 1



Environmental Sustainability Strategy

Our students and staff practice green living through a 3-E experience:

- Engaging through various activities both inside and outside the classroom.
- Enriching with knowledge and practices about sustainable living.
- Embracing new developments and working together with external parties to further build skills.



Environmental Sustainability Outcome

The following key Environmental Sustainability (ES) Outcomes are expected at the end of the 5-year strategic plan (2010-2014):

Key Outcomes	
1	ISO 14000 certification
2	All new regional campus will achieve BCA Green Mark Platinum award.
3	Establish green IT through data centre design and cloud computing
4	Introduce ES in the new career-cluster curriculum strategy
5	100% of all courses will have some topics on ES
6	Enhance ITE teaching staff ES competence through project and conference.
7	Student and staff involvement in significant community-based ES projects.



Environmental Sustainability Infrastructure

Jumping on the Green Bandwagon

Supporting the cause for environmental awareness in the construction and real estate sectors, all three ITE colleges have incorporated the best practices in environmental design and construction, and the adoption of green building technologies.



ITE College East – BCA Green Mark Gold

On Your Mark, Get Set, Gold!

In 2006, ITE College East was conferred the *BCA's Green Mark Gold* for incorporating green features into its campus, the first of ITE's three regional campus building.

Among the green features found in the campus are as follows:

- Open staircases and circulation spaces minimise energy consumption.
- Sun-shades are installed along the corridors, and low-E performance glazing and laminated double-glazed curtain-wall are used.
- Circulation spaces, multi-purpose rooms, classrooms and offices are designed and built to maximise day lighting.
- Lush, integrated, themed landscape

pays homage to nature.

- Ceiling boards in laboratories, classrooms, offices and toilets are made of 40% recycled materials.
- Building design and layout enhance physical permeability between the buildings, with naturally ventilated corridors at the building perimeters, elevated central structure, double-volume concourse, internal landscaped courtyards.



ITE College West – BCA Green Mark Platinum

New Debut Goes Platinum!

Nestled amongst lush greenery, the new ITE College West Regional Campus covers a sprawling area of 114,800 m². The first project in Singapore to be delivered under a Public-Private Partnership (PPP), this college is the second of three regional campuses.

Among the green features found in the campus are as follows:

- Green roofs and rooftop gardens cover 40% of the total roof area.
- The façade consists of low-E glass and shading, with no part of the 7 blocks directly facing the afternoon western sun.
- Students' interactive areas and outdoor performance spaces are naturally ventilated and shaded by a high-tensile

fabric membrane roof.

- Reinforced earth retaining wall spanning a total of 486 m is built along the perimeter boundary, which minimises concrete and steel usage in construction.



ITE College Central & Headquarters

The New Kid On The Block

ITE College Central will be the third comprehensive campus to be built under the ITE's "One ITE System, Three Colleges" model. It is not only a merged of five smaller ITE campuses, it will also become

the new premise for the headquarters.

Like the other two campuses, ITE College Central will also boast impressive green features. There will also be provision of Educational Eco Tour for visitors to the campus.



ITE College Central & Headquarters

The New Kid On The Block

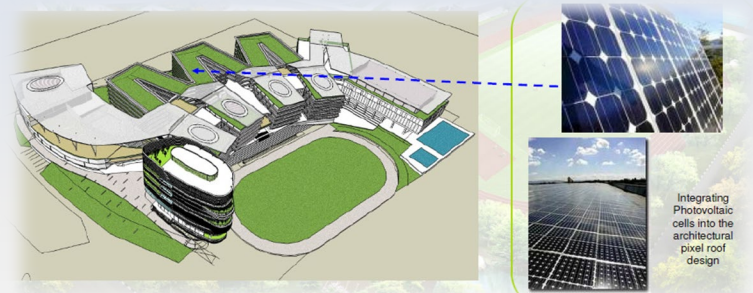
Among the green features found in the new campus are as follows:

- The building is oriented such that the East - West facade is kept to the minimal. By situating non-air-conditioned areas at the West facade, the energy consumption is substantially reduced.



Extensive Green Wall on West Facing Facade

- Adequate cross ventilation is achieved by adopting a layout that complements the prevailing wind flow.
- The interlaced design of the buildings further provides shading to the lower floors of the adjacent buildings, thus improving the shading co-efficient.
- Energy and water efficient products and materials are used in the development



Photovoltaic Panels

Integrating Photovoltaic Cells into the architectural pixel roof design creates an architectural signature. At the same time, it generates electrical power for the development.

Approximately 200 MWhr of electrical energy could be harvested each year with approximately 550 solar panels of 1.7m²/panel.



Environmental Sustainability Culture

Greening @ ITE

ITE has incorporated an extensive integrated landscape as one of the key design considerations for the campus, very much in line with ITE's goal in making itself environmentally sustainable. This is further complemented by many tree-planting initiatives to commemorate numerous occasions and show commitment to its green effort.



Tree Planting at International Green Wave Day 2011 @ ITE College East

One such occasion is the International Green Wave Day held on 20 May 2011. The International Green Wave is a global biodiversity campaign to educate children and youth about biodiversity through the planting of trees. In conjunction with the International Green Wave, ITE College East joined in the creation of a global "green wave" to inculcate a sense of ownership for greenery, nature and our Garden City.

The planting of trees from east and travelling west around the world creates a figurative "green wave". ITE College East also extended its invitation for this meaningful event to its industry partners who joined in, where each tree planted would mean an offset of carbon emission by their organization. Director & CEO of ITE and Principal, ITE College East each planted a tree in significance of carbon offset.



Mr Bruce Poh, Director & CEO, ITE, planted a native tree (Katong Laut) at the International Green Wave Day 2011 @ ITE College East on 20 May 2011



Environmental Sustainability Culture

Greening @ ITE

ITE continues to be active in conserving local bio-diversity, both ITE College East and College West supporting this annual event by planting a native tree each year. Trees are like the lungs of the planet. They breathe in carbon dioxide and breathe out oxygen. Carbon dioxide is one of the major contributing elements to the greenhouse effect. Trees trap carbon dioxide from the atmosphere and make carbohydrates that are used for plant growth. They give us oxygen in return. Additionally, trees provide habitat for birds and other wildlife. There are many other social, economic, and environmental benefits in planting trees.



Mr Eden Liew, Principal ITE College East, planted an Orange Chempaka at Greening @ ITE College East on 15 July 2010



Tree Planting on 22 May 2012 in support of the International Biodiversity Day



Environmental Sustainability Culture

Greening @ ITE

Green Club @ ITE College West also joined in the creating of a Green Wave with Dr Yek Tiew Ming, Principal, ITE College West, planting a native tree known as Ilex Cymosa.



Staff and Students at ITE College West get together to commemorate the International Biodiversity Day by planting a native tree on 20 May 2011 at 10 am



Environmental Sustainability Culture

Clean & Green Schools Carnival 2011

9 & 10 November 2011 saw ITE College West buzzing with activity, with the campus hosting the Clean & Green Schools (CGS) Carnival for the very first time.

The CGS Schools' Carnival is an annual event to inspire youths to care for our environment by adopting an environmentally friendly lifestyle. This carnival serves as a platform to feature environmental projects, competitions and activities that were organised throughout the year. It is held to recognise and reward the youths who have made an effort to play an important part in owning the environment and who have excelled in the various competitions. It also provides an opportunity to recognise the companies that have come forward to work with the school community, through NEA's Corporate and School Partnership Programme.



Senior Minister of state, Ms Grace Fu, with our students and their environmentally-friendly solar-powered vehicles



Environmental Sustainability Culture

ECO Carnival 2011

In support of ITE's Environmental Sustainability Initiatives, ITE College East had organised the ECO Carnival 2011 which was held on 7 Oct 11. The ECO Carnival is a fun-filled and educational event which highlights the contributions and efforts of the college and partners in reaching out to the community in propagating good environmental practices as part of our corporate social responsibility. This brings together a concerted community effort towards an ECO Community Ownership

In driving the environment message across, the theme of the ECO carnival is "Celebrate! Gaia, Our Home, We Care." This theme focuses on the how a green community is built through the college's 3E (Education, Engagement, ECO-Community) Programme in caring for our earth.



Environmental Sustainability Culture

ECO Carnival 2011

The Guest-of-honour, Mr Lim Biow Chuan, PBM, Adviser to Mountbatten Grassroots Organisations presented the Green Schools @ South East awards to schools in the South East District for their sustained efforts in driving environmental sustainability. Awards for the inaugural ITE Youth ECO Ambassadors were also presented in recognition of ITE students for their outstanding contributions towards environmental sustainability awareness and contributions.



ITE Youth ECO Ambassador Award Recipient
(From Left to Right) Keith Kwa Kar Hui, ITE College East, Derreck Tam Chi Yu, ITE College West, Hedyazuan Bin Mohd Jumari, ITE College West, NurHakim Bin Mohd Shah ITE College East, Neo Chee Hui, ITE College Central (Bishan) and Mikail Riduan, ITE College Central (Macpherson)



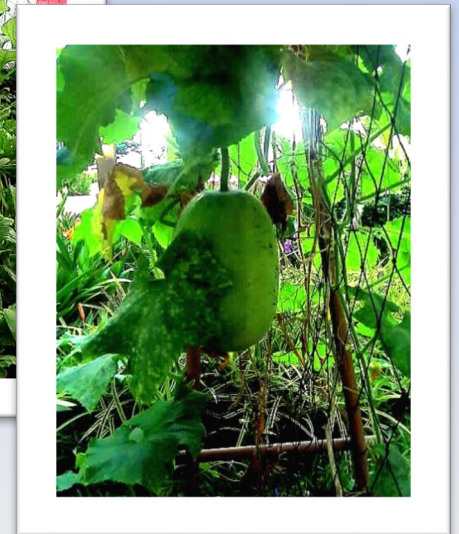
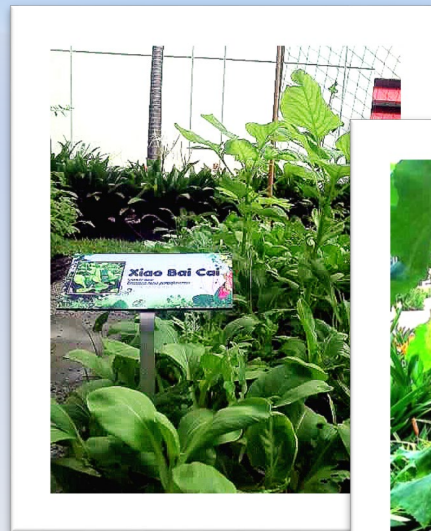
Winners of the South East Green Schools Award receiving their award at the ECO Carnival



Environmental Sustainability Culture

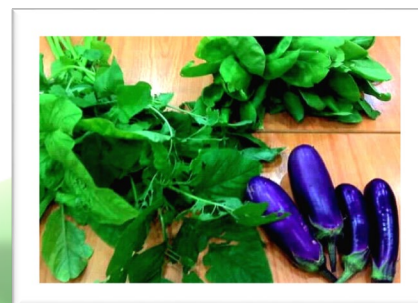
Eco-Farming @ College Central

The Eco-Food Garden @ CC is set up as a living, outdoor, eco-classroom with a diverse variety of fruit plants, herbs, spices and vegetables. Here, students can observe and learn the skills of growing food and become stewards of the land. Using food systems as a unifying concept, the classroom has become a platform for students and staff alike to experience agriculture and on occasion, taste the fruit of their labour.



The harvest at this garden is often shared with the college's Cooking Club or put up for sale at the bazaar to help raise funds to sustain the garden. Some facts about this garden:

- Natural food garden - No pesticides or any kind of fertilizers are used, just compose from leaves and vegetables scraps for mulching and soil conditioning.
- Vegetable beds - A variety of vegetables (leaves, stems, roots, tubers, seeds and flowers) are planted here.
- Mini orchard - Discarded seeds have been used to grow these plants.
- Culinary oasis - The herbs and spices grown here add flavours to dishes conjured up by the Cooking Club.
- Medicinal garden - A showcase of medicinal plants that have played a major role in pain-relieving and healing.



Environmental Sustainability Culture

Eco-Farming @ College East

The college's Landscaping Services students have designed and developed a kampong-style garden dedicated to eco-farming. Nine types of herbs and spices have been identified and planted in the garden, and each are furnished tags bearing facts such as common and scientific names, uses, origins and benefits, making this an educative avenue for the whole student population.

A green house has also been built in the campus, which boasts a collection of vegetables grown hydroponically and cultured orchids. The venture is developed and managed by the college's Horticulture Club. To date, Cai Xin and Kai Lan have been harvested.



Environmental Sustainability Culture

Eco-Farming @ College West

The Herb Garden in ITE College West was set up and managed by the Green Club. The herbs grown in the garden will in turn be used by the college's training restaurants and kitchens.

On the other hand, organic waste such as leftover food or unused parts of ingredients are collected from the training restaurants, cafés and kitchens, and recycled into compost using micro-organisms, which in turn are used to fertilise the gardens. Regular road shows are also held at community events as part of the college's effort to educate the public on the process and the advantages of food composting.

There is also a hydroponic farm in ITE College West set up and maintained by the Green Club students, lettuces are being grown in this farm.



Environmental Sustainability Culture

HSBC Tree Hugger Programme

For a few Saturday mornings, a group of students from ITE led by their teacher have been working in the Central Reserves alongside researchers from Centre for Tropical Forest Science and HSBC Climate Champions to study tree growth in response to climate changes.

Armed with plastic strips, crimping tools and springs, these volunteers literally hug trees as they place dendrometers or measuring bands around selected trees to track their growth as well as assist in tagging of trees and data collection.

It was indeed a meaningful morning spent in the secondary forests with trees, ants, insects and the hot humid weather. For some of our delicate students, it was an opportunity to step out of their comfort zones as they bravely stepped over the colony of huge ants while avoiding yet another thorn-filled branch that was sticking into their faces.



Student, Salihah, “hugging” the tree deep in the forest.



Student, Asqalani, measuring the diameter growth of the tree

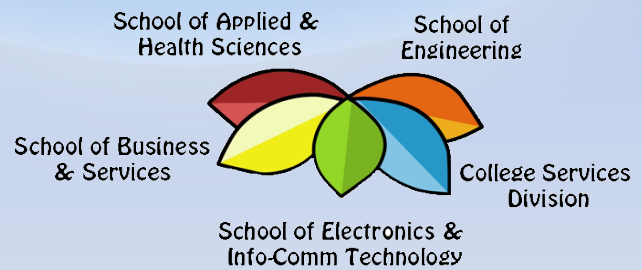


Environmental Sustainability Culture

The ECO Mascot

Adding fun to promoting environmental conservation, ECO Ambassadors in ITE College East created its very own ECO mascot, Vivo-Green, which means 'Living Green'. This mascot signifies the college's total commitment to conserve the environment. It has appeared almost everywhere, from recycling bins to eco-publicity materials to educate and remind students to inculcate good recycling habits and on the importance of environment conservation.

There is also a full-size semi-permanent version of the mascot constructed from plastic bottles and put up near the entrance of ITE College East's Café 1, as well as a portable one built from recycled materials which often makes an appearance at college-wide events as a symbol of ITE's dedication in its environmental conservation effort.



Environmental Sustainability Culture

Youth for the Environment Day 2011

The Inaugural *Youth for the Environment Day* (YED) is a key platform for young Singaporeans to champion environmental efforts and to renew their commitment to care for the environment. ITE College East and ITE College West were appointed the respective district satellite school by NEA, taking the lead in celebrating the inaugural YED launch. Environmental message from the Minister for the Environment and Water Resources was shared by the respective principal. Environmental activities were carried out by the ITE students together with the participating Primary and Secondary students to commemorate this day.



On 20 April 2011, NEA launched the inaugural Youth for the Environment Day (YED). This new initiative is a key part of NEA's continued efforts towards a sustainable Singapore, and it targets young Singaporeans by encouraging them to take ownership of the environment and to safeguard, nurture and cherish it for present and future generations. Youth for the Environment Day is planned to be an annual event in the school calendar, commemorated in schools on 22 April each year in conjunction with Earth Day, a prominent international environmental date. It will be a key platform for young Singaporeans to champion environmental efforts and to renew their commitment to care for the environment. Through this event, ITE is playing a leading role in co-organising environment-related activities that students from other schools can participate in to reinforce the message of environmental ownership and promote environmentally friendly habits.



Environmental Sustainability Culture

Youth for the Environment Day 2012

In conjunction with the YED 2012, students from ITE College East commemorated this annual event through 3 different ways. On 20 April, student representatives gathered to receive Minister's YED 2012 message from the principal. Members of the Environmental Club then roamed around the campus educating students to care for the environment and patrolled as Litter Free Ambassadors, informing fellow students on proper waste disposal methods.

On 21 April, students from ITE College East participated in the Great EnviRondure organised by the National Youth EnvirOlympic Council to raise awareness to use lesser plastic bags through a Guinness World record breaking challenge. 120,000 plastic bags were collected to construct the largest plastic sculpture in world. The plastic bags were then recycled and the money collected were donated to Singapore National Kidney Foundation.

On 22 April, students from ITE College Central and College East participated in the *Keep Singapore Beautiful Movement (KBSM)* held at Marina Bay promontory field which saw the involvement of ITE students at national level, along with other participating institutions from secondary schools, junior colleges, polytechnics and universities. Together, the youth conducted public engagement and outreach programmes to spread the message of caring for the environment.



The record breaking 'giant ball' made from plastic bags



Outreach programme at the KBSM event



Environmental Sustainability Competencies - Curriculum

ITE provides a number of platforms and programmes to help both staff and students build on their initiatives. We promote environmental and community sustainability with an integrated, multi-faceted, forward looking and dynamic approach combining its long term strategic plan with regular ground activities while engaging the community and innovative commercial enterprises.

On the academic front, our educators have incorporated in the curricula relevant eco-content such as recycling, green technology and environment conscious practice such as lead-free soldering, eWaste recycling, food composting etc. In addition, students are also involved in environmental sustainability initiatives through projects and competition.



Environmental Sustainability Competencies - Curriculum

NEBO Recycling Project

In 2011, ITE College East had embarked on an environmental-cum-community service project with NEBO, a youth branch of National Trades Union Congress (NTUC). This collaborative effort aimed to:

- Facilitate students' learning in managing a project, one of Lifeskills' modules.
- Learn to apply QCC tools on a real-life project.
- Educate the youth on environmental issues and ways to protect the environment
- Raise funds for the needy with the recycling craft made.

In this module, students embarked on a project to develop innovative products using recycled materials. For over five months, more than 3,000 students came together to help educate the public on environmental issues and how to eliminate waste by reducing and recycling. Students collected recyclable materials, like jeans, old calendars, cans and fabric remnants, and gave them new life as accessories, pouches and stationeries.



Environmental Sustainability Competencies - Technology & Innovation

Green Wave Environmental Care Competition

ITE students had clinched nine out of eleven awards in the 2011's Green Wave Environmental Care Competitions. Students from ITE College Central clinched the top 3 awards in the JC/ITE/CI category with their innovative project ideas. Since the launch of this award in 2003, this environmental project competition organised by Sembawang Shipyard has been a very good platform for ITE students to be engaged in innovation project for environmental care. Over the years, more interest and involvement in this competition was observed.



1° Prize: Used Cutting Oil Reprocess Machine
ITE College Central (Balestier) team receiving their prize from MG (NS) Chan Chun Sing



2° Prize: Hydroelectric Lighting Device
ITE College Central (Yishun) team receiving their prize from MG (NS) Chan Chun Sing



3° Prize: Safe 2 Fog
ITE College Central (Tampines) team receiving their prize from MG (NS) Chan Chun Sing



Environmental Sustainability Competencies - Technology & Innovation

Mobile Applications

Two mobile applications and one iPad game disbursing tips on going green were developed by a group of Mobile Device students in ITE College East. *mGreen Handbook* contained information on how to inculcate a green workplace and home as well as knowledge on waste management and green standards. This application is available for both Android and iPhone users, download the application now!

spring BYTES

Going green by mobile

Want to be more environmentally-conscious? Reach for your iPhone or smart phone! *SPRING* susses out some 'green' apps for you to check out TEXT Elisabeth Lee

M-GREEN HANDBOOK

Learn more about the three Rs — reduce, reuse and recycle — from a Singaporean perspective with this handy app. Packed with tips on going green, this handbook also helps you find your nearest waste disposal site and waste treatment location. <http://itunes.apple.com/app/m-green-handbook/id453153298?mt=8>

FREE

GOTHERE.SG

One way to really go green is to ditch your gas-guzzling car for public transport. Gothere.sg is one of the top apps for figuring out a cheap and quick way to your appointment — whether by bus, train, taxi or a combination of all three. You can also browse a list of useful amenities and businesses around where you are. <http://itunes.apple.com/app/gothere.sg/id348131804>

US \$2.99*

DOWNLOAD OUR MOBILE APPS

mGreen Handbook being featured in CDC's Contact Magazine

mGreen Handbook
now available at **App Store**

QR Code for Android Market

For other smartphones, you can download our portal app at <http://EcoCityZone.NET/app>



mGreen Handbook being presented to the VIPs at the eGov Global Forum and South East Clean & Green Carnival



Environmental Sustainability Competencies - Technology & Innovation

Mobile Applications

The *GoGreen* mobile application, was developed to help tech-savvy users navigate the exhibits at the South East's Clean & Green Singapore Carnival. Besides aiding the navigation of the carnival exhibits, the application also contained useful information on recycling, energy efficiency calculation, waste disposal and dengue education that users could refer to even after the carnival. The iPad game were developed to educate on waste disposal through gaming, search for the application now - *Litterbug*.



Litterbug
By mdtc@ite



Environmental Sustainability Competencies - Creativity & Outreach

From Waste to Craft

Innovation is the fruit of creative thinking. The unique Recycling Craft workshop that turned scrapped cables, wires and printed circuit boards into beautiful accessories such as bracelet, handphone straps, tables and chairs created greater awareness on how materials deemed to be useless can be turned useful. This workshop is run by the ECO Ambassadors at ITE College East on a regular basis and at various environmental related events.



Environmental Sustainability Competencies – Mass Awareness

ITE Eco-Conference 2011 - Rethink 3Rs

The inaugural conference was held on 8 July 2011 with the theme, *Rethink 3Rs - Rethinking Green Practices and Green Technologies to Reap Rewards*. It attracted the participation of many experts in areas of environmental sustainability as well as industry partners who used this opportunity to showcase their latest eco-technologies and products. The conference would be an annual event and a platform for ITE staff and students to discover and learn the best green practices from other organisations.



ITE Eco-Conference 2012 Green Citizen - A Lifestyle Choice

The 2nd ITE Eco-Conference aims at creating mass awareness in engaging ITE's staff, students and the community in addressing the challenge of reducing carbon footprints. Focusing on sustainable living, the conference features a plenary session of professionals sharing and interactions. A dedicated Student Track and Eco Workshop Track were also introduced in this year's conference to reach out to staff and students enabling them to explore different aspects of Green Lifestyle and catering to varying needs and interests. Exhibits on green technologies, products and projects were also put up by industry partners and our three ITE Colleges, creating a holistic commitment to environmental sustainability.



Environmental Sustainability Competencies – Learning Journey

Life is a life-long-learning journey, our footprints advance beyond this nation. Green Club students at ITE College West embarked on a Eco & Conservation Trip to Melbourne, Australia in September 2011.



The Green Desert Challenge

Students from ITE College East participated in a tree-planting project in Inner Mongolia. The Green Desert Challenge is a Youth Expedition Project partly funded by the National Youth Council where Singaporean youths are mobilize to join China youths from Beijing to drive environmental projects.



Educational Visit to Semakau Landfill

74 staff from ITE College East went on an educational trip to Semakau Landfill on 18 Nov 2011. The Semakau Landfill is located 8 km south of Singapore with an area of 350 hectares. It is the world's first offshore landfill created entirely from the sea space. And it is now the only remaining landfill in Singapore.

The educational visit consists of a briefing on the solid waste management in Singapore, design and operation of Semakau followed by a tour of the landfill. Other activities that could be arranged on this island are Intertidal Walk, Bird Watching, Sport Fishing.



Environmental Sustainability Competencies – Share & Learn

Sharing by Lead Technologist, National Climate Change Secretariat



Workshop on Lighting Efficiency at ITE Eco-Conference 2011



Sharing by Principal, ITE College East on Paperless Journey



ISO14000 Training for Internal Auditor



Training & Sharing on Food Composting



Environmental Sustainability Competencies – Share & Learn

Eco Portal

The Eco Community Ownership (ECO) portal is a public portal developed by staff in ITE College East to share resources on green knowledge and aids ITE in driving green efforts for staff, students and the communities

around it. It also contains the “Green Collar Worker” training portal, an online learning portal developed by a group of lecturers from the School of Electronics and Info-comm Technology to share key green practices in preparing the work force for a green going economy.



Environmental Sustainability Collaborations – Industry Partnership

The industry offers new technologies, capabilities and funding opportunities on Environmental Sustainability for us to leverage on. Collaboration with industry will help accelerate and enhance our capabilities, and provide support for our Environmental Sustainability initiatives.

ITE regularly collaborates with green technology industries, key agency and oversees student-run outreach programmes that step out to share the message of the Green Footprint with the local community.

MOU with Wildlife Reserve Singapore

ITE and Wildlife Reserve Singapore (WRS) signed an MOU on 12 May 2011 to collaborate on initiatives and activities that include environmental sustainability and conservation, and continual learning opportunities as well as joint development of technological projects with various ITE Schools.

To-date, a total number of 25 staff from three colleges have been working together with their students and WRS staff on 13 innovative projects on improving productivity, animal breeding and safety system. This five-year partnership provides great opportunities for our staff and students to get close to the animals and learn about environmental sustainability and conservation.



Environmental Sustainability Collaborations – Industry Partnership

MOU with Wildlife Reserve Singapore

Under this MOU, twenty ITE student volunteers supported a mangrove conservation project at Sungei Buloh Wetland Reserve. Together with NParks and WRS representatives they monitor the growth of saplings and their establishment and survival rate in relation to the effects of refuse. Volunteers are also involved in clean-ups of the study site twice a month. A tree census is also conducted once every

quarter to ascertain the mangrove species, abundance and growth in the study sites.

The 1st Eco Camp held from 25 to 27 Jun 2012 sees 90 ITE students from the three colleges pitching tents in the zoo and participating in nature appreciation activities to understand the importance of conserving our biodiversity.



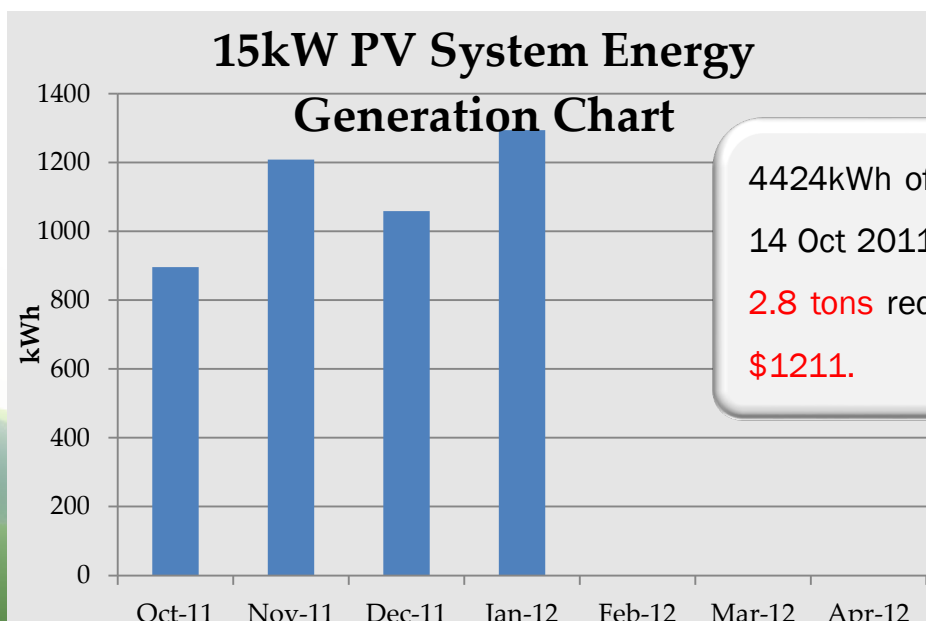
Environmental Sustainability Collaborations – Industry Partnership

MOU with Renewable Energy Corp

ITE and Renewable Energy Corp (REC) signed an MOU on 18 May 2011 to explore the development of capabilities on the latest solar panel applications, as well as creating awareness towards environmental sustainability among ITE staff and students by embarking on solar energy-related community events and industrial projects.

Under this MOU, REC donated 150 Photo Voltaic panels to ITE to support the ITE - REC PV system. The system has provided valuable data in helping the staff and students understand both the advantages and disadvantages of a PV system installation design.

A 15kW Grid-Tied Solar System was set up at ITE College West as a real system for teaching. This grid provided a source of clean energy which offset the building's electrical consumption and also supplied the electrical load of the building at night.



4424kWh of Electrical Energy were produced from 14 Oct 2011 to 31 Jan 2012 which is equivalent to **2.8 tons** reduction of CO2 emission and saving of **\$1211.**

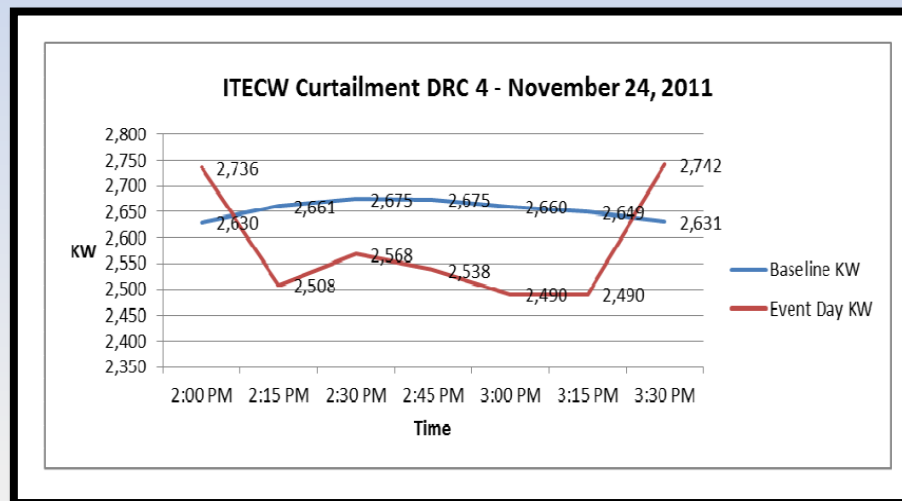


Environmental Sustainability Collaborations – Industry Partnership

Service Agreement with CPower vTrium Pte Ltd: Demand Response Project

In 2011, ITE College West unleashed its plan to be the first educational institution to embark on a pilot programme, Demand Response (DR) Project, one of the 5 initiatives funded by Energy Market Authority (EMA). Its main objective was to curtail energy usage for better energy peak load management which would delay the need for turning on additional power generating plants.

A service agreement between ITE College West and CPower vTrium (CPvT) Pte Ltd was signed on 16 April 2011, in which ITE College West had committed to reduce its utility grid by 100kW during each DR exercise. To reach the goal, 10 hours of technical qualification test (trial) were conducted from July 2011 to March 2012 before the full DR capacity test takes place from March 2012 to September 2012.



During the DR exercise, 6 lifts (PL3, 4, 11, 12, 14 & 16) were switched off and the Chilled Water Supply Temperature (CHWS) was increased from 6.8°C to 7.2-7.4°C, aiming to achieve a typical room temperature of 25°C



Environmental Sustainability Collaborations – Community Partnership

Recycling Helps @ South East

ITE collaborated with South-East CDC, National Environment Agency and ActMedia Singapore to organise a charity drive that leveraged on the Green Bank recycling machines. A total of eleven schools participated in the drive. Each machine was then placed in the participating school for two weeks to collect recyclable materials such as bottles and cans.

Teachers and students were briefed and trained on how to use these machines. At the end of two weeks, a total of 3,470 kg of recyclable materials were collected. Through this drive, it imparted the message of giving through recycling among students. The monetary returns from the recycling exercise were channelled to the less privileged in the South-East community.

New 'bank' helps kids save Earth



PRIMARY school children have been given a more interactive way to recycle their plastic bottles and cans.

The Green Bank is a bit like a vending machine - but in reverse.

Pupils feed their used drink containers into it, then see the amount collected displayed on a screen.

The machine was launched yesterday at Changkat Primary and will be introduced at 11 other schools across the South East District in the next three months.

It was developed over a three-year period by students from the Institute of Technical Education.

Lecturer Liew Jia Shing, who led the project, said each Green Bank costs \$20,000, much less than similar machines used in supermarkets across Europe.

The technology is part of a new initiative by the South East Community Development Council (CDC), called Recycling Helps @ South East 2011.

District mayor Mohamad Maliki Osman was the guest of honour at yesterday's event. He told The Straits Times that it was important to get children into the habit of recycling.

'At that age they are like a sponge that will be able to absorb all the right values,' he said. 'We need to teach them that this is their future they are

safeguarding.'

Low-income families will also benefit from the programme. South East CDC aims to collect 800kg of recycled plastic bottles and cans.

For every kilo collected, Sheng Siong supermarket will donate a food hamper. The council hopes to receive hampers for about 500 needy families.

Noor Ameera, 11, was among the pupils eagerly awaiting her chance to try out the new machine yesterday.

'Even if there's a long queue during recess, I'll still queue up to throw my bottles in,' she said.

STACEY CHIA



Environmental Sustainability Collaborations – Community Partnership

Litter-Free Ambassadors Programme

The Litter-Free Ambassadors Programme sees ITE students taking the lead in caring for the environment. Students courageously moved out to public places to advocate good waste disposal habits. The programme was the first NEA initiative supported by ITE to form a structured student team taking ownership of its commitment to care for the environment. It conducts highly visible monthly patrols within the campus vicinity and its neighbouring hotspots to advocate good habits of waste disposal to the public. The LFA Programme aims to instil a sense of responsibility in individuals to keep Singapore clean and to encourage them to take action to bin their litter.

Identified students are trained by NEA and appointed as Litter-Free Ambassadors who then spearhead litter-free initiatives in their community.



Environmental Sustainability Collaborations – Community Partnership

Eco Energy Auditors @ South West

Eco Energy Auditors @ Southwest is a volunteer-based programme with an incentive scheme to monitor energy consumption of participating households and advise them on energy-efficient habits over a period of three months. It is developed by South-West Community Development Council, Philips Lighting Singapore, National Environment Agency (SWRO), ITE College West and Koh Kok Leong Enterprise Pte Ltd.

This initiative is also part of the Environment & Community (Eco) Plan South West's long-term efforts to encourage more households to reduce energy consumption and build a sustainable and cool home for all in the South West district.



Environmental Sustainability Collaborations – Community Partnership

iContribution – A South-West Energy Challenge

iContribution, a South-West energy challenge, is a programme initiated by the National Environment Agency, South West Community Development Council and Grassroots Organisations, and is supported by ExxonMobil Asia Pacific Pte Ltd, ITE College West and Philips Electronics Singapore Pte Ltd. It aims to engage and encourage the South West community to participate actively in reducing their household energy consumption. For each iContribution received, \$10 will be donated to a fund administered by South West CDC to help children from needy families in South West district.



Distributing and installing energy saving bulbs

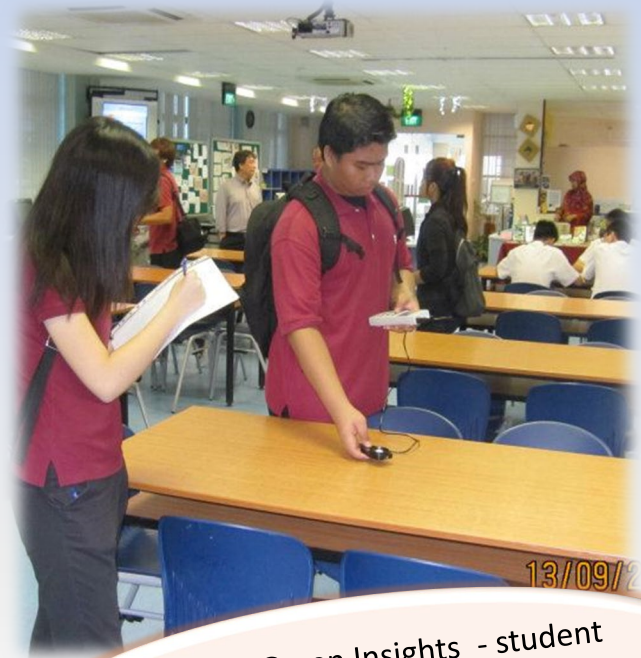


Environmental Sustainability Collaborations – Community Partnership

Project Green Insights

Singapore Green Building Council (SGBC) in partnership with IBM Singapore embarked on this pilot energy awareness and monitoring solution in selected Singapore's schools, with an aim to educate our next generation on the importance of going green even in schools. ITE College East was one of the 20 pilot schools to be equipped with networks of smart meters, allowing the entire school community to track its energy consumption using cloud-based software on an easily accessible dashboard.

Students from the Facility Technology department in ITE College East were appointed energy ambassadors to perform energy audits in the participating schools and to help identify ways to reduce electricity.



Project Green Insights - student auditors at work in the participating schools



Outcomes For The Environmental Sustainability Programme

Through the Environmental Sustainability Programme, ITE has strengthened its role as a green beacon for best practices in areas of educational and community sustainability. The three inter-locking factors in the programme i.e. culture, competency and industry collaboration ensures that ITE develops the appropriate culture and mindset for sustainable green practices within ITE, and at the same time, inculcate the right skills, technical knowledge and values to meet the demands of the workplace in the global market.

In terms of making improvements to the sustainability footprint, both staff training and curriculum development are on-going in order to inculcate a mindset of environmental sustainability. This includes organising overseas college/industry study trips to learn from and benchmark against colleges or organisations with leading green practices and curriculum for the green industry.

For long-term sustainability of initiatives, ITE looks at developing strategic green industry partners and adopting community/industry environmental sustainability-related projects to share and learn best practices to ensure greater engagement with the community. These partnerships ensure a mutual flow of information and best practices.



Awards & Recognitions

STUDENT ACHIEVEMENTS

Bayer Young Environmental Envoy Award

Nguan Jia Hui from *Nitec* in Mechatronics at ITE College West, member of the electric urban concept vehicle - iTerbo, was awarded with the Bayer Young Environmental Award 2011. In Jia Hui's project, she and a team of Mechatronics Engineering students built an electric car, iTerbo and competed it in the Shell Eco-marathon Asia 2011. The car was also used as an educational tool to impart clean energy messages to students in various schools in Singapore. For this project and her leadership skills, she was selected to represent Singapore as an environmental envoy to Germany along with 3 other youths from various tertiary institutions.

Hoi Poh Yoke, a Green club member from ITE College West, was also among the top 10 awarded with the Bayer Young Environmental Award 2011.



Nguan Jia Hui receiving her award from Dr Amy Khor, Mayor, South West District



Hoi Poh Yoke receiving her award from Dr Amy Khor, Mayor, South West District



Awards & Recognitions

STUDENT ACHIEVEMENTS

HSBC/NYAA Youth Environmental Award 2011

The HSBC/NYAA Youth Environmental Award was established in 1998 with the support of the Ministry of the Environment to honour youths between the ages of 14 and 25 years for their outstanding contributions, achievements and commitment towards environmental protection and nature conservation in Singapore.

Brandon Chia from ITE College East course was the first ITE student to win this award. He is a volunteer at Sungei Buloh Wetland Reserve, taking on the role of a bilingual nature guide to educate visitors on the Reserve's flora and fauna, and promoting nature conservation. He also helped to organise many environmental projects for Sungei Buloh such as Envirofast, HSBC Young Naturalist Programme and mangrove planting. Brandon was also ITE's top graduate and winner of the Lee Kuan Yew Gold Medal for the graduation class of 2012.

Brandon had the opportunity to embark on an Earthwatch Study Trip to Gutianshan, China, to learn about climate change in Gutianshan forest.



Brandon receiving the award from Dr Vivian Balakrishnan, Minister for Environment & Water Resources



Brandon in Gutianshan for the Earthwatch Study Trip



Awards & Recognitions

STUDENT ACHIEVEMENTS

HSBC /NYAA Environmental Award 2012

This year, Eddie Leow, a student from the *Nitec* in Electronics (Mobile Devices) course in ITE College East emerged as a Merit Award winner and was given the opportunity to participate in an Earthwatch trip to Borneo to explore tropical rainforest conservation.

The youths were provided opportunities to work alongside Earthwatch scientist playing an important role in gathering data for the project they are involved.



Eddie receiving the award from Dr Vivian Balakrishnan, Minister for Environment & Water Resources



Eddie with Mr Eden Liew, Principal, ITE College East (Left) and Mr Chong Leong Fatt, Director, College Services (Right) who supported him at the award ceremony.



Awards & Recognitions

STUDENT ACHIEVEMENTS

National Climate Change Competition 2011

The world's climate is changing and the unusual number of extreme weather events may be a prelude to what is to come if no action is taken.

ITE College West's Team EVA won 2nd place in the National Climate Change Competition 2011 under the JC/CI/ITE Category. An acronym for 'Environmental Vision and Action', Team EVA embarked on a campus-wide awareness drive, which include showing a video skit on reducing, reusing and recycling, creating awareness on climate change and reducing individual carbon footprint, setting up a Facebook page on environmental awareness, and organising a campus-wide pledge-taking exercise and quizzes.



Awards & Recognitions

STUDENT ACHIEVEMENTS

National Climate Change Competition 2012 – Short Film Challenge (Theme 'Singapore: A Climate Change Resilient City')

This competition called for video entries that explained the cause and effects of climate change and how individuals could combat climate change by reducing their carbon footprint.

A group of students from *Nitec* in Multimedia Technology course, ITE College Central, top this competition with their winning video entitled: 'Let's Transport to the Green Side'

Another group of students from *Higher Nitec* in Information Technology, ITE College East, clinched the 3rd Prize with their video entitled 'Carbon FootPrints'.



Students from the 2 winning teams with the Guest-of-Honor, DPM Teo Chee Hian



Awards & Recognitions

STUDENT ACHIEVEMENTS

Eco Music Design Album Design 2011

Yak Wan Ling, a student from the Interactive Media Design course in ITE College Central emerged as the winner in the Eco Music Design Album Design 2011. Despite having hearing disabilities, her heart motif design had captured the heart of the judges and indeed became an inspiration. Her design is featured on the cover of the Eco Music Challenge Season 2 album and on all Clean & Green Singapore 2012 publicity materials.



Made-To-Wear Recycle Fashion Contest 2011

Students from the ITE's Singapore Nurses Association (SNA) emerged fourth in the Made-to-Wear Recycle Fashion contest. The contest, organised by the Woodlands Grassroots Organisations and NEA's North West Regional Office, is an annual flagship recycling initiative in the North-West district. Competitors were given three hours to showcase their creativity and talent by designing a fashion piece made of old or unwanted clothing and accessories, with the theme 'Dinner & Dance' in mind.



Awards & Recognitions

ENVIRONMENTAL AWARDS - ORGANISATION

District Level Green Schools

The Green Schools Award were launched by National Environment Agency and the respective Community Development Councils to encourage schools to carry out projects, sustain the environment and be creative in their green initiatives. Both ITE College East & West were conferred this award for the school's sustained effort in environmental conservation.



Dr Yek Tiew Meng, Principal, ITE College West receiving the Green Schools @South West Award 2011 from Dr Amy Khor, Mayor, South West District



Mr Eden Liew, Principal, ITE College East receiving the Green Schools @South East Award 2011 from Mr Lim Biow Chuan PBM, Adviser to Mountbatten Grassroots Organisations



Awards & Recognitions

ENVIRONMENTAL AWARDS - ORGANISATION

NEA Recycling Outreach Programme (ROP) Awards 2011

ITE College East received Most Innovative ROP and Most Holistic ROP awards (Tertiary category) in recognition of its comprehensive and creative programme in promoting environmental awareness through practical, active and impactful environmental action engaging the school and external community.



Mr Eden Liew, Principal, ITE College East receiving the ROP Awards from Mr Tan Wee Hock, Director, 3P Network Division, NEA



Staff and student ECO Ambassadors setting up a booth to showcase the College's ROP Achievements



Awards & Recognitions

ENVIRONMENTAL AWARDS - ORGANISATION

Sustained Partnership Award

ITE College West won two bronze Sustained Partnership Awards in recognition for its successful partnership with Zap Piling and Keppel Shipyard. The award, given out by the National Environment Agency, is presented to organisations who have worked on joint environmental projects with the industries under the Corporate and School Partnership (CASP) programme for three consecutive years.



Dr Yek Tiew Ming, Principal, ITE College West receiving the Sustained Partnership Award from Ms Grace Fu, Senior Minister of State for Environment & Water Resources

South West ECo Award

This is an annual award to recognise exemplary organisations for their efforts towards first class public health standards and a 'shining' South West district and their contribution to the ECo Plan South West.

ITE College West was awarded the South West ECo Award 2011 (Community Category).



Mr Goh Mong Song, Deputy-Principal, ITE College West receiving the South West ECo Award from Dr Vivian Balakrishnan, Minister for Environment & Water Resources



Awards & Recognitions

ENVIRONMENTAL AWARDS - ORGANISATION

Project E.A.R.T.H. Challenge 2011

ITE College Central emerged as the champion in Project E.A.R.T.H. (Every Act of Recycling Trash Helps) Challenge 2011 under the school category for their achievement in the highest recycling of trash during the assessment year of August 2009 to July 2010, collecting a total of 19,176 kg scrap metals and 7,494 kg scrap papers. The challenge was brainchild of Central Singapore CDC in partnership with the National Environment Agency, whose aim was to promote the message that everyone has a role to play in saving the environment.



Environmental Sustainability Plans For The Future

What's coming up?

With its core product and business in education, ITE is also dedicated to incorporate environmental and community sustainability practices into its curriculum. To date, there are a total of 54 courses with environmental sustainability content coverage, the Curriculum & Educational Development Division in ITE is currently in the process of reviewing the courses and committed to complete all 92 courses with environmental sustainability content coverage by 2014. Other than topical coverage, two new full elective modules - Green IT and Clean Energy were introduced in ITE in 2011.

Obtaining ISO 140001 certification is

definitely a key environmental goal for ITE to achieve in the near future. A 2-phase plan towards ISO 14000 Certification in 2012 entails developing a comprehensive environmental management system in managing, measuring, improving and communicating the environmental aspects of its operations. The 3rd ITE mega campus at Ang Mo Kio will be completed by end 2012, this campus building will incorporate many more Sustainability Building features, Eco-friendly design and implementing the Environmental Management System set up by the other 2 colleges. ITE is continuing the path to produce eco-conscious manpower for every field in business and industry as well as green citizens for the nation.



Editorial Team

Advisor

Goh Mong Song

Deputy Principal (Academic),
ITE College West

eBook Producer

Tan Kah Huat William

Lecturer,
Mobile Technology & Services
School of Electronics & Info-Comm Technology
ITE College East

Green Footprint Logo Design

Maslan Bin Mashul

Section Head, Lifeskills
School of Business & Services
ITE College West

Chief Editor

Catherine Soh

Course Manager, Electronic Systems & Services
School of Electronics & Info-Comm Technology
ITE College East

Editor

Carolina Young

Course Manager, Lifeskills
School of Business & Services
ITE College East

Editor

Linda Lim

Section Head, Lifeskills
School of Business & Services
ITE College East

Editor

Noor Aslina Niti

Lecturer, Lifeskills
School of Business & Services
ITE College East

Editor

Pamela Koh

Lecturer, Lifeskills
School of Business & Services
ITE College East



Acknowledgement

This eBook is made possible with the support as well as generous contributions of information, photographs and write-up from the following ITE colleagues:

Tan Kay Chuan

Director, School of Electronics & Info-Comm Technology,
ITE College Central

Soh Thiam Soon

Project Manager, ITE College Central

David Tham

Deputy Director, School of Business & Services (Interdisciplinary Studies)
ITE College East

Mervyn Teo

Section Head, Display Technology & Services,
Electronics & Info-Comm Technology, ITE College East

Buddhima Dinushini Williams

Lecturer, Environmental Services,
School of Engineering, ITE College East

Eng Siew Jia, Jayna

Lecturer, Display Technology & Services,
Electronics & Info-Comm Technology, ITE College East

Jenny Chua

Lecturer, Environmental Services,
School of Engineering, ITE College East

Loh Qi Zhuang, Karen

Lecturer, Display Technology & Services,
Electronics & Info-Comm Technology, ITE College East



Acknowledgement

This eBook is made possible with the support as well as generous contributions of information, photographs and write-up from the following ITE colleagues:

Alfred Tan

Course Manager, Mechanical Engineering,
Cg Deputy Director, Technology Development Centre
School of Engineering, ITE College West

Chan Kok Choy

Course Manager, Electronics Technology,
School of Electronics & Info-Comm Technology , ITE College West

Christopher Leow

Course Manager, Facility Technology,
School of Engineering, ITE College West

Ng Chun Kee

Section Head, Electronics,
School of Electronics & Info-Comm Technology, ITE College West

Edmund Tan

Project Officer, Campus Development & Estates Division

References

Authors of the following article:

ITE College West Events & Happenings Portal

- Tree Huggers from Green Club ITE CW
- Clean & Green Schools Carnival 2011
- CW Student Wins Bayer Young Environmental Envoy Award

ITE College East News & Happenings Portal

- Eco Carnival 2011
- Made-to-Wear Fashion Contest 2011
- Project Green Insights

Photographs from:

- ECO@CE Facebook Page
- ITE College East Facebook Page
- Green ITE portal



