Ways of Knowing: Sustainable teaching for a sustainable world

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With thanks to Professors Richard Calland and Will Day of the University of Cambridge Programme for Sustainability Leadership
UWC in Mostar

“Life defining experiences...to discover the possibility of change through courageous action, personal example and selfless leadership”. 
UWC in Mostar

Three *United World College in Mostar* professional development programmes reflect the UWC Mission and UWCiMostar’s **moral purpose**; “Education as a force to unite people, nations and cultures for peace and a sustainable future”.

- **UWC Sustainability Leadership Programme**
- **Leadership in International Education**
- **Education in conflict and post-conflict contexts**
Cathy Berger Kaye
Words – Ideas - Action
International Mindedness: Ubuntu
From the general to the specific:
We are all connected...

- At Nelson Mandela’s memorial service (10/12/13) President Obama cited the South African philosophy of "ubuntu" - the idea that humanity is bound together and expressed by caring for each other - to great cheers from the crowd. He said Nelson Mandela embodied the spirit of "uBuntu", which means "I am because you are".
How different are we really?

- **Physiological**: breathing, food, water, sleep, homeostasis.
- **Safety**: security of body, of employment, of resources, of morality, of the family, of health, of property.
- **Love/Belonging**: friendship, family, intimacy.
- **Esteem**: self-esteem, confidence, achievement, respect of others, respect by others.
- **Self-actualization**: morality, creativity, spontaneity, problem solving, lack of prejudice, acceptance of facts.
Wi-Fi
our way of life is being threatened by a dark force.

we must defend our way of life.

What is this dark force which threatens our way of life?

It's our way of life...

Leunig
Making the connections

Uncertainty & Security

- Climate
- Energy
- Population
- Urbanisation
- Poverty
- Conflict
- Inequality
- Nutrition
- Food
- Disease
- Water
- Density

Conflict

Poverty

Urbanisation

Population

Energy

Climate

Uncertainty & Security

Disease

Nutrition

Food

Water

Density
Knowledge as a map

What is wrong with this map?
Ways of Knowing: Making the connections

Theory of Knowledge:

Shared knowledge
"We know because..."

Personal knowledge
"I know because..."

Organising our ideas to make sense of the world
Ways of Knowing:
Theory of Knowledge: “divergent thinking” encouraging creativity of thought

Given half a chance, what could this banana be?
What is ToK?
You can’t do the thinking for your students

“If he is indeed wise he does not bid you enter the house of his wisdom, but rather leads you to the threshold of your own mind”.

Gibran Khalil Gibran
“On Teaching”
(The Prophet, 1923)
The state of the world today… but what about the world tomorrow?

Unstoppable force meets immovable object

‘Prediction is very difficult, especially about the future.’

Niels Bohr, Danish physicist (1885 -1962)

Of course I could be wrong…so where is the evidence?

UNEP, World Bank, UNDP, CPSL…it’s all out there…
The world is changing fast

• We are living in a world that is changing faster than ever and facing unprecedented challenges

• Two driving forces of change =

  • technological innovation
  • population growth.
Technology: the past 3000 years

Imagine the past 3000 years as the face of a clock with each of the 60 minutes representing 50 years

- 11 minutes ago: printing press (1440)
- 2.7 minutes: telephone (1875)
- 1.6 minutes ago: black and white TV (1929)
- 54 seconds ago: fax (1966)
- 41 seconds ago: personal computer (1977)
- 38 seconds ago: analog cell phone (1979)
- 25 seconds ago: WWW (1990)
- 1 second ago: 3-D TV (2010)
Population Growth

- It took to mid 18th Century for population to reach 1 billion people
- It took 130 years to reach 2 billion (1930)
- It took 30 years to reach 3 billion (1960)
- It took 14 years to reach 4 billion (1974)
- It took 13 years to reach 5 billion (1987)
- It took 12 years to reach 6 billion (1999)
- By 2050 it will be 9.2 billion – that is more people than have ever lived on the planet at the same time
City Life

• In 2050 over 60% of the population will be living in cities – many in mega cities (of over 10 million people)

• By 2050 over 50 mega cities with populations of over 50 million

• Today largest city = Tokyo (34.6 million – more than entire population of Canada)
Is the way education happens now fit for purpose?
Making the connections

- Water
- Density
- Population
- Urbanisation
- Poverty
- Climate
- Energy
- Uncertainty & Security
- Food
- Inequality
- Conflict
- Nutrition
- Disease
Some of the underlying problems we face

Watch out!..Data Dump
RS 500 US Oil production
Global Change 1990 – 2006/11

- Under 5 mortality rate
- Pop on less than $1.25 per day
- Undernourishment
- Adult literacy
- Access to improved water
- Mean years of schooling
- Female Parliamentarians

Source: UNEP, World Bank, UNDP
We are living in an accelerating world
August 22nd
The world's water

<table>
<thead>
<tr>
<th>Type</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Saltwater</td>
<td>97.5%</td>
</tr>
<tr>
<td>Freshwater</td>
<td>2.5%</td>
</tr>
<tr>
<td>Locked in glaciers</td>
<td>68.9%</td>
</tr>
<tr>
<td>Groundwater</td>
<td>30.8%</td>
</tr>
<tr>
<td>Lakes and rivers</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

Source: UNEP
Worsening per capita water availability
Estimated world water use
## Water use

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Water Use (gallons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pound of lettuce</td>
<td>23 gallons</td>
</tr>
<tr>
<td>1 pound of tomatoes</td>
<td>23 gallons</td>
</tr>
<tr>
<td>1 pound of potatoes</td>
<td>24 gallons</td>
</tr>
<tr>
<td>1 pound of wheat</td>
<td>25 gallons</td>
</tr>
<tr>
<td>1 pound of carrots</td>
<td>33 gallons</td>
</tr>
<tr>
<td>1 pound of apples</td>
<td>49 gallons</td>
</tr>
<tr>
<td>1 pound of chicken</td>
<td>815 gallons</td>
</tr>
<tr>
<td>1 pound of pork</td>
<td>1,630 gallons</td>
</tr>
<tr>
<td>1 pound of grain fed beef</td>
<td>at least 3,000 gallons</td>
</tr>
</tbody>
</table>
Growing demand for grain in the developing world will require significantly more production - or higher prices to reduce demand in line with historical trends.
To meet the increasing demand from a growing population we will need to produce more food in the next 40 years than has been produced in the previous 8,000 years.

Jason Clay, Senior Vice President WWF
Soil degradation

Philippe Rekacewicz, UNEP/GRID - Arendal
Percent increase in Nitrogen flows in rivers

Source: Millennium Ecosystem Assessment
Food and oil prices tend to rise together

All data is from the US Energy Information Administration.
Global South vs Global North

Staple prices triple as much of the world’s food supply is diverted towards fuel consumption.

Your child is hungry? My SUV is ravenous!

Global North

Global South
The poor spend a high percentage of their income on food.
Past & projected overweight rates in selected OECD countries
Estimate of prevalence of diabetes 2025
Number of children per woman

Life expectancy at birth 2004
Outlook for working populations for different economies

80-100 million jobs will need to be created in the MENA region in the next 20 years.

World Bank 2012

Source: UK population, OECD calculations
Emerging and re-emerging infectious diseases 1996-2004
Emerging and re-emerging infectious diseases 1996-2004

FRIDAY, 17 OCTOBER

UN launches urgent Ebola aid appeal

BBC News this morning
Positive proof of global warming
International Panel on Climate Change (IPCC)

CO2 levels at their highest for 650,000 years.

Climate change “unequivocally” happening, and 90% certain that it’s due to man-made emissions.

10-15 years to put in place serious measures to start reducing emissions of CO2.

“Best guess” indicates global temperature will rise by 1.8°C to 4°C by 2100. Worst case “up to 6.4°C”.

Policy responses geared to hold temperature increase below 2°C.

Urgent need to agree on global stabilisation target. 550 ppm CO2 increasingly seen to be inadequate. 450 ppm CO2 emerging as new consensus figure.
The impact of a one metre sea-level rise – displaced people in Asia
The BP statistical Review of World Energy

"It's no secret anymore that for every nine barrels of oil we consume, we are only discovering one."

November 11th, 2009
Growing Inequality

UK Life Satisfaction and GDP: 1973-2002

Eurobarometer survey
Global mega-trends

• new economic world order; major demographic changes; new tribalisations; new notions of security, privacy and terror; enduring development of technology; asianisation; spiritual revolution; climate; new definitions of happiness, ideals & ethics; change; food shortage; new energy economy; bespoke wellness & healthcare; new power balances; boys surplus; new management of anger.

• Adjiedj Bakas, “Trend Watcher”
What might this all mean for an education lasting 1,000,000 minutes?

• A child who starts school at age four and graduates at age 18 till spend roughly one million minutes at school. What they learn during their time at school is essentially the sum of what they learn during each of those one million minutes.
The future is something we create, not somewhere we are going
Growth of the global knowledge economy: Global Sapiens

- Thinking beyond own generation
- Empathy
- Global consciousness
- Willingness to change
- Courage

Employers say that they are looking for candidates who can navigate a workplace that transcends national and cultural borders. (British Council 2013)
These are the terms most frequently used by employers to define intercultural skills.
How employers rank different skills in terms of importance
Few employers report being satisfied with their national education system’s ability to produce graduates with strong intercultural skills.
Employer recommendations to education systems for improving the development of intercultural skills.

Chart 13: Contributions that education can make to improving intercultural skills as seen by employers (top eight suggestions from employers)
IB Mission Statement

“The International Baccalaureate aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect.

To this end the IBO works with schools, governments and international organizations to develop challenging programmes of international education and rigorous assessment.

These programmes encourage students across the world to become active, compassionate and lifelong learners who understand that other people, with their differences, can also be right.”
A reflection on moral purpose:

“Schools have to make the choice whether they want to be the mirror of society or the change agents of society.”

(Professor Steward Sutherland)
“Imagine that in and around this place, the fruits of creativity are visible in a celebration of human ingenuity, invention, innovation and inquiry whilst a sense of wonder and respect for the environment is pervasive. In this place, the buzz of industry, empowered by technologies, is audible whilst collaboration and team work happen intuitively. In this place happiness is an epiphenomenon for the disciplined, synthesizing mind and the compassionate, generous heart. In this place you can see the art, hear the music and feel inspired. This is a place where young people never cease striving to turn their dreams into reality.”
How is education addressing sustainability on its broadest sense?

- CIE Global Perspectives IGCSE “Global Perspectives is a groundbreaking new course that is cross-curricular, stretching across traditional subject boundaries”
- IB Diploma courses in Global Politics, Peace & Conflict, Environmental Systems & Societies, World Cultures
- IB Global Engage
- The inherent connectivity of the IB programmes
Christopherou
Creativity, Action, Service

• “Strange is our situation here on Earth. Each of us comes for a short visit, not knowing why, yet sometimes seeming to divine a purpose. From the standpoint of daily life, however, there is one thing we do know; that we are here for the sake of each other, above all, for those upon whose smile and well-being our own happiness depends, and also for the countless unknown souls with whose fate we connect with a bond of sympathy. Many times a day I realize how much my own outer and inner life is built upon the labours of others, both living and dead, and how earnestly I must exert myself in order to give in return as much as I have received and am receiving”.

• Albert Einstein
IB Global Engage
http://globalengage.ibo.org/

Welcome to the Global Engage website, which supports members of the IB community, particularly teachers, in engaging with our global world. Here you will find information, resources, ideas and opinions, links, and suggestions for action concerned with global issues and reports of actions taken by the IB community.

The world's six billion people are appropriating 54 percent of all the accessible freshwater contained in rivers, lakes and underground aquifers.

World Water Assessment Programme
UWCSEA learning programme
An real opportunity to contribute
Multiple perspectives

We see no problem in different points of view.
Only potential.

yourpointofview.com

HSBC
The world’s local bank
Homogeneity – dumbing down?
What’s distinctive?

Dubai

Rome
Oxfam’s description of a global citizen

• Is aware of the wider world and has a sense of their own role as a world citizen
• Respects and values diversity
• Has an understanding of how the world works
• Is outraged by social injustice
• Participates in the community at a range of levels, from the local to the global
• Is willing to act to make the world a more equitable and sustainable place
• Takes responsibility for their actions
In addition a global citizen...

• Has a sense of connectedness with and responsibility towards others, other species and the environment
• Understands interconnectedness and complexity
• Can see the world through the eyes of others
• Views the future with hope

Roberts, Boyd 2009, Global Citizenship, IB, Cardiff.
Dimensions of Perspective
Hanvey, 1976

1. Perspective Consciousness
2. State of Planet Awareness
3. Cross-Cultural Awareness
4. Knowledge of a Global Dynamic
5. Human Choices
What’s already being done?

UWCSEA profile: qualities and skills

Our goal is to educate individuals to embrace challenge and take responsibility for shaping a better world. Our community achieves this goal by developing knowledge and understanding, qualities and skills through the five elements of the UWCSEA learning programme: academics, activities, outdoor education, personal and social education and service.
Ways of Knowing (WOK)
The Diploma Programme (1968)

A rigorous two year pre-university course that leads to examinations, for motivated students
The Middle Years Programme (1994)
A framework of academic challenge and life skills appropriate to students aged 11 to 16.
Primary Years Programme (1997)
An opportunity for learners to construct meaning, principally through concept-driven inquiry
The IBCC (2012) - A Convergence of Knowledge Acquisition and Skills Development
Is the way education happens now fit for purpose?
Closing question: What is your moral purpose?
Activity: Theory of Knowledge (ToK)

Key TOK questions = how do I know and how do we know?

1. What do you know you know?
2. What do you know you don’t know?
3. What don’t you know that you don’t know?

“In formal logic, a contradiction is the signal of a defeat, but in the evolution of real knowledge it marks the first step in progress towards a victory.”

Alfred North Whitehead
Ways of Knowing

- Language
- Sense Perception
- Emotion
- Reason
- Imagination
- Faith
- Intuition
- Memory

Areas of Knowledge

- Mathematics
- Natural Sciences
- Human Sciences
- History
- The Arts
- Ethics
- Religious Knowledge Systems
- Indigenous Knowledge Systems
### Projected impacts of climate change

<table>
<thead>
<tr>
<th><strong>Global temperature change (relative to pre-industrial)</strong></th>
<th>0°C</th>
<th>1°C</th>
<th>2°C</th>
<th>3°C</th>
<th>4°C</th>
<th>5°C</th>
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<tbody>
<tr>
<td><strong>Food</strong></td>
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<td>Falling crop yields in many areas, particularly developing regions</td>
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<td>Possible rising yields in some high latitude regions</td>
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<td>Falling yields in many developed regions</td>
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<td><strong>Water</strong></td>
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<td>Small mountain glaciers disappear – water supplies threatened in several areas</td>
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<td>Significant decreases in water availability in many areas, including Mediterranean and Southern Africa</td>
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<td>Sea level rise threatens major cities</td>
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<td><strong>Ecosystems</strong></td>
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<tr>
<td>Extensive Damage to Coral Reefs</td>
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<td>Rising number of species face extinction</td>
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<td><strong>Extreme Weather Events</strong></td>
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<td>Rising intensity of storms, forest fires, droughts, flooding and heat waves</td>
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<td><strong>Risk of Abrupt and Major Irreversible Changes</strong></td>
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<td>Increasing risk of dangerous feedbacks and abrupt, large-scale shifts in the climate system</td>
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Stern Review
How may a man measure his own happiness?

He must first go to his cupboard and take out all his neckties.

Then he must lay them out on the ground, end to end.

Then he must measure the length of this line of neckties.

And that measurement; that distance is exactly the same as his distance from true happiness.
Every American will need 2.96 million pounds of minerals, metals, and fuels in their lifetime.

Mineral Information Institute 2011