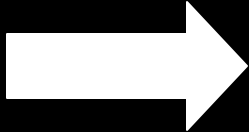


Upper Canada College's “Green School for the 21st Century” – A Working School Model -

**Presented to:
Conference of Independent School (CIS)
Heads Network Meeting
January 16, 2007**

**Presented By:
Stephanie Foster
Executive Director
UCC Centre for Environment
and Sustainability**

Presentation Overview: Education for Sustainability

- A Mini-Primer on Sustainability
- Trends and Some Best Practices
- UCC's Green School Approach
 - Facilities & Operations
 - Curriculum & PD
 - Organizational Behaviour

Challenges & Opportunities
- Thinking Outside the Box
- Conclusions

Benefits of Education for Sustainability

The question is no longer whether or not to go green. It's how.

- Environmental (reduced resource consumption)
- Financial (real benefits to the traditional bottom line)
- Social Equity (acting locally, thinking globally)
- Leadership (being a model for others)
- Advancement (attracting new donors)



What is Sustainability?

“Meeting the needs of the present without compromising the ability of future generations to meet their own needs.”

Brundtland Definition
World Commission on
Environment and Development 1972

What is Sustainability?

“Sustainability is the merest possibility
that human and other forms of
life on earth will flourish forever.”
- John Ehrenfeld,
Massachusetts Institute of Technology

WHY?

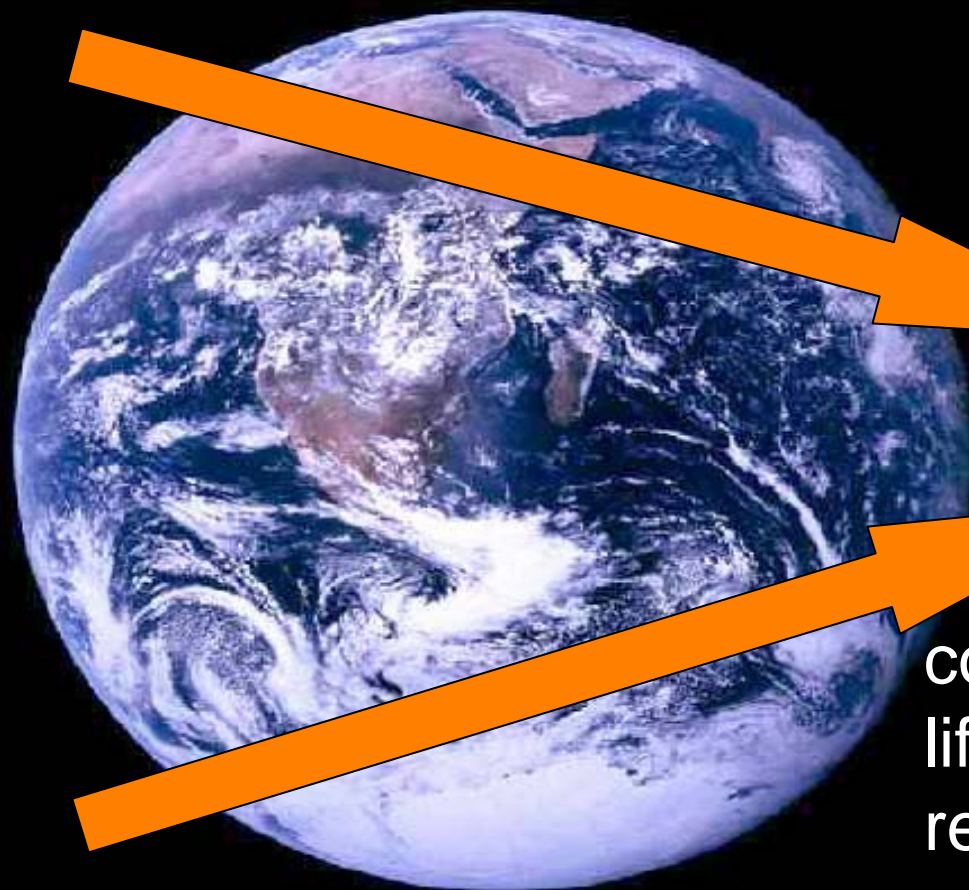


*Earth provides
enough for
everyone's need
not for
everyone's
greed.*

– **Mohandas Gandhi**
(paraphrased)



Imagine a funnel....



life supporting
resources =

declining

consumption of
life supporting
resources is =

rising

Reducing our Ecological Footprint

- The planet's world's population is expected to increase by 50% by 2050 for a total of 9 billion
- This will put huge pressure on our natural resources, biodiversity and ecosystems on this planet Earth we call home.
- We need to change the way we view our natural resources and how we use them more urgently now than ever.





UCC
UPPER CANADA COLLEGE

Climate Change: THE Issue of our Time

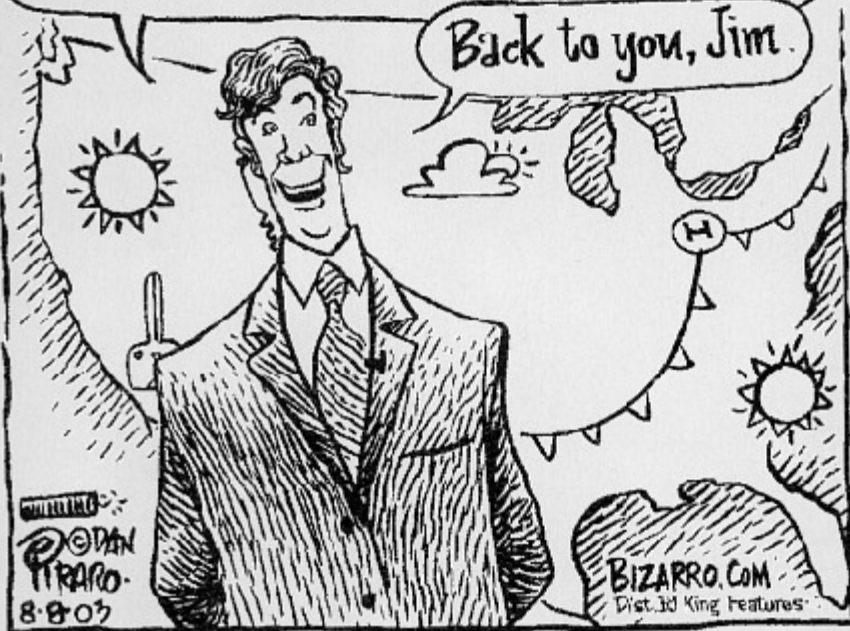


UCC green school

- “An Inconvenient Truth” -

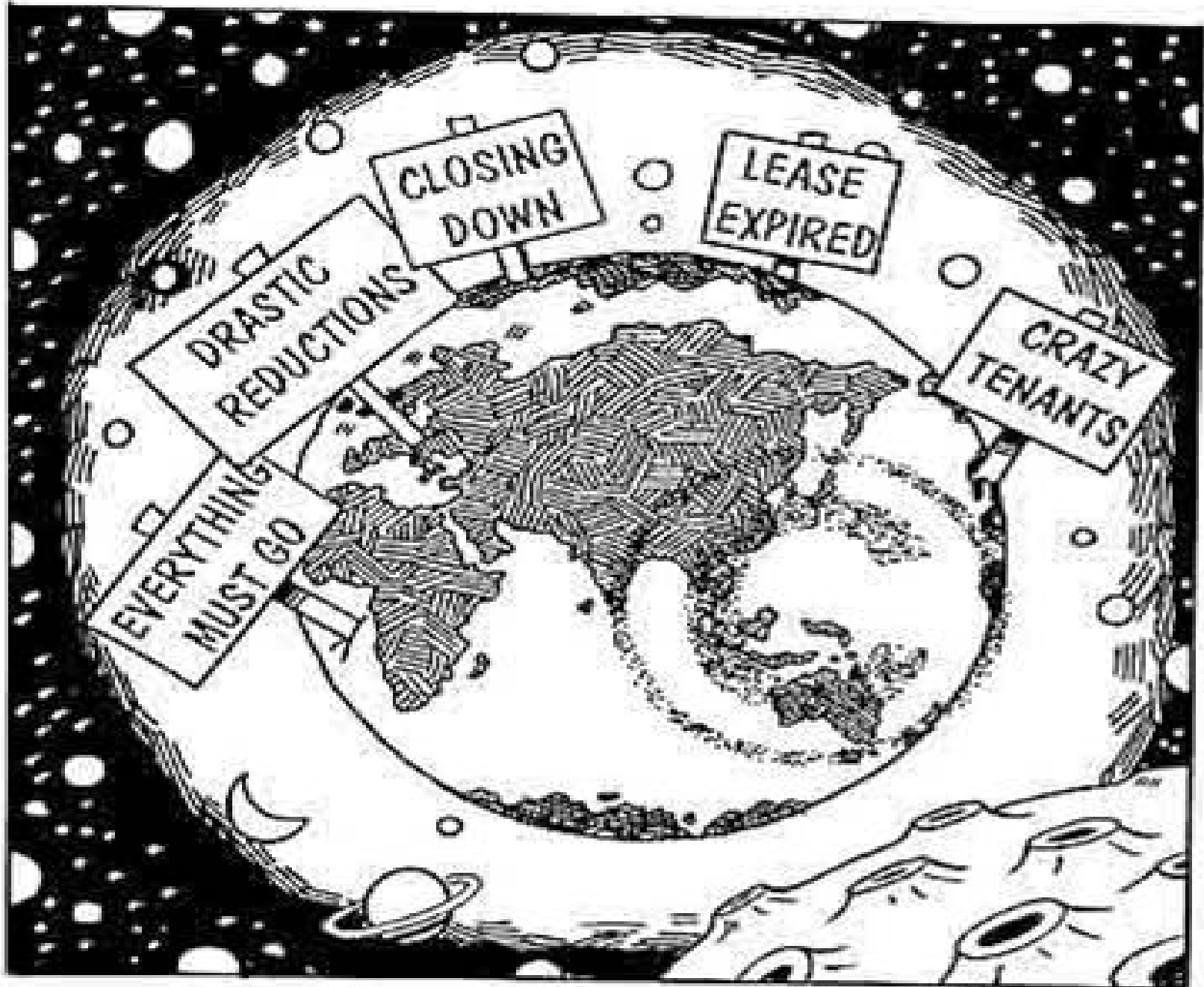
Our extended forecast includes global warming & the catastrophic end of the human race. But for the weekend, it's looking like sunny skies, mild temperatures, & a general apathy toward environmental concerns.

Back to you, Jim.

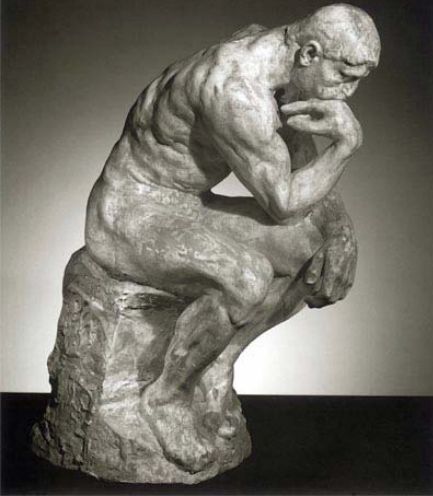


REPRINTED WITH PERMISSION OF DAN PIRARO.



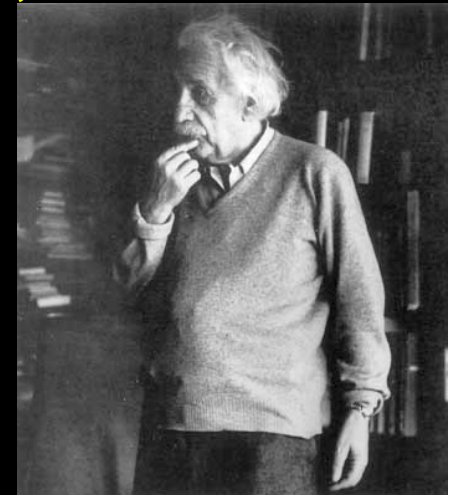


The Starting Point



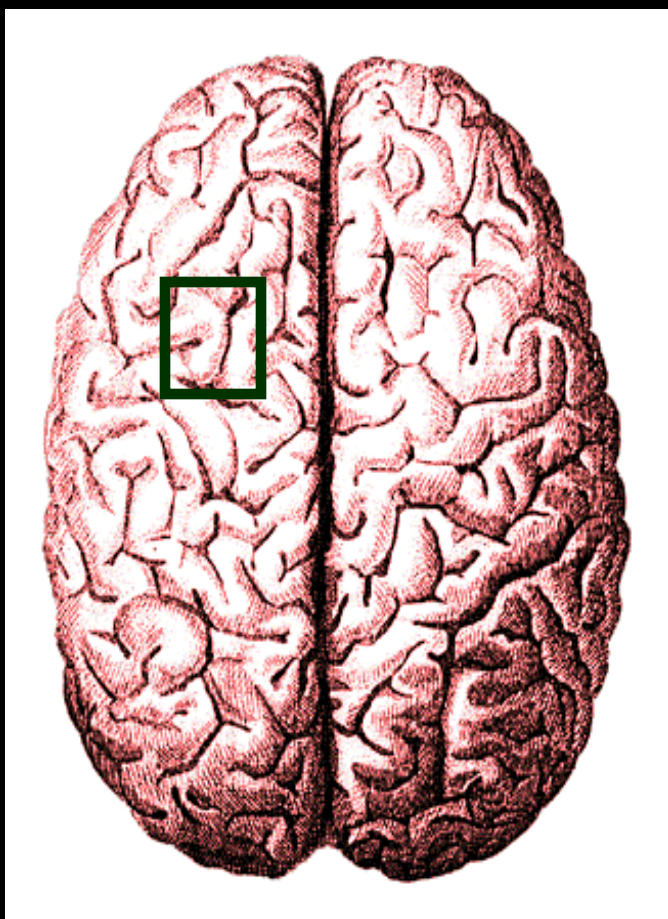
“We can’t solve our problems with the same level of thinking that caused the problems in the first place.”

Albert Einstein

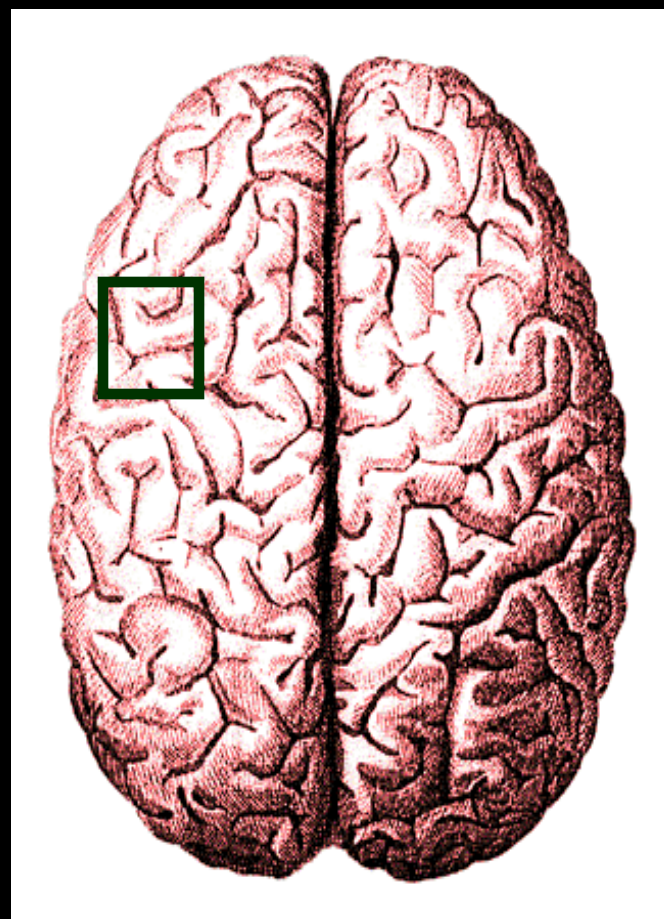


Understanding The Sustainable Brain

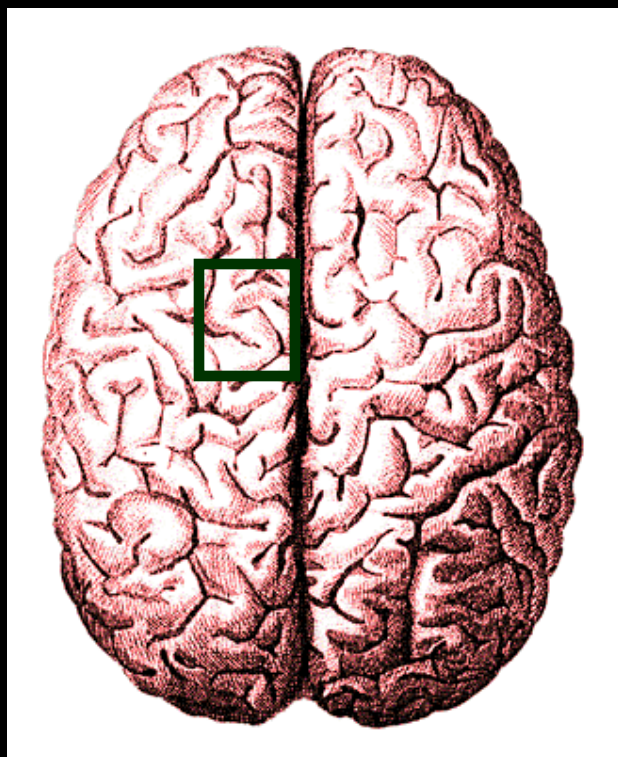
The Typical Brain



The Sustainable Brain



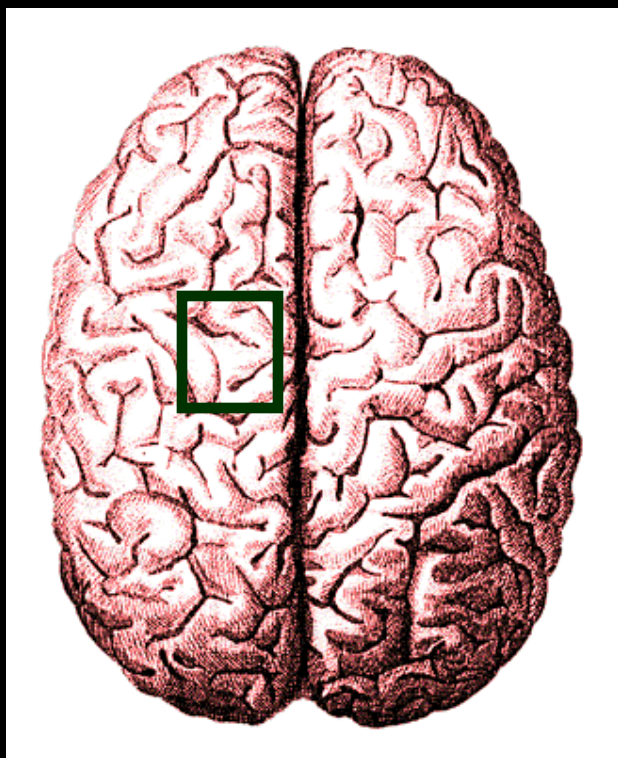
A Look Inside the Typical Brain



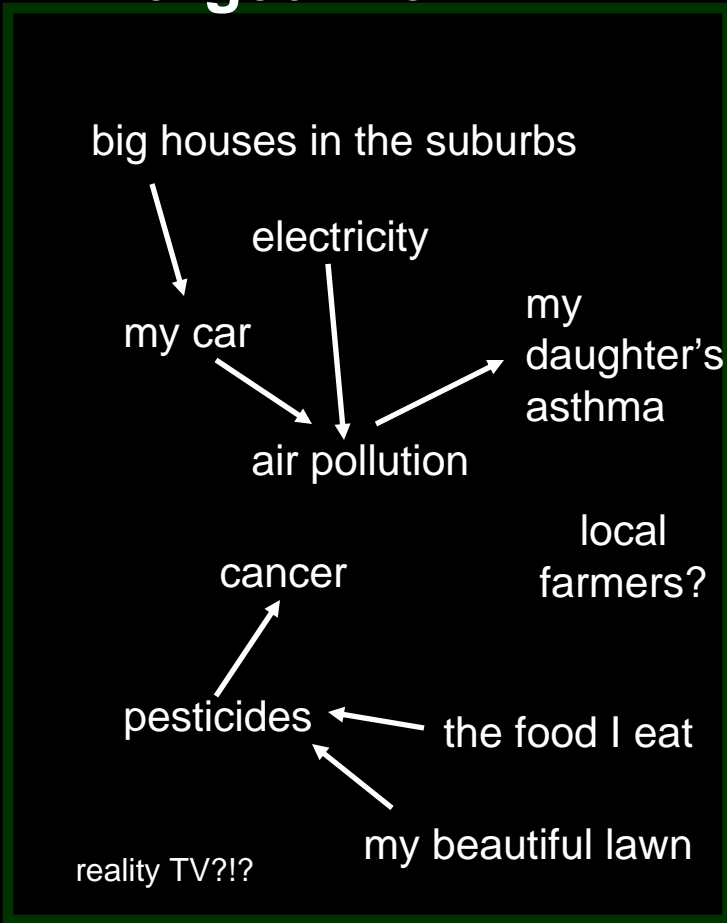
Enlarged View

big houses in the suburbs
air pollution
my car
my beautiful lawn
my daughter's asthma
cancer
reality TV
local farmers
electricity
pesticides
the food I eat

A Look Inside the Sustainable Brain



Enlarged View



Understanding Sustainability

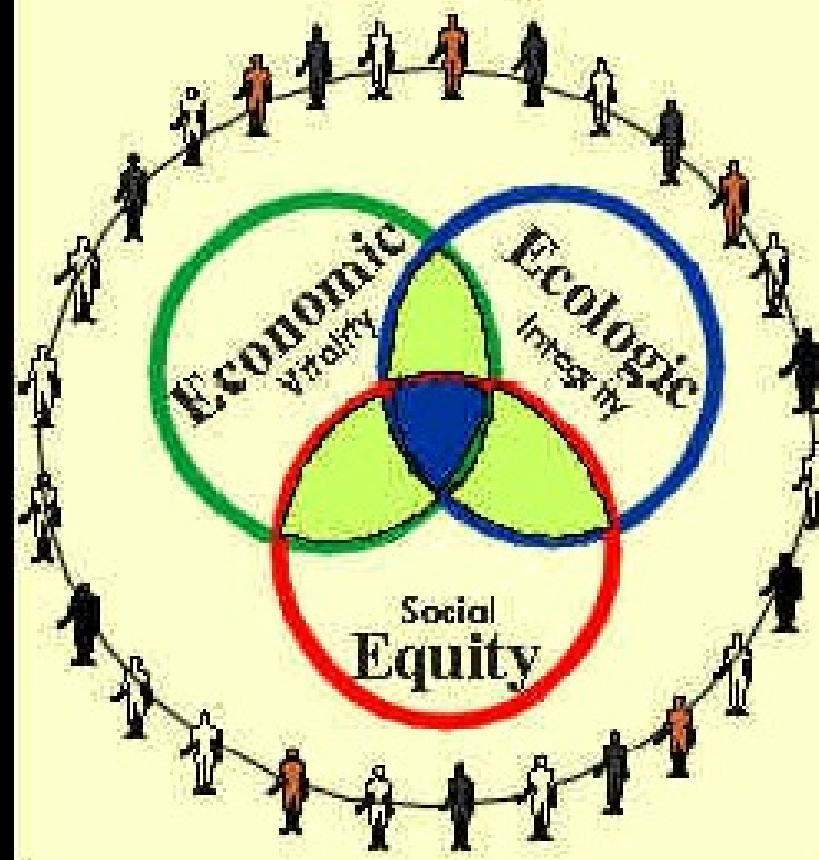
TRADITIONAL PROBLEM-SOLVING

Economics

Environment

Social
Well-being

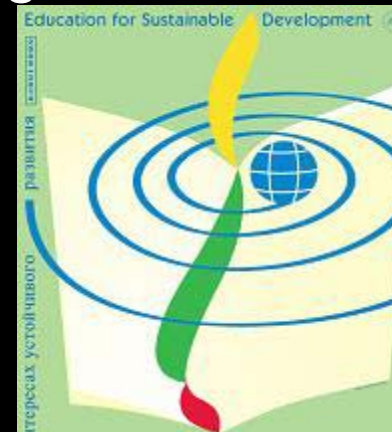
Sustainability Model



Education for Sustainability Trends

Global and Governmental:

- 1992 Rio Earth Summit and Agenda 21
- 2005: UNESCO declares Decade of Education for Sustainable Development
- Several countries develop National Curricula, e.g., UK, Sweden, Australia among others
- Manitoba Ministry of Education



What does Sustainability Education mean?

"Education – in all its forms and at all levels – is not only an end in itself but is also one of the most powerful instruments we have for bringing about the changes required to achieve sustainable development."

UNESCO's Director-General Koïchiro Matsuura

"We have a responsibility to help young people to understand the reasons for sustainable development, and to develop the knowledge, skills and values on which to base their future decisions and actions ."

World Wildlife Fund – United Kingdom

Education for Sustainability Trends

Green Buildings and Facilities:

- “Greening America’s Schools: Costs and Benefits”
- California High Performance Schools Cooperative
- Leadership for Energy and Environmental Design (LEED)
- Canada Green Building Council



Education for Sustainability Trends

Post-Secondary Education:

- American Association for Sustainability in Higher Education
- North Eastern Campus Sustainability Consortium
- University Leaders for a Sustainable Future
- Growing trend of Business School teaching sustainability



Sierra Youth Coalition in Canada:

- UBC, Concordia, McGill, Queen's, Waterloo U., Guelph U., U. of Calgary, University of Saskatoon
- Schulich School MBA for Business and Sustainability
- York University Centre for Applied Sustainability



Education for Sustainability Trends

Senior Kindergarten – Grade 12

- National Association of Independent Schools
- International “Eco-Schools” Program
- Toronto District School Board Eco-Schools
- Learning for a Sustainable Future (York University)

International “Green Flag” Eco-School Program - 7 Step Program -

1. Establish Eco-School Committee: Multi-stakeholder
2. Environmental Review
3. Action Plan and Priorities
4. Monitoring and Evaluation
5. Curriculum Integration
6. Informing and Involving
7. Eco-Code Statement of values and objectives

Education for Sustainability Best Practices

- Principal as Champion
- Sustainability in Strategic Plan
- Leadership commitment and accountability (get your VP Finance on board!)
- Communicate, educate, advocate
- A clear and measurable action plan
- Involving diverse members of your school community
- Be patient, change takes time

Our Green School Vision



Living on this Earth today and everyday
as if we are borrowing it from our children

Green School Origins



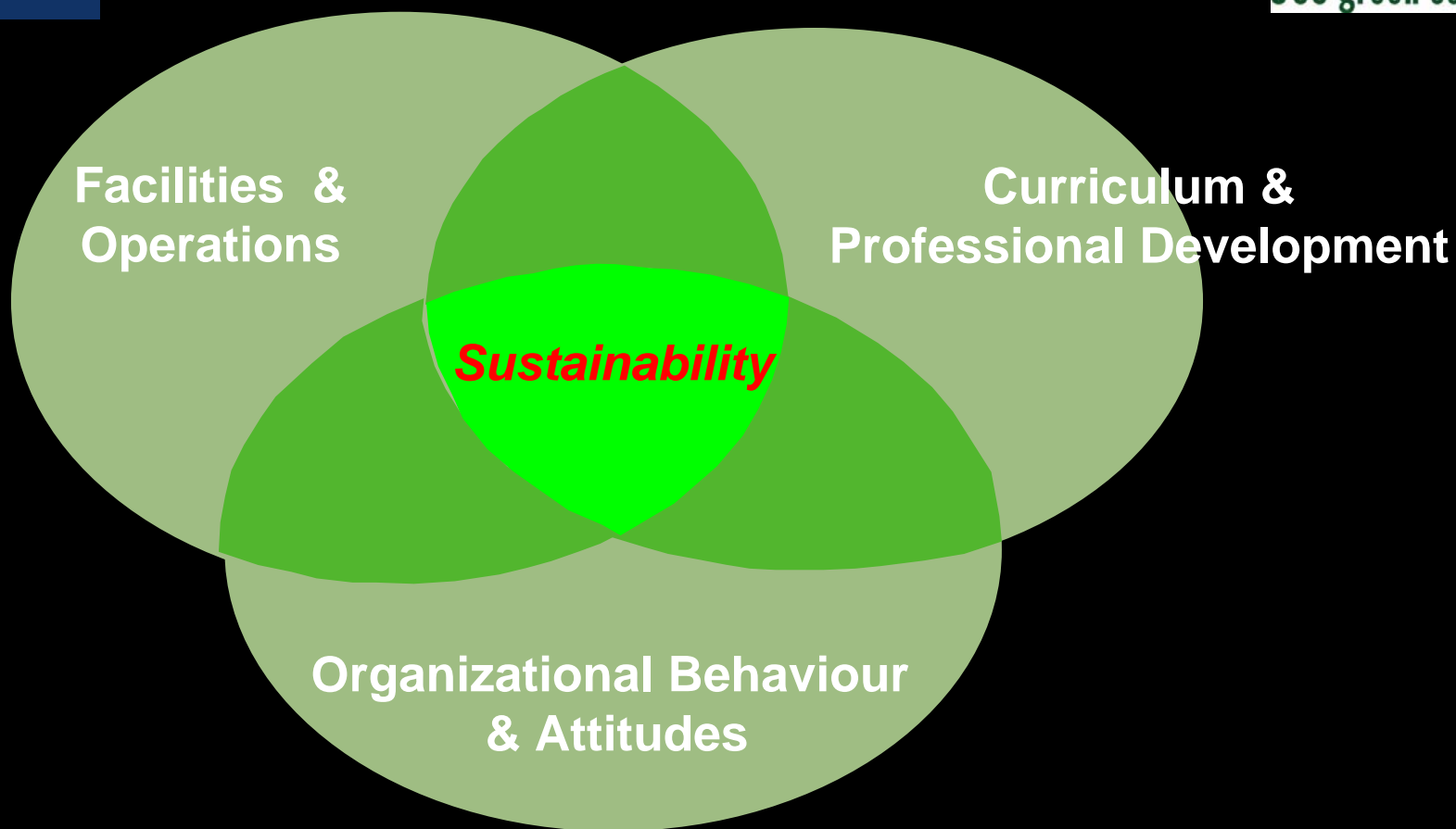
2002 Board of Governors approves
“Green School for 21st Century”

Imagine a school ...

- committed to help students understand the need to lead eco-friendly lives in an increasing resource-depleted world
- that offers students lifelong tools for reducing waste, consuming less and practicing environmental stewardship
- that graduates “eco-ambassadors” -- globally minded leaders for a world in need



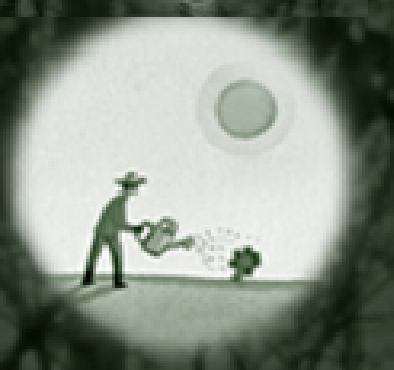
UCC's Green School:



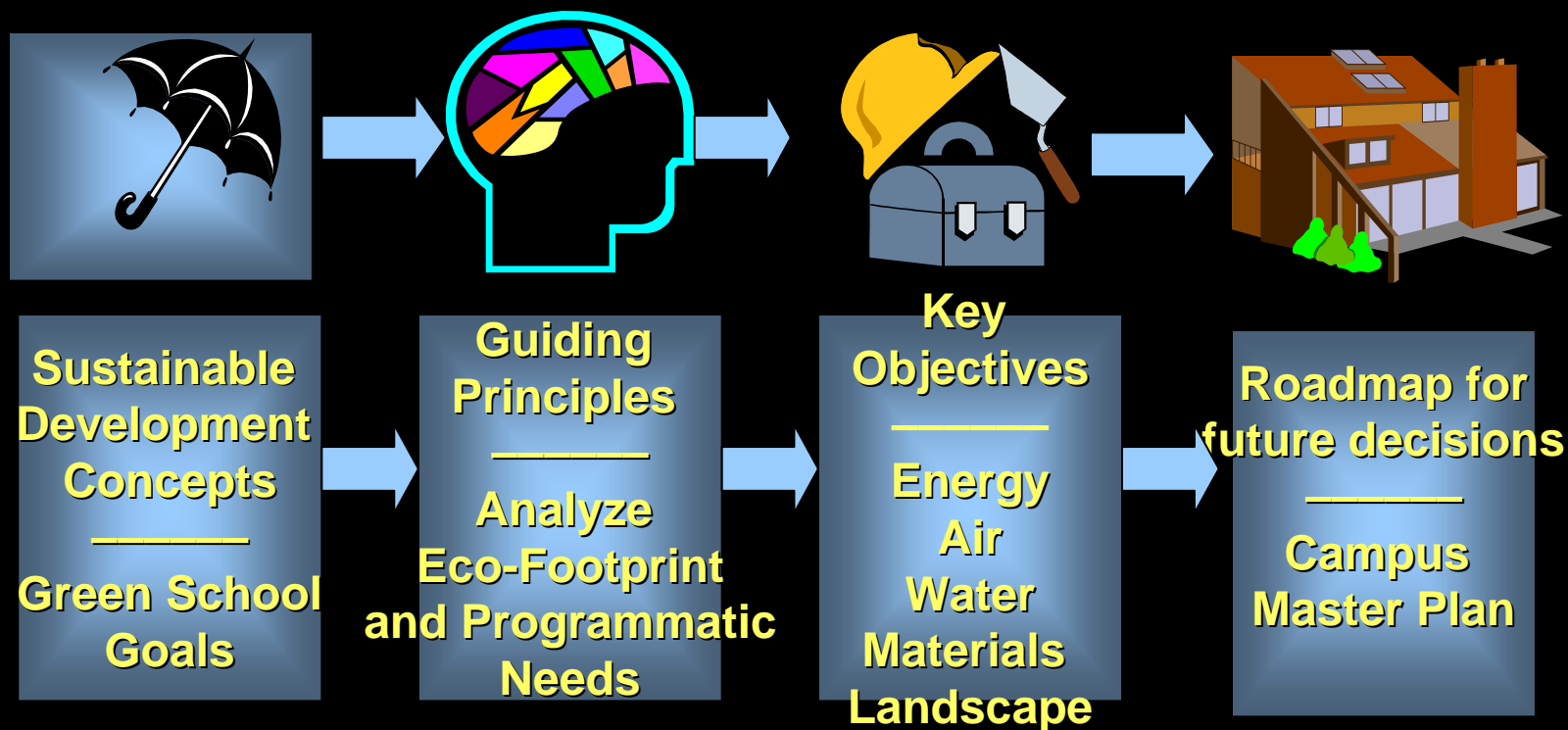
A three-pronged approach

Green School Guiding Principles

- Integrate UCC's built environment with the natural environment
- Provide an educational focus on how we conduct ourselves as an organization
- Consider all aspects of value and cost, both in the long and short term
- Strive for continual improvement in our demonstration of environmental responsibility
- Private school, public purpose



Where to start? A Green School Master Plan



Green School Master Plan Objectives

Environmental Stewardship:

- Meet or exceed international standards for environmental design
- Reduce ecological footprints of the Toronto and Norval campuses.
- Increase green space and maintain sport field space
- Use and re-use building materials efficiently.
- Consume fewer non-renewable natural resources.



Green School Master Plan Objectives

Heritage Values:

- Maintain historic look of the Deer Park Campus and ensure that any new construction is compatible with existing architecture
- Enhance the aesthetic quality of the campus through the design of buildings, landscaping and outdoor spaces



Green School Master Plan Objectives

Parking, Circulation, Transportation and Mobility:

- Re-establish the predominance of pedestrian over vehicular circulation
- Reduce the impact of motorized vehicles and enhance non-motorized, non-polluting vehicular traffic



The Road to Green Facilities & Operations

Energy:

- Reduced overall consumption by 35%
- 5% renewable energy (Bullfrog Power) plus geothermal field
- Reduced greenhouse gases by 1,300 tonnes CO₂e
- Reduced SO₂ and NO_x by 45 tonnes

How:

- Audit, identify measures and set priorities according to payback (low hanging fruit)

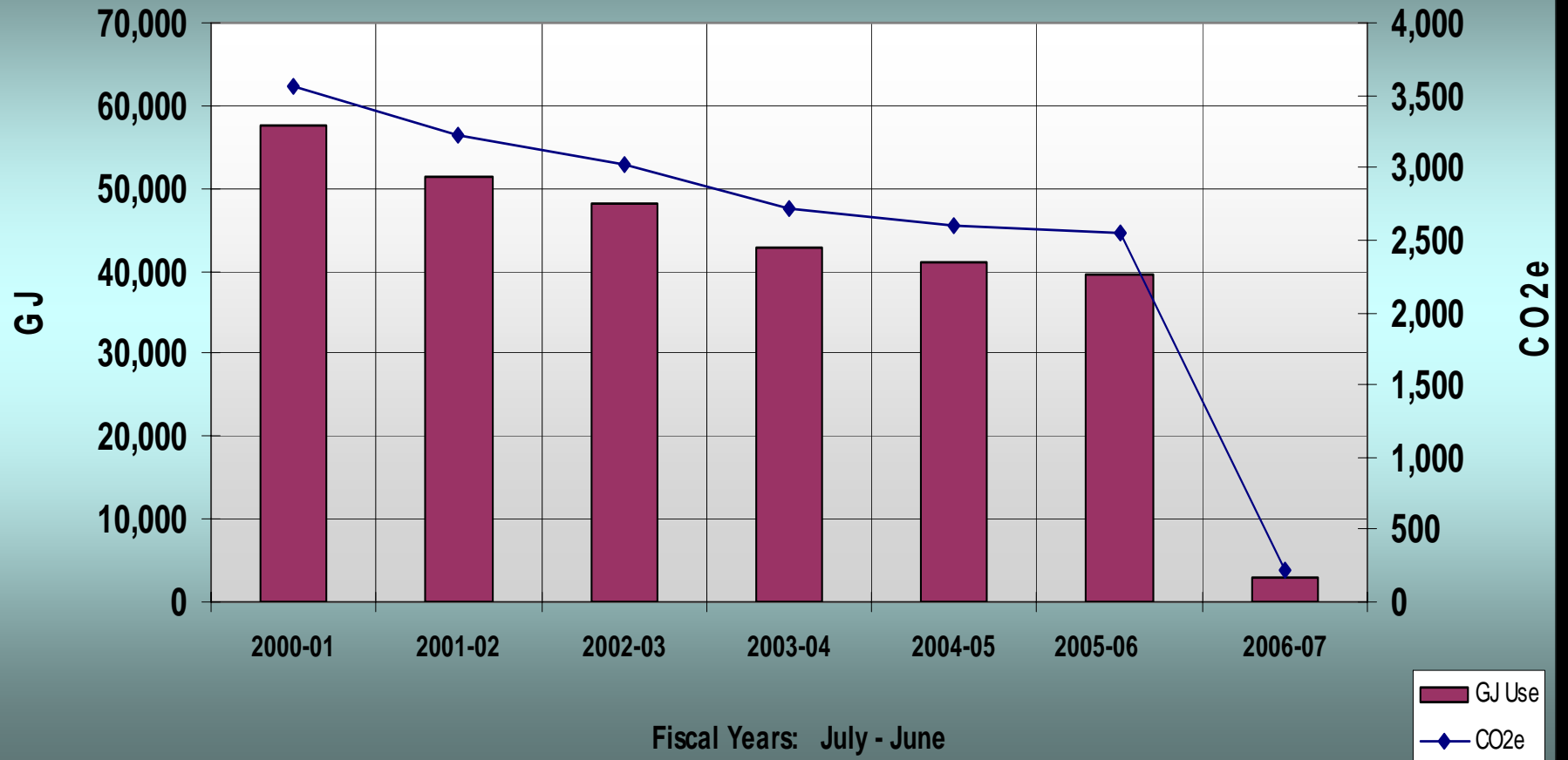
Financial:

- Reduced electricity and natural gas bills by \$140,000 (plus identified \$128,000) billing error
- Greater control in volatile energy marketplace



CO₂e is an index used to approximate the greenhouse gas potential of various gases relative to CO₂.)

UCC Annual Energy and CO₂e Results



A Giga Joule is 1 billion joules; a metric unit that measures how much heat Energy is generated by natural gas or electricity.)

The Road to Green

Facilities & Operations



Water:

- Reduced consumption by 40%, more than 80,000 cubic metres or over 85 million litres
- That's enough to supply approx. 100 Toronto families daily

How:

- Audit, identify measures and set priorities according to payback (low hanging fruit)

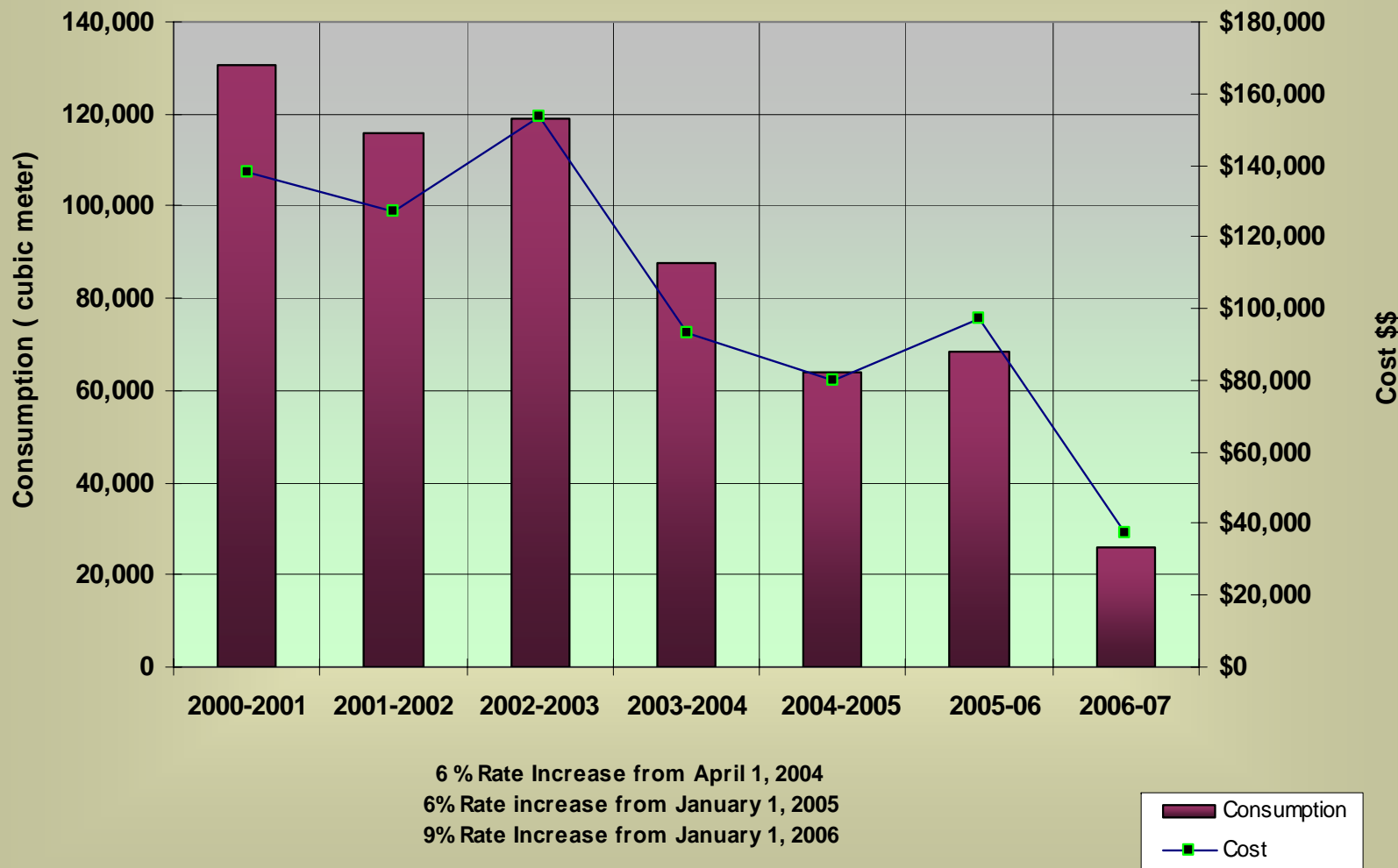


Financial:

- Reduced water bills by \$60,000
- Cut water bills in a time of rising prices (approx. 9%/year)

The Road to Green Facilities and Operations

Annual Water Consumption & Cost



The Road to Green Facilities & Operations

Waste Management:

- Increased diversion from landfill from 35% - 65%
- Increased recycling by 25%:

Since 2003

- 200 kilograms of waste composted every day
- Recycled > 125 tons of metal, glass & plastic, and 135 tons of paper annually
- Recycled > 1,000 lbs. of batteries
- Recycled fluorescent lamps, cell phones, waste oil, ink-jet cartridges



The Road to Green Facilities & Operations

Landscape Objectives:

- Protect heritage trees & enhance biodiversity
- Expand areas of naturalized vegetation
- Increase tree density + canopy by 35%
- Reduce impermeable surfaces by 25%

Achievements:

- Pesticide free campus
- Naturalization/Xeriscaping Plan
- Switch to biodiesel
- Tree planting program



The Road to Green Facilities & Operations

Materials:

- Green purchasing and procurement
- Greening food services and cafeterias
- Greener housekeeping and cleaning products
- Reduced hazardous wastes to dispose of

Some achievements:

- Domtar Earth Friendly 30% recycled content paper
- Interface recycled, recyclable carpets
- Compact fluorescent light bulbs
- Recycled plastic outdoor furniture
- Bamboo flooring



The Road to Green Facilities and Operations

Opportunities:

- New learning horizons for facilities staff
- Creating optimum “learning” environments
- Aging facilities as candidates for green retrofits

Challenges:

- Collecting data, choosing indicators and defining targets is a lot of work
- Aging facilities
- Resistance to change – new way of doing things, e.g. food services and housekeeping contracts



The Road to Green

Curriculum & Professional Development

Coordinator for Environment and Sustainability Programs:

- Works with faculty to integrate sustainability into curriculum
- Supports action research and professional development
- Links to the grounds and facilities as learning tools
- Develops partnerships with outside organizations
- Makes special presentations in the classroom
- Collects and disseminates resources



Environment and Sustainability Curriculum Model



Sustainable Development



Environmental Solutions



Ecological Principles

Nature Connecting



← ← **COMPASSION, RESPECT & THE ETHICS OF SUSTAINABILITY** → →

K - 3

4 - 7

8 - 10

11 - 12 (IB DIPLOMA)

The Road to Green

Curriculum & Professional Development

Prep School examples of curricular integration:

- Kindergarten: Making friends with nature (and its services)
- Grade 2: How (non-human) animals use tools
- Grade 3: Sustainability as fairness to all
- Grade 4: Seventh generation and sky-awareness
- Grade 5: Green design principles and life cycle analysis



The Road to Green

Curriculum & Professional Development

Some UCC Highlights:

- Prep Learning Garden
- IB Group 4 project
- Learning it By Living It Framework
- Optimal Learning Environments

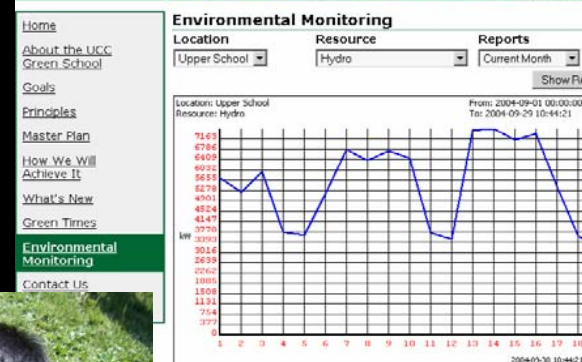


The Road to Green

Curriculum & Professional Development

Learning it By Living It:

- Carbon neutral Soccer Tournament
- Eco-Ambassadors at Prep
- On-Line Environmental Monitoring
- Measuring UCC's Eco-Footprint
- Energy demonstration cabin
- Green School Committee
- Sustainability Steward?



Questions, comments, or requests
Email: GreenSchool@ucc.on.ca



The Road to Green

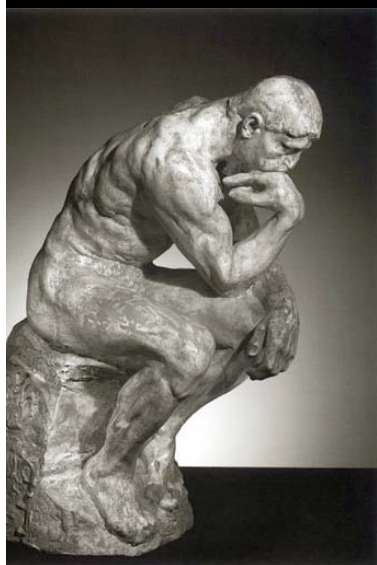
Curriculum & Professional Development

Opportunities:

- Opens new areas for research and professional development, e.g., “Place as pedagogy”
- Empowering and strengthening existing programs

Challenges:

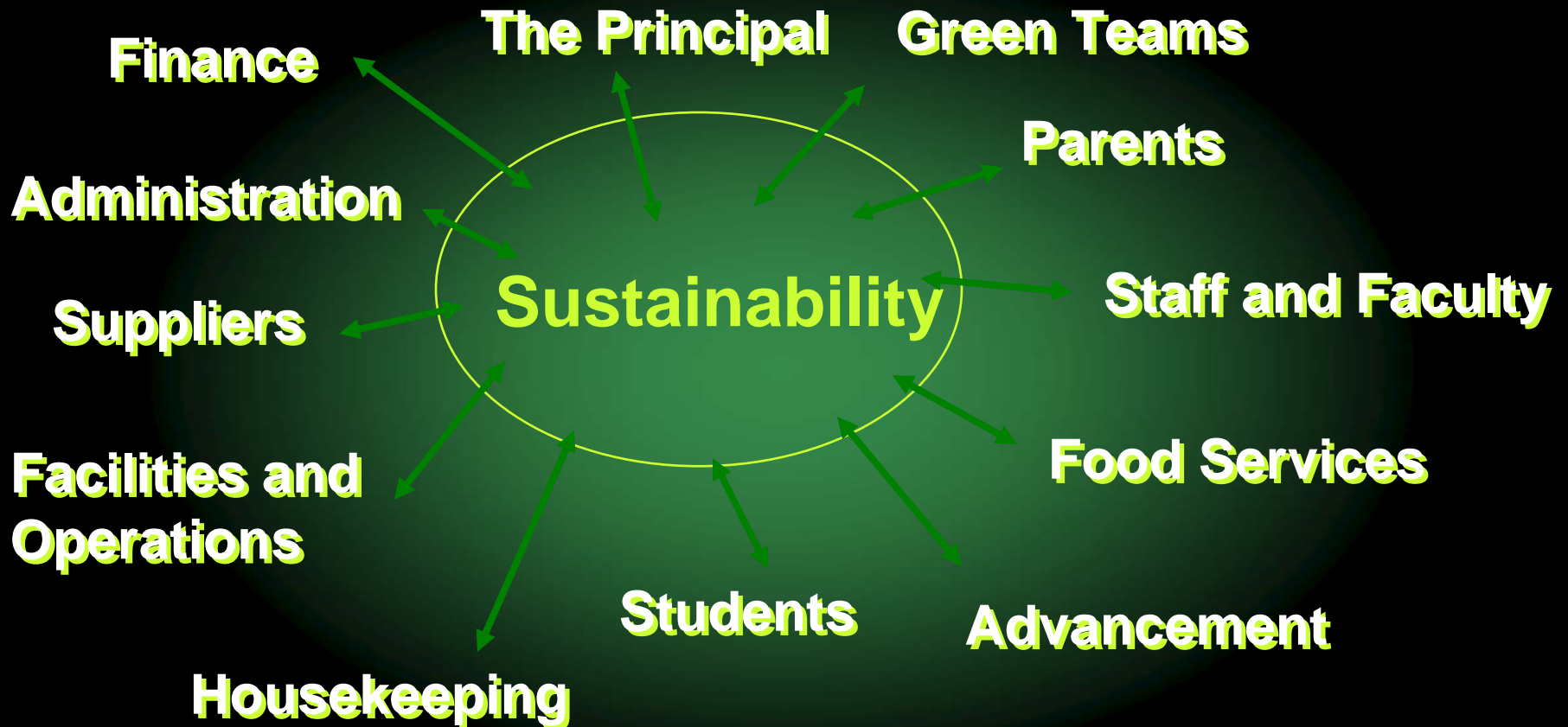
- Are we adding to teachers’ workloads?
- Will some feel threatened ?
- How to measure success ? e.g., integration across disciplines?
- Are students learning better?





The Road to Green

Changing Organizational Behaviour



Organizational Behaviour: “Greening” our Operations



UCC Environmental Policy Statement

- 1) Waste Reduction & Recycling Guidelines
 - Dining Hall Waste Diversion
 - Recycling Centre (batteries, cell phones, ink jets)

- 2) Green Procurement
 - Paper Purchasing Guidelines
 - Green Purchasing Checklist
 - Paper Conservation & Reuse

- 3) Green Event Checklist



1.0 UCC Environmental Policy Statement

Upper Canada College recognizes the importance of environmental sustainability and is committed to becoming a Green School for the 21st Century.

To this end, we endeavour to:

- Integrate the UCC community harmoniously with its natural environment.
- Provide an educational experience that integrates environmental stewardship.
- Consider all aspects of value and cost, including social and environmental, both in the long term and the short term.
- Strive for continual improvement in our demonstration of environmental responsibility.
- Demonstrate leadership by being a model for others.

Signature

The Road to Green Changing Organizational Behaviour

Some strategies to motivate and communicate:

- Eat Smart
- Golden Broom
- Boarding House KW Challenge
- Traffic Survey and Anti-Idling Campaign
- Link existing programs with sustainability
- Celebrate! (e.g. Earth Week, etc.)



The Road to Green

Changing Organizational Behaviour

Opportunities:

- Building a sense of community
- Opportunities to recognize innovation



Challenges:

- Getting buy-in takes time
- How to engage the whole community?
- Having staff and faculty set models of environmental responsibility

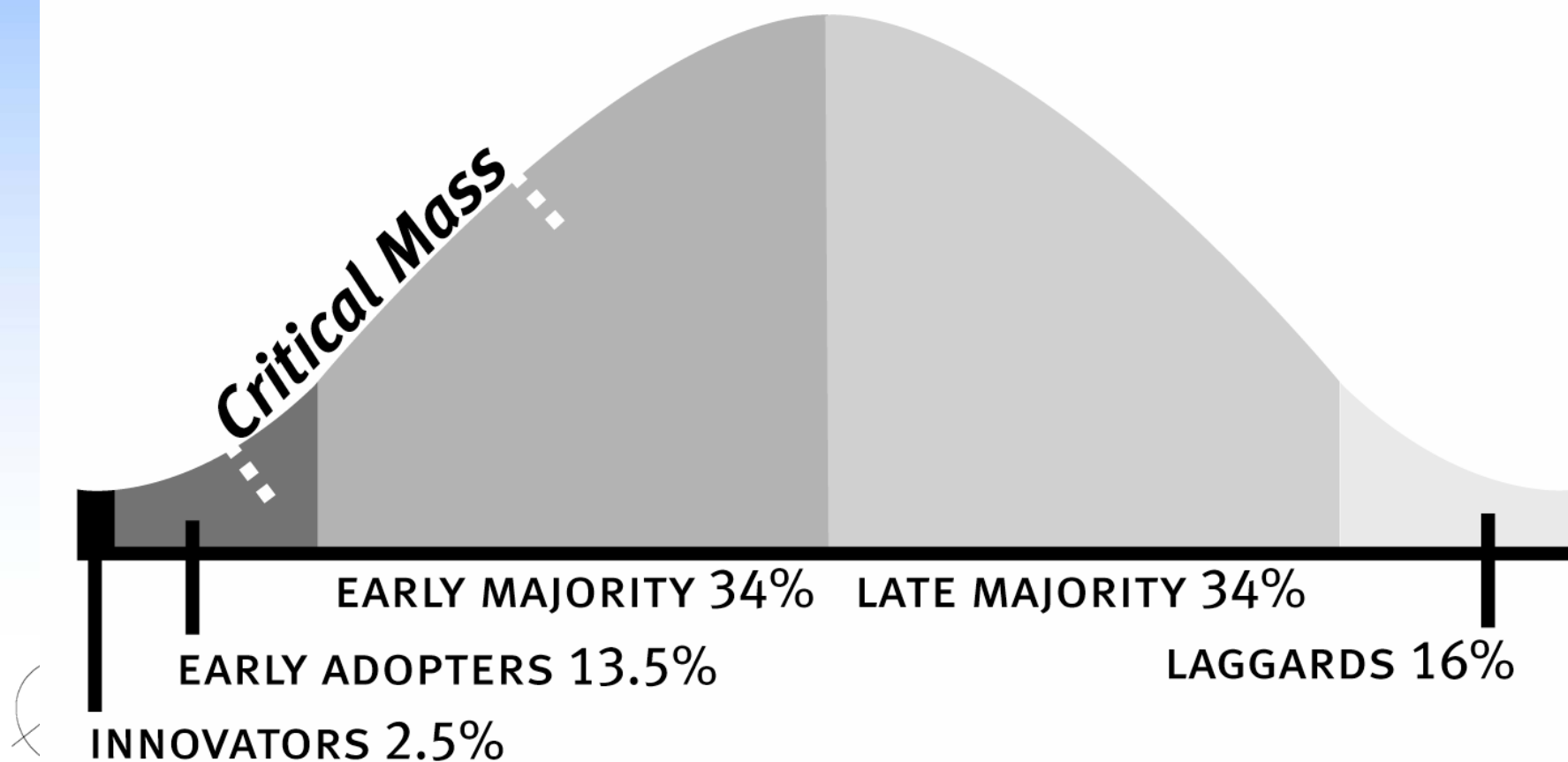


"Never, ever, think outside the box."

Figure 3.2

Rate of Adoption of an Innovation Over Time

Source: Adopter Categorization on the Basis of Innovativeness
Adapted from: Rogers, 1995, pg. 262



The Road to Green

Conclusions

- How to really achieve paradigm shift and how do we measure success, e.g., student surveys ?
- Cross-fertilization of sustainability themes (in facilities, curriculum and organization)
- Students' anti-establishmentarianism
- The "Shadow Curriculum", walking the talk





THANK YOU !