

A Video Guide

Sustainability Intelligence: Meeting 21st Century Challenges with 21st Century Learning

Introduction:

With support from the *Learning and Skills Improvement Service*, the *City College Coventry*, and *Roger Talbot Associates* are developing a *Video Guide to Sustainability Intelligence*.

We use the term *Sustainability Intelligence* to refer to the aggregation of knowledge, skills and values that is required – amongst individuals and organisation – to meet the complex challenges of a “hot, flat and overcrowded” world in crisis, and to navigate a path to a different kind of world, a different kind of society and a different kind of economy, in ways that are as humane and fair as possible to as many as possible.

The Video Guide takes the form of a series of short, informative, inspirational and instructional videos that draw freely and widely upon the views, experience and wisdom of a rich, interdisciplinary “cast” of influential and authoritative researchers, teachers, thinkers and practitioners, current and past. Collectively the series seeks to develop an understanding of key concepts underpinning the idea of *Sustainability Intelligence* and to integrate these into a compelling case for a new kind of “social” learning, relevant and appropriate to the grand challenges of the 21st Century.

The Guide is not without an agenda – and that is to help committed but non-specialist learners align their worldview, mindset, values and actions with the goals and operating principles of a low carbon society and with the wider strategic objectives of sustainability. Collectively the series presents a kind of “crash course” in realigning and reshaping lives to be more balanced, resilient and sustainable – in short, to be more sustainability intelligent.

Each video in the series imagines a convivial, moderated, illustrated and accessible “conversation” between selected participants; in each case inviting focus upon a specific topic of common interest.

Each video is short and takes a “big picture” perspective or, as Murray Gell-Mann would express it, a “crude look at the whole”. Learners wishing to go deeper are directed to a supplementary online learning resource.

The references listed represent only a small selection of the database we have built up in support of this project.

The Video series is organised within the following volumes:

Volume 1: In Our Time

In the 21st century, human existence and our ability as a global society to live and work in productive, healthy and equitable ways are under multiple, interconnected pressures, threatening unprecedented and destabilising change. Threats to the stability and sustainability of life include climate change, population increase, ecosystem decline, the depletion of natural resources (such as oil) upon which the human economy depends and the collapse of economies themselves. Thomas Friedman’s description of Earth in our times as “hot, flat and crowded” says it all.

These problems are related to one another in complex, mutually reinforcing ways. Taken together they constitute the most severe challenge the human species has ever faced. In the struggle to face such threats, global society – addicted to growth - is itself developing ever more complex and unstable structures to prevent collapse. In the view of Joseph Tainter we are destined to fail. In Tainter’s view, complex systems do not develop to some optimum size and then maintain themselves. Instead they grow too large (over-shoot) and become vulnerable to external shocks. Finally disintegrating and providing the raw capital for renaissance.

Whether we accept this more cataclysmic analysis or not, the general picture is inescapable – it is one of mutually interacting instances of overconsumption and emerging scarcity. It seems certain that this “perfect” - and potentially overwhelming - storm of uniquely 21st century challenges is taking us inexorably towards a different kind of world, a different kind of society and a different kind of economy. Once we accept that energy, fresh water and food will become less freely available over the next few decades, it is hard to escape the conclusion that while the 20th century saw the greatest and most rapid expansion of the scale, scope and complexity of human societies in history, the 21st will see contraction and simplification. The only real question is whether societies will contract and simplify intelligently and for the common good or in an uncontrolled, chaotic fashion.

In the opening lines of *The Go Between*, L.P. Hartley memorably likens the past to a foreign country – they do things differently there. The same can surely be said to be true of our future. It is simply inconceivable that the next 20 years of life on Earth can in any meaningful way be like the last twenty.

Understanding the nature of the threats and the relationships between them is essential to developing solutions - solutions which include educating present and future generations to think about the world - and about our place within it – in new and transformative ways.

Selected Key References for Volume 1:

1. A Blueprint for a Safer Planet (Nicholas Stern), 2009
2. A World of Challenges (National Geographic), 2011
3. An Incontrovertible Truth (Al Gore), 2008
4. Climate Change and Society (John Urry) 2011
5. Development as Freedom (Amartya Sen), 1999
6. Future Forces Affecting Sustainability (GEMI), 2007
7. Global Challenge (MIT), 2011
8. Global Challenges (Worldwide Universities Network), 2011
9. Global Challenges for Humanity (The Millennium Project), 2009
10. Global Issues of the Twenty-First Century and United Nations Challenges (Christopher Spencer) 2011
11. Global Risks 2010 (World Economic Forum), 2010
12. Heat; How the Stop the Planet Burning (George Monbiot), 2006
13. Hot, Flat and Crowded: Why the World Needs a Green Revolution (Thomas Friedman), 2009

14. Peak Everything: waking up to the Century of Decline in Earth's Resources (Richard Heinberg), 2007
15. Powerdown: Options and Actions for a Post Carbon World (Richard Heinberg), 2004
16. Shaping Ideas 2020 (Ericsson), 2011
17. The End of Poverty: How We Can Make it Happen in Our Lifetime (Jeffrey Sachs), 2005
18. The God Species: How the Planet Can Survive the Age of Humans (Mark Lynas), 2011
19. The Upside of Down (Thomas Homer-Dixon), 2006
20. The World is Flat: The Globalised World in the Twenty-First Century (Thomas Friedman), 2006

Volume 2: System Earth

The root cause of impending global catastrophe is the failure to view our world and our place within it in systemic terms. Whilst the Earth is in a natural state of continual dynamic change, the impact of uncontrolled human development within a recent period of time called the anthropocene has grown to such an extent that it is placing the Earth's essential life-support systems under acute stress. Safe boundaries are being crossed. Something every other living creature but human beings have learned is not to mess their own living space. The root cause of this crisis state is the failure of human society to appreciate – and act intelligently upon – the *systemic* nature of the world we live in and interact with. The urgent need to understand that Planet Earth is a complex and dynamic system - in which no process or phenomenon occurs in isolation or without effect on other parts of the system – has emerged over recent years. The demand for a new, *systems thinking* approach to guide society away from catastrophe and towards what Johan Rockstrom and his collaborators have described as a “safe operating space for humanity” presents a major challenge to educators at all levels.

Selected Key References for Volume 2:

1. Earth as a System (WCCUSD/UCMP), 2004
2. Earth as a System Learning Activity (GLOBE), 2008
3. Earth System Analysis for Sustainability (Schellnhuber), 2006
4. Earth System Science (Murtugudde), 2010
5. Earth System Science for Global Sustainability: The Grand Challenges (ISSC), 2010
6. Earth Systems (Climate Change Science Compendium), 2009
7. Furthering the Understanding of Earth Systems and Global Environmental Change (AGCI), 2011
8. Global Change and the Earth System (IGBP), 2001
9. Human Interactions on the Planet (Richard Williams), 2002
10. Human Interactions with the Earth System (Liverman), 2008
11. Introduction to Systems (NASA), 2002
12. Revolutionising Earth System Science Education for the 21st Century (Hoffman), 2007

13. Symphony of the Spheres: Perspectives on Earth System Science Education (Rankey), 2006
14. The Changing Earth (EOP), 2007
15. The Earth System (Kump), 2011
16. The Earth System (UWO), 2005
17. Tipping Towards the Unknown (Stockholm Resilience Centre), 2010
18. World on the Edge (Lester Brown), 2011

Volume 3: It's the Stupid Economy

Economic activity involves the transformation of natural materials. Transformations occur at all stages of a product's life cycle, including extraction of raw materials, manufacturing, distribution, consumption and disposal. Moreover, making energy available to power these transformations involves its own set of transformations, such as mining, refining and combustion. All these stages create outputs in the form of waste. The environment is the final sinks into which all wastes flow. The wastes produced by any economic activity go back into the environment in one form or another. These wastes do not – and physically cannot – “go away”. There is no away. The environment is not merely a factor in production as is portrayed in the conventional – and not very smart – “circular flow” economic model but rather a containing system for the economy. If human activity consumes more resources than the environment has the resources to replenish or more waste is created than the environment has the capacity to absorb, a critical boundary – or set of boundaries – is crossed and the Earth will not be able to sustain us. Just as you cannot borrow yourself out of debt, you cannot grow yourself out of the acute problems created by unfettered growth. As Einstein said “we cannot solve problems by using the same kind of thinking we used when we created them.”

Selected Key References for Volume 3:

1. Capitalism as if the World Matters (Porritt), 2007
2. Ecosystem Goods and Services (DEFRA), 2007
3. Growth Isn't Possible: Why we need a New Economic Direction (New Economics Foundation), 2010
4. The New Capitalism (Robert Peston), 2009
5. The Next Four Billion (WRI), 2007
6. The Oil Crunch: Securing the UK's Energy Future (ITPOES), 2010
7. Valuing Ecosystem Services (DEFRA), 2007
8. Crash Course In Economics and the Environment, Chris Martenson, 2010

Volume 4: Living within Limits

Humans and their activities are fully and irrevocably “of” System Earth, interacting with all other components. The anthroposphere encompasses the total human presence on Earth, including our culture, technology and built environment. In physical terms the anthroposphere is comprised of cities, village, energy and transportation networks, farms,

mines, ports as well as books, software and communication (and learning) systems. Human kind benefits from a multitude of resources and processes that are supplied by natural ecosystems. Collectively these benefits are known as ecosystem services and include products like clean drinking water and processes such as the decomposition of wastes. The Earth also provides capital assets such as mineral deposits soil nutrients and fossil fuels. The research record is now clear. Humanity must stay within defined planetary boundaries – for a range of essential life support systems – to avoid catastrophic environmental change. The time-honoured practice of *pollute and move on* is no longer acceptable. We now fill the globe, and we have nowhere else to go. This leaves us with a set of hard choices to make. Starting with the need to think about how we view and manage our economy.

Selected Key References for Volume 4:

1. Behavioural Change Towards a Low Carbon Society (Masumoto), 2008
2. Fairness in a Post Carbon Society (NEF), 2008
3. Major Tipping Points in the Earth's Climate System (WWF), 2009
4. Planetary Boundaries: Exploring the Safe Operating Space for Humanity (Rockstrom et al), 2009
To Live Within Earth's Limits (Australian Academy of Science), 2010
5. Planning for Sustainability (Natural Step), 2009
6. Prosperity Without Growth (SDC), 2009
7. Restoring Nature's Capital (WRI), 2007
8. Sustainable Energy Without Hot Air (MacKay), 2008

Volume 5: No Place for Business as Usual

A sustainable world will only be possible by thinking differently. We need to apply such new thinking not only to how we live with each other at a personal level but how our organisations and institutions work. We need to establish a clear business case for sustainability. Today's forward thinking companies and sectors – such as further education – are showing how to create a different future by learning how to see the larger systems of which they are a part and to foster collaboration across every imaginable boundary

Selected Key References for Volume 5:

1. Biomimicry: Innovation Inspired by Nature (Benyus), 1997
2. Building the Blue Economy (Pauli), 2009
3. Cannibals with Forks (Elkington), 1997
4. Eearth: Making a Life on a Tough New Planet (McKibben), 2010
5. Green Economics (Cato), 2009
6. The Ecology of Commerce: How Business Can Save the Planet (Hawken), 1993
7. The Green Collar Economy (Van Jones), 2008
8. The Necessary Revolution (Senge) 2009
9. The Spirit Level (Wilkinson), 2009
10. The Turning Point (Fritjof Capra), 1982

Volume 6: Sustainability Intelligence

It is becoming increasingly clear that the most profound challenge facing society today is the need for an integrated conceptual framework for understanding sustainability in its broadest sense. The question is whether human societies will be able to develop the collective cognitive power to re-order their affairs in a manner that reflects an understanding of the interconnected workings of the planetary system, and whether they can come to a common understanding of major desired and undesired developments and the associated required revisions in the functioning of today's societies. Such a comprehensive understanding of the interacting and interdependent systems is critical if humankind is to make informed choices between the many competing 'solutions' to the energy, environment, economic, and social problems that constitute the sustainability challenge. The 21st century will be the century of complexity, connectedness, change, collaboration, and customisation. Bringing such a radical change in perspective to the challenge of global sustainability and the long-term survival of our planet will be critical because it inherently recognizes the kinds of interconnectedness and interdependencies so frequently ignored in current discourse. Roger Talbot has coined the term "sustainability intelligence" to refer to the ability to see systems, to collaborate across boundaries and to visualise creative future across diverse cultural settings; embracing values, knowledge, skills and tools. An organisation that actively and strategically seeks to ensure that its people, and the people it serves, possess sustainability intelligence is defined as a Sustainability Intelligent Organisation.

Selected Key References for Volume 6:

1. Carbon Capability (Tyndall), 2009
2. Emotional Intelligence (Goleman), 1995
3. Intelligence Reframed: Multiple Intelligences for the 21st Century (Gardner), 1999
4. Message in a Bottle: Learning our Way Out of Unsustainability (Wals), 2010
5. The Wisdom of Crowds (Surowiecki), 2005
6. Truth, Beauty and Goodness Reframed (Gardner), 2011
7. Original work by Roger Talbot

Volume 7: Skills for the 21st Century

To prepare the global society for the inevitable and necessary transition to a low carbon future demands the rediscovery, the redevelopment, the re-democratisation and redeployment of skills – we call them 21st century skills – that go to the very heart of what humans "are for". Our ability to connect, to create and to collaborate. High level cognitive skills – the essence of sustainability intelligence - are important for everyone. It's not enough to educate a few highly skilled specialists. At the technological frontier, substantial numbers of scientists, engineers, and other innovators are obviously needed. But so is a citizenship that has the skills not only to survive but to positively contribute to and benefit from the successful transition to a low carbon economy. Systems thinking represents arguably the highest level of cognitive skill - and is key to the development of sustainability intelligence.

Selected Key References for Volume 7:

1. 21st Century Skills (Partnership for 21st Century Skills), 2010
2. 21st Century Skills (Trilling), 2009
3. Developing New Skills to Address the Challenge of Climate Change (CLES), 2009
4. Essential Skills for the 21st Century Workplace(AMA), 2010
5. Green Talent : Creating a low Carbon Economy (BITC), 2007
6. Higher Education Skills in the Workplace (UVAC), 2008
7. Twenty First Century Skills (Metiri), 2002

Volume 8: Learning for Sustainability

The converging and interconnected global trends of the 21st century are creating the need for radical new forms of deep, inclusive learning – effectively to deliver 21st century skills across whole populations and dramatically increase the pool of sustainability intelligence. Universalising the acquisition of high order skills is one of the most profound challenges that face the further education and skills sectors today. Now is the time to explore new kinds of learning and new pedagogies; including social learning which we define as the learning which challenges existing conventions and orthodoxies and focuses increasingly upon the learning that takes place outside and beyond the classroom, and even outside of formal learning structures altogether.

Selected Key References for Volume 8:

1. Education for Change (IGES), 2009
2. Education for Sustainable Development (Wals), 2010
3. Education in the Post Carbon Era (PRI), 2011
4. Fundamentals of College and University Teaching (Mintz), 2010
5. Good Work Project (Gardner), 2008
6. Horizon Report 2011 (NMC), 2011
7. New Basics Project (NSW), 2002
8. Social Learning and Sustainability (SEI), 2011
9. Sustainable Education (Sterling), 2003
10. Teaching for Quality Learning at University (Briggs), 2007
11. The Teaching for Understanding Guide (1998)
12. Whole System Thinking (Sterling), 2003

Volume 9: Being Social Media Smart

In reshaping the new 21st century learning landscape to deliver 21st century skills and increase the universal pool of sustainability intelligence, we can call upon the support - as City College Coventry demonstrated in the course of its recent LSIS SUS funded project – of a hugely powerful set of tools and technologies that are already in the process of development and deployment. The ever expanding world of social media. The possibilities for uses of social media to create community and collaboration are extensive. Social media technologies dissolve many of the barriers between learner and instructor, creating a more informal, collegial and interactive learning environment. Learning strategies involving the smart use of social media tools can help learners become more aware of their own learning process, more mindful of and deliberate about their own learning and encourage them to take ownership of learning and apply it to their working and personal lives.

Selected Key References for Volume 9:

1. Knowledge Tools of the Future (IFTF), 2008
2. Social by Social: A Practical Guide to Social Technologies (NESTA), 2009
3. Social Media Guidebook (GMTC), 2010
4. Social Media in Higher Education (Jadu), 2010
5. The Social Intranet Workbook (Episerver), 2009
6. Web 2.0 for Teaching and Learning in Higher Education (Franklin), 2007

Volume 10: Being Low Carbon Ready

This section is intended to bring the ideas and principles contained in the first nine volumes together and apply the lessons learned to helping individuals, groups and organisations within FE become fit of the purpose of leading the sector in the transition to a low carbon economy. Whilst efforts to improve the sector's overall sustainability performance – improving the energy efficiency of its building stock, recycling a greater proportion of waste arisings, reducing the pollution and congestion associated with travel and protecting biodiversity around campuses – are of vital importance in their own right, unless such programmes simultaneously serve to instil the right values, spread useful knowledge, change attitudes and above all teach transferable 21st century skills then a massive opportunity is being lost.

Selected Key References for Volume 10:

1. Beyond Carbon (Aldersgate), 2010
2. Building a Low Carbon Economy (CCC), 2008
3. Global Sustainability in the 21st Century (UNGC), 2009
4. Making Sense of the Low Carbon Economy (FFTF), 2007
5. SME's in a Low Carbon Economy (BERR), 2009
6. The Future's Green - Jobs and the Low Carbon Transition (IPPR), 2009

Roger Talbot

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APPENDIX: A Preliminary Cast of Characters:

1. Dr Roger Talbot (Moderator)
2. Bill McKibben
3. Dr James Hansen
4. Thomas Homer-Dixon
5. Van Jones
6. George Monbiot
7. Nancy Lee Wood
8. Joseph Tainter
9. Leo Apostel
10. Anthony Clayton
11. Thomas Friedman
12. Keir Bloomer
13. Jared Diamond
14. Al Gore
15. Lord Stern
16. Tim Flannery
17. Jeffrey Sachs
18. Amartya Sen
19. Mark Lynas
20. Lee Kump
21. Peter Senge
22. Fritjof Capra
23. Michael Carley
24. Malcolm Gladwell
25. Carl Frankel
26. Patrick Dixon
27. Janine Benyus
28. John Sterman
29. Marian Chertow
30. Lester Milbrath
31. William Blackburn
32. John Elkington
33. Hans Rosling
34. Molly Scott Cato

35. Richard Normann
36. Paul Hawken
37. John Seddon
38. Ervin Laszlo
39. Sim Van Der Ryn
40. Chris Goodall
41. Daniel Goleman
42. Howard Gardner
43. Martin Seligman
44. Brene Brown
45. Ken Robinson
46. Michael Fullan
47. Robert McKay
48. John Taylor Gatto
49. Don Tapscott
50. Richard Wilkinson
51. Jeanne Meister
52. John Biggs
53. Tina Blythe
54.