

- the pivotal role of education and learning

Purpose of the paper: to provide a clear briefing on the current debate on the relationship between education, learning and sustainable development, and point to ways in which – working together – they can help ensure a more sustainable and safe future. This paper was commissioned by UNESCO.

Readership: the paper is aimed primarily at policy makers and stakeholders in the sustainable development community, but also policy makers and stakeholders in the education community.

Abstract

At the end of the Decade of Education for Sustainable Development (UN DESD), and in the context of the post-2015 debate, this paper aims to clarify the relationship between education and sustainable development.

It places particular emphasis on the critically important role of learning in winning ‘the future we want’, arguing that change towards a more sustainable and safer world is entirely dependent on the sufficiency and quality of the learning process amongst all stakeholders. The paper presents a case to the sustainable development community to recognise the pivotal role of education achieving lasting progress - and to the education community to take on board the pressing challenges of sustainable development much more centrally in educational purposes, policy and practice. The nature of sustainability education is outlined and progressive strategies for change and building sustainability competencies are presented. The post 2015 debate, reflected in high-level reports, is reviewed in terms of how far education and learning are sufficiently recognized as key to advancing and achieving proposed SDGs. Education is then discussed as an essential means of enhancing conventional instruments of change such as policy, incentives and legal regulation, and a distinction is made between remedial education for sustainable development (ESD) and solutions-led preventive ESD. The need for change in educational purposes, policy and practices in support of sustainable living is reiterated, before evidence for the effectiveness of ESD is reviewed. A final section summarises key points, and a number of cross-cutting questions for consideration are posed.

Executive summary

Key points are summarized below.

Section 1: Context

- The quality of the human and biospheric future depends on our collective capacity and ability to learn and change.
- In the absence of such learning we will get the ‘future we deserve’ - and nobody will want.
- Sustainable development is not itself sustainable (that is, lasting and secured), unless relevant learning amongst all stakeholders is central to the process.
- Whilst sustainable development can be promoted through policy instruments, legal measures, financial incentives and disincentives, information and campaigns, these tend to be effective for only as long as they are applied.
- Education can enhance the effectiveness of each and all of these instruments through developing informed engagement, agency, and empowerment amongst all affected stakeholders. Further, education can build lasting change - that is, sustainable change, because it is owned by the learner, and reaches hearts and minds.
- Yet the current situation is marked by fundamental paradox: whilst education is critical to advancing sustainable development, a good deal of conventional educational policy and practice pays little or no attention to the issues of sustainability that will dominate living in the 21st century. There is therefore a significant gap between the powerful *potential* of education to advance sustainable development, and much current educational policy and practice which can promote unsustainable rather than sustainable living. Hence urgent calls for the reorientation of education.
- At the same time, in the sustainable development debate, the key role of education in realizing sustainable development is often ignored, downplayed and underestimated - or viewed in isolation from the other instruments of change. In this debate, education is rarely regarded as a major factor in making the world more sustainable, and its potential is overlooked.

- The Education for Sustainable Development (ESD) community, and the sustainable development (SD) community have both emerged strongly since the Rio Summit of 1992. Whilst they are pulling in the same direction, significant opportunities for synergies, mutual learning and enhanced effectiveness are largely not recognized and tend to be missed.
- ESD means and implies far more than those working outside the ESD field often perceive it to mean – it offers a renewed vision for educational policy and practice fully in tune with the needs and issues of the 21st century.
- However, the role of education - even amongst sustainable development experts - tends to be narrowly interpreted and seen as confined to such areas as basic literacy and education for all (EFA).
- The fundamental challenge is this: *How can education more strongly impact sustainable development - and sustainable development be embedded at the heart of education and learning - so that there is both mutual benefit and accelerated positive effect, sufficient to win breakthrough towards an economically secure, ecologically stable and socially just world, way into the future?.*

Section 2. Education for Sustainable Development

- The ESD movement, and related educational movements, are concerned with identifying and advancing the kinds of education, teaching and learning policy and practice that appear to be required if we are concerned about ensuring social, economic and ecological viability and well-being, now and into the long-term future.
- There is no change without learning, and no learning without change.
- Learning can entail progressively deeper levels of engagement, between simple learning such as of factual content, and higher orders of learning which involve deeper reflection and can be transformative, involving change of personal frame of reference or worldview.
- These levels are associated with different learning and teaching methods: from *transmissive* (which is dominant in most educational systems), towards *transactional* which is more interactive and participative, and finally *transformative* which leads to deeper personal and social change.
- Higher order learning can lead to the development of *sustainability competencies* characterized by such qualities as an anticipative perspective and future orientation, an ability to think critically, creatively and systemically, an action competence, an ethical sensibility, and ability to manage in conditions of change, uncertainty and risk.
- The four main categories of educational/learning strategies that can be employed to advance sustainable development (whether advanced by ESD practitioners or by SD practitioners) are Information, Communication, Engagement, and Capacity Building. These can be seen as a progression in the ability, capacity and motivation of the individual, group, community or institution to participate effectively in owned change.

Section 3. Reviewing the post 2015 debate

The role of education and learning as reflected in key sustainable development reports

- Education tends to be equated with - and limited to - 'Education for All', that is, the right to basic education, normally in the formal sector.
- The role of non-formal, informal and life-long learning for SD is greatly underplayed.
- The recognition of education and learning as a positive force and driver in the achievement of SD goals and SDGs is very largely unacknowledged.
- Whilst 'transformation' of policy and practice is often mentioned, the reports tend not to recognise that transformation is a learning process, or recognise the role of education in facilitating transformational learning.
- The role of education and learning are similarly underplayed as regards their key role in translating SDGs into terms that are meaningful and actionable and engage different groups and cultures.
- The SDG agenda needs to recognise the vital role of education and learning as a cross-cutting issue and essential vehicle for realising sustainable development across *all* SDGs.
- Further, SDGs relating to education must include - but also go beyond - EFA and basic educational entitlement to reflect wider sustainable development outcomes. A possible outline is:

'Reorient formal and non-formal education policies and programmes towards supporting sustainable development. *To achieve universal and life-long sustainability literacy, encourage government, and formal institutional and non-formal education policy makers to evaluate how far*

sustainable development principles and participative pedagogies are reflected in educational purposes, policy, provision and practices, as a key part of access to quality education for all. Encourage media in all forms to devote improved and more extensive coverage of sustainability related issues and stories, to promote widespread critical understanding and engagement.'

Section 4. Sustainable change: ESD as key to SD

- Whilst the SDGs are deeply challenging, the instruments intended to achieve them are presented as: policy, assistance, monitoring, finance and incentives, and legislation and regulation. These are necessary, but not sufficient.
- Unless stakeholders, policy makers, legislators, businesses, agencies, NGOs, media and civil society are involved in learning processes, the proposed SDGs will not be achieved. This is because change cannot happen without learning.
- Change towards sustainability needs itself to be sustainable, and education and learning is central to this process.
- ESD can operate in two modes- *remedial* – which helps limit damage and develop new practices that can address and ameliorate issues across human activities, rendering them 'less unsustainable'; and solutions-led *preventive (or curative)* mode which is about building a sustainability oriented culture which 'designs in' positive solutions and synergies in the first place - developing resilient systems which manifest economic, social and ecological health and wellbeing through a continuous and dynamic learning process .
- Globally, the policy-makers, politicians, scientists, technicians, engineers, economists, bankers, law makers and legal experts, farmers, industrialists, media personnel, academics and researchers, transport industry, teachers and so on – all professional groups – need to attain a level of sustainability literacy consistent with their impact in and on the world, through pre-service and in-service education and training.
- Necessarily, this involves a re-thinking of the *purposes, policies, provision and practices* of much current education and learning to fit the realities and conditions of the 21st century.

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1. Context

'The destiny of people and planet rests with human choice: the ways we respond to the challenges of unsustainability and act to shape a sustainable planetary civilization.' (Rosen et al 2010:14)

Introduction

It is widely known that - seen from a global perspective - humanity is now in a critical position without precedent in our long history (Randers 2012, Assadourian *et al* 2013). It's decision time. In the next few decades, collectively we will either choose

a future that sustains us and the planet into the foreseeable future, OR one marked by worsening crisis and disruption at all levels, for us and succeeding generations. We are in the year 2014, and we are facing a decisive fork in the road. Whilst options narrow as the years go by, there is a growing consensus and realization that our current pathway is a dangerous – and possibly terminal - one. So decisions that we take, individually and collectively over the next several years will either edge us farther down this road, possibly irretrievably, or - by a historic effort - divert us onto a pathway towards a more secure future.

Over the last forty-plus years since the UN Conference on the Human Environment of 1972 held in Stockholm, there have been a large number of authoritative reports detailing worrying signs of global change, and correspondingly, high level international agreements and declarations designed to advance development pathways which are more sustainable. Following Rio+20, there is 'unprecedented worldwide engagement in shaping the post-2015 agenda', (*Global Thematic Consultation on Environmental Sustainability 2013: i* – see below) manifested in key reports and renewed dialogue.

Yet the crises continue and become ever more intertwined. It is as if we are becoming better at recognising and monitoring the crises whilst, at the same time - like dazed rabbits caught in the headlights – insufficiently able to change our collective thinking and behaviours which feed them. This is a problem of individual and societal learning, or rather, non-learning. Conversely, futurist Paul Raskin argues that, 'The shape of the global future rests with the reflexivity of human consciousness – the capacity to think critically about why we think what we do – and then to think and act differently'. (Raskin 2008: 469). So the assumption behind this paper is as follows:

The quality of the human and biospheric future depends on our capacity and ability to learn and change.

The purpose of the paper is to unpick and substantiate this statement, and to illuminate the critical role of learning and education – interpreted here in a broad sense – in securing development which is more sustainable. And to argue that sustainable development is not itself sustainable (that is, lasting and secured), unless relevant learning (see Box 1) amongst all stakeholders is central to the process. In this way, there is still a strong possibility we can *win the future we want*. But in the absence of such learning – and this is the single-most important point in this paper - we will then get the 'future we deserve' and nobody will want.

Box 1: What is learning? This paper emphasizes the importance of learning, which is commonly seen simply as the 'acquisition of skills and knowledge through experience or study'. But it's important to go a little deeper than this definition. Learning is a response by the individual or group to external change or feedback. This has two aspects: first, *meaning making*, i.e. making sense of the change, and secondly, making some internal adjustment or (in systems terms) '*correction*' to take account of the change, such as acquiring a new understanding or perspective, or a modification or shift in assumptions or beliefs. The changes and challenges that sustainability issues present a profound learning challenge – including *unlearning* some established patterns of thinking and behaviour, *re-learning* sustainable patterns where appropriate, and *new learning* to be able to recognise, create and engage with necessary alternatives. Where this occurs at a deep level, it is called *transformative learning*. Learning occurs at all levels: individual, organisational, and social. Note: there is no change without learning, and no learning without change.

Change towards sustainability can be advanced through a number of means or instruments:

- policy, governance and agreements
- planning and legal regulation
- financial incentives and penalties
- information and campaigns

And of course, education. But there is a significant difference between the above instruments and education: the *latter can enhance the effectiveness of each and all of them* through developing informed engagement, agency, and empowerment amongst all affected stakeholders. Also, through unlocking and fostering their creativity, ideas, abilities and enthusiasm. More and more people have come to realize that 'business as usual' is no longer tenable, and seek constructive alternatives – an energy that education for sustainable development (ESD) can release constructively.

There is a further and important qualitative difference between education and other instruments of change: whilst they are often only effective for as long as they are in operation because they are externally applied, education can build lasting change - that is, *sustainable change*, because it is owned by the learner. Whilst other instruments tend to treat symptoms of unsustainable activities and behaviours, only education and learning can reach hearts and minds, and therefore address root causes.

Education is claimed as 'the bedrock of sustainable development, contributing to its social, economic and environmental dimensions', underpinning peace and security and 'creating a lasting impact on health and gender equality, and leading to safer, more resilient and stable societies' (UNICEF 2013: 2). Further, reflecting consensus in the international quality education community, it is claimed that 'the provision of education contributes to the eradication of poverty, the promotion of social cohesion, good governance and participatory citizenship, and improved health and gender equality' (UNICEF 2013:3).

Yet the key role of education in realizing sustainable development is often ignored, downplayed and underestimated, or viewed in isolation from the other instruments of change. Two of the conventions coming out of the 1972 Rio UNCED conference, the Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC), developed communication, education and public awareness (CEPA) strategies. In addition, the United Nations Convention to Combat Desertification (UNCCD) established an awareness raising, communication and education (ARCE) unit. However, education has not played a significant role in the programmes relating to the conventions (Sarabhai et al 2012). As Sarabhai notes (2012:167), education 'is rarely seen as a major factor in making the world more sustainable'. This is part of a larger paradox - which is looked at below.

Facing the paradox

This section paints some of the background to the current situation and the paradox it presents. An obvious point is that this debate is not new. The first pictures from space – of 'Earth rising' taken from Apollo 8 in 1968 – were a trigger for a kind of emergent global consciousness that has underlain a persistent debate and concern ever since. This dramatic view of our sole home was picked up in the 'Only One Earth' rhetoric of the 1972 Stockholm conference, in the seminal 'Limits to Growth' reports from 1972 onwards, and notably in the Brundtland Report of 1987 - which opens chapter 1 with, 'The Earth is One, but the world is not' (p27). Brundtland wasn't the first report to mention 'sustainable development' (the World Conservation Strategy of 1980 had already advanced the idea) but it put the concept firmly on the map of international and political discourse. Accompanying this view was recognition that crises and issues could neither be understood nor addressed in isolation:

These are not separate crises: an environmental crisis, a development crisis, an energy crisis. They are all one. (WCED 1987:4)

This was anticipated earlier by the Club of Rome which coined the term 'world problematique' referring to the intermeshing of key issues whereby each affects the other and the whole (Peccei, 1982). The key point is that we live in a systemic world, characterized by complexity, uncertainty, interconnection and interdependence, where at some level, 'everything is related to everything else' (Commoner 1971). This hyper-interconnectivity has been accentuated in recent years by the rise of communication technologies and globalized trade and culture. Yet the majority of people, institutions and governments tend to think and work in accustomed and familiar patterns that neither recognise wider consequences and effects of decisions and actions, nor take real account of the environment or of the future. Back in '87, the Brundtland Report called for a 'vast campaign of education, debate, and public participation' to secure changes in human attitudes (WCED 1987:23). It hasn't happened. Rather, change expert Otto Scharmer suggests that throughout society there is a 'massive institutional failure: we haven't learned to mold, bend, and transform our centuries-old collective patterns of thinking, conversing, and institutionalizing to fit the realities of today' (Scharmer, 2009: 3).

Yet at the same time, at international level there has been and continues to be significant effort to advance the thinking, policies, tools and actions that can lead toward the more sustainable development pathway, and particularly since the first Earth Summit held in Rio de Janeiro in 1992, as a follow-up to Brundtland. This is evidenced in the considerable activity and discussion around the post-2015 agenda and in anticipation of the Sustainable Development Goals (SDGs).

Now, as the Decade of Education for Sustainable Development (DESD) ends, we are faced by a major paradox; one that must be resolved urgently if we are to have any real chance of assuring a more sustainable future. It is this: efforts to address global sustainability through the accords and reports - outlined above and detailed below - are without precedent. Sustainable development remains big news – an inescapable agenda, and we have no viable alternative. Nonetheless, the indicators of economic, social, and particularly of ecological sustainability, remain largely headed in the wrong direction. The various current 'post 2015' reports (see section 3 below) give better analyses of this paradox than is possible or necessary here.

Rather, this paper's contribution centres on one part of the paradox: *the relationship between education and learning for sustainable development (ESD) on the one hand, and sustainable development (SD) on the other.* And notably, the relationship between the ESD and SD communities, both having emerged and grown, particularly since the Rio Summit of 1992. They are pulling in the same direction, but often in isolation of each other, so significant opportunities for synergies, mutual learning and enhanced effectiveness are largely missed.

The importance of learning and community involvement is well recognized in the field of natural resource management and interest in resilient socio-ecological systems (Cundill and Rodela 2012), but largely this work tends to operate outside ESD discourse and practice, and vice-versa. This is a problem of different communities of practice, usage of different terms, different working contexts, and lack of communication – which this paper attempts to address. But it is also a problem of misperception: ESD means and *implies far more* than those working outside the ESD field often perceive it to mean. As UNESCO states:

ESD is far more than teaching knowledge and principles related to sustainability. ESD, in its broadest sense, is education for social transformation with the goal of creating more sustainable societies. ESD touches every aspect

of education including planning, policy development, programme implementation, finance, curricula, teaching, learning, assessment, administration. ESD aims to provide a coherent interaction between education, public awareness, and training with a view to creating a more sustainable future (UNESCO, 2012:33).

Hence, as UNESCO has stated, ESD can be seen as offering a renewed vision for educational policy and practice as a whole. Yet the role of education - even amongst sustainable development experts - tends to be narrowly interpreted and limited to such areas as basic literacy and education for all (EFA). These are clearly important, and much has yet to be done to meet the goals of EFA and education related MDGs (UNICEF, 2013). However, education and learning has a much bigger additional potential role. This is a serious issue as consequently, many of the key sustainable development reports (section 3 below) underplay or omit entirely the role and potential of ESD. Alternatively, they do not recognise the potential of ESD to enhance and support other instruments of change, but see it as a separate category. At the same time, however, in wider society there has been a rise of interest in learning, and particularly the role of social learning in facilitating the need for adaptation to a rapidly changing world, and this affords an opportunity for heightened communication.

Curiously, this problem of omission in SD is echoed in educational discourse - but conversely. Key policy papers, debates and conferences on the future and purposes of education, whether national or international, often miss *any* reference to the wider and critical socio-economic and ecological context that will directly affect the lives of both this generation and of those to come. This is a striking and grave omission, not least as education is in essence about preparation for life; further it undermines the otherwise valid maxim that education is 'part of the solution'. It is for this reason that UNESCO and many leading commentators have, for some years, been calling for transformation in educational thinking and practice, whilst the vision of the Decade of ESD was 'a world where everyone has the opportunity to benefit from education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation' (UNESCO 2005:6).

However, we are in an undesirable situation where much sustainable development discourse and policy underplays the role of education, whereas much education discourse and policy underplays – or ignores – sustainable development. Meanwhile, 'actors in ESD' and 'actors in SD' tend not to communicate with each other. The DESD has made a major and highly important impact in addressing and ameliorating this pattern, but it is still manifest. Hence, in the 'Future We Want' document resulting from the UN Conference on Sustainable Development (Rio+20) in Rio de Janeiro, Brazil, in 2012, Member States agreed, 'to promote education for sustainable development and to integrate sustainable development more actively into education beyond the United Nations Decade of Education for Sustainable Development': in other words after twenty years, there is still a big job to do.

The challenge is to meet this fundamental question:

How can education more strongly impact sustainable development - and sustainable development be embedded at the heart of education and learning...

... so that there is both mutual benefit and accelerated positive effect in wider society, sufficient to win a breakthrough towards an economically secure, ecologically stable and socially just world, way into the future?

First, however, some key ideas about ESD are set out to inform the later parts of the paper.

2. Education for Sustainable Development

What is ESD? - mapping some key ideas

For many decades, people have been developing educational thinking and practice intended to make a positive difference to the world in terms of trying to create the conditions for betterment - including universal literacy, respect for human rights, equity, wellbeing, economic health, and ecological security and integrity. Particularly since the Rio Earth Summit of 1992, and Agenda 21 - which in chapter 36 laid out the challenge of educating for a more sustainable society - an international 'education for sustainable development' (ESD) movement has strongly emerged, which draws on longer established approaches such as environmental education, conservation education, development education, human rights education, and global education. This movement is concerned with *identifying and advancing the kinds of education, teaching and learning policy and practice that appear to be required if we are concerned about ensuring social, economic and ecological viability and well-being, now and into the long-term future.*

This calls for a particular quality and orientation of educational and learning policies and practices, across all societies and contexts. UNESCO defines ESD as education which 'allows every human being to acquire the knowledge, skills, attitudes and values necessary to shape a sustainable future' (UNESCO website). This is sometimes termed 'sustainability literacy' (Stibbe 2009). UNESCO summarises the 'essential characteristics' of ESD as shown in Box 2. So

programmes and policies that reflect some or all of these characteristics can be said to manifesting ESD – even where this term is not used or recognized by policy makers or practitioners (and such recognition is not a condition of good practice).

Box 2: Essential characteristics of education for sustainable development (UNESCO, 2005).

- is based on the principles and values that underlie sustainable development;
- deals with the well-being of all three realms of sustainability – environment, society and economy;
- promotes lifelong learning;
- is locally relevant and culturally appropriate;
- is based on local needs, perceptions and conditions, but acknowledges that fulfilling local needs often has international effects and consequences;
- engages formal, non-formal and informal education;
- accommodates the evolving nature of the concept of sustainability;
- addresses content, taking into account context, global issues and local priorities;
- builds civil capacity for community-based decision-making, social tolerance, environmental stewardship, adaptable workforce and quality of life;
- is interdisciplinary: no one discipline can claim ESD as its own, but all disciplines can contribute to ESD;
- uses a variety of pedagogical techniques that promote participatory learning and higher-order thinking skills.

These characteristics can be interpreted in ways which are culturally appropriate in any particular context, in relation to all learning situations whether formal, non-formal and informal, and at scales – individual, organisational and professional, community and society. As Wals states (2012:11) : ‘Those learning in the context of ESD include multiple groups in society, from people in formal education settings to facilitators of multi-stakeholder change processes, from network coordinators and policy-makers to administrators, funders and members of the private sector.’ So learning occurs in different arenas, which often involve different learning methods and media (Box 3).

Box 3: Different arenas education and learning

formal education and learning – applies to school, university and college situations and associated internet provision, and is characterised by set curricula and assessment

non-formal education – applies to learning situations outside formal systems, and may be provided by organisations such as botanical gardens, zoos, museums, youth and adult learning services

informal education and learning – is that which goes on in the home or at work, or through community groups, public health services, media and social networking, entertainment etc.

However, UNESCO is clear that currently, a good deal of mainstream educational and learning policy and practice supports *unsustainable* lifestyles by default, and therefore stresses the need for reorientation towards sustainable development. Similarly, UNECE states that:

Transformation of educational systems...is essential because our current systems have not supported sustainable models of development.....change is needed to ensure that the system provides education that predisposes learners to consider sustainability across their life choices.
- UNECE Expert Group (2013:52)

So it important to clarify what education and learning which *is* reoriented towards ESD looks like. This is employed later in the paper to help analyse the strengths and weaknesses of the key reports and policy documents reviewed (Section 3). There is a very large literature on the nature of ESD, but for our purposes, some key ideas are shown below. The UNESCO ‘essential characteristics model’ (Box 2) is helpful in this task, but some minimum detail is now mapped out, to inform later discussion in the paper.

The following simple ‘C’ model helps identify the direction of ‘reorientation’ towards ESD. As a starting point, any educational policy or programme can be evaluated in terms of how far it takes account of:

Context – does its stated purpose and boundaries of concern embrace the wider context of sustainability and futures?

Congruence – does it recognize and reflect relationships and connectivity, reflecting the systemic nature of the real world and the current threats and opportunities this presents?

Culture – is it sufficiently attuned to the culture in which it is located, and to the existing values, understanding and needs of the learners?

Criticality – does it examine and weigh dominant assumptions and values reflexively in relation to building a more sustainable future?

Commitment – does it engage with the ethical dimensions of issues to facilitate building an ethos of critical commitment and care?

Contribution – through this policy and programme, will the learners, outputs and learning outcomes of the policy or programme make a positive (or negative) difference to sustainable development?

Each question requires evidence. Further, Box 4 offers a simple practical model by which any educational policy or strategy operating at any system level can begin to be evaluated and re-thought in terms of how far it currently contributes to sustainability education, and how far it can make a stronger contribution.

Box 4: Reorienting education through the four R's – beginning the discussion

Evaluating educational policy or programmes in relation to the sustainability agenda:

- * What is of real value that we need to **keep**? Elements which are useful, valid, up to date and relevant: **Retain**
- * What might need **modification**? Elements are partly all the above – but need some updating or revision: **Revise**
- * What elements, if anything, might we need to **abandon**? They are outdated, counter to sustainability, or no longer relevant or valid: **Reject**
- * What **new ideas**, aims, concepts, principles, methodologies, working methods, pedagogies, etc. are needed? There is a need to innovate and bring in new ideas: **Renew**

- Sterling (2012)

Keywords that typically characterize ESD are: participative, holistic, interdisciplinary, iterative, life-long, participative, futures oriented, and values based. There is an emphasis on critically reflective thinking, systems thinking, multi-method pedagogies, real-world inquiry and practical application.

UNESCO recognizes that such education should lead to higher-order learning (UNESCO 2005). But it is helpful and realistic to recognise that ESD can occur at progressively deeper levels of engagement. This makes a distinction between different 'orders of learning' (Bateson 1972) that is, between simple learning, such as of factual content, and higher-order learning which involves a personal change of frame of reference or worldview (see Box 5). This has direct relevance to how ESD can be employed as a change strategy (see 'Change strategies and ESD' below).

Box 5: Forms and stages of ESD: a model of progressive engagement and deeper learning

ESD I - Education/learning 'about' sustainable development and change: this has an information and content emphasis and involves cognitive learning. There may also be a skills and technical solutions element. Through this stage of ESD, learners will acquire new knowledge, but are not likely to experience value change or lasting behavioural change – the learning is often *accommodated* into their current frame of reference or mind-set. This equates to 'first order learning' (cognition)

ESD II - Education/learning 'for' sustainable development and change: builds on knowledge and understanding but includes deeper examination of existing assumptions, values and beliefs of individuals, communities, organisations and wider society to facilitate critical reflection on alternatives given the urgency of sustainability. Through this stage of ESD, learners are likely to experience reflexivity - a critical questioning and expansion of their thinking - and deeper affective learning and sense of engagement. This equates to 'second order learning' (meta-cognition)

ESD III - Education/learning 'as' sustainable development and change: there is an emphasis on capacity building, empowerment and action competence, stressing the ability to engage creatively, to manage successfully in conditions of uncertainty, complexity and ambiguity, to reflect critically and learn iteratively over time from engaging with real world experience. This may involve 'third order learning' where a change of mind-set occurs towards one which is more holistic, connected, agile and open in outlook (epistemic change).

Each of these forms and stages of ESD - emphasising respectively Knowledge, Values, and Capability - has value. The first form, acquiring some basic sustainability literacy, is important, but may well be insufficient given the deep challenges of sustainability. The second form is vital to individual and social change, but it is the third form – capability – *building on the first two*, that makes significant difference both to the learner and the real world. Each stage is associated with particular pedagogies, that is, teaching and learning approaches or methods. The first is often largely *transmissive* or instructive – involving the transfer of knowledge; the second is more *transactional* – involving dialogue and inquiry; the third is potentially *transformative* – where a change of perception and frame of reference arises from full engagement of the learner. It should

be recognised that the 'learning journey' through these stages – whether for an individual, an organisation, or community – is progressively challenging because at each stage, more is asked of the learner as their deeper beliefs, assumptions and values are brought to the surface.

The ESD journey nurtures competencies which, arguably, are necessary both to the possibility and flourishing of sustainable development at all levels and sectors of society. Much debate has arisen recently about the nature of ESD competencies with a good deal of consensus arising. Key *sustainability competencies* commonly identified include such areas as:

- Anticipative perspective and future orientation
- Ability to see connections and think critically, creatively and systemically
- Interpersonal and collaborative skills
- Strategic and action competence towards sustainability
- Ability to manage in conditions of change and uncertainty
- Normative competence embracing values and ethical principles

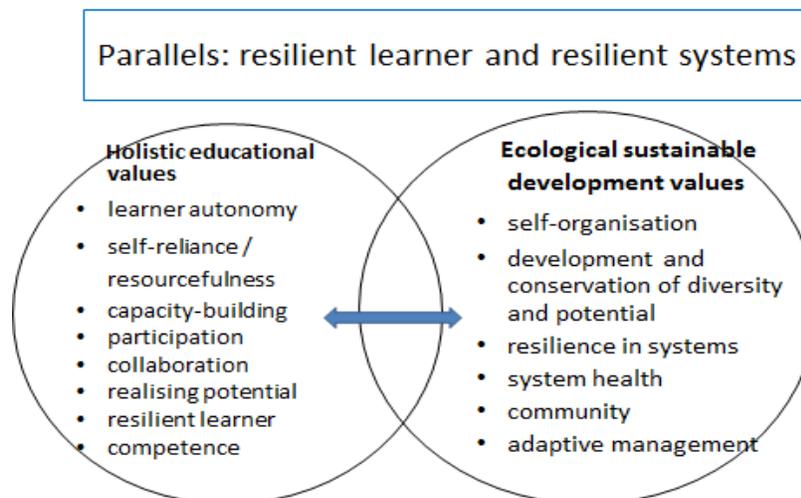
(UNECE 2012, Wiek *et al* 2011)

These competencies at the level of the individual are developed through education and learning programmes which may include *but go beyond* transmissive ESD I forms. Translated to the group or community level, well developed ESD policies and programmes will lead to most or all of the following *outcomes*:

- unlock and foster creativity, enterprise, resourcefulness and resilience
- build competence, confidence and willingness to engage
- raise awareness, build understanding and shift attitudes and values in favour of sustainability
- promote reflection on behaviour and facilitate practical change
- help build social capital and promote partnerships and collaboration
- promote participation and engagement amongst target groups and stakeholders
- create mandate both for policy development and implementation

Here, we can see a *direct relevance to sustainable development* in terms of building personal and community capacity, and social conditions which are conducive and necessary to activating change - which itself is sustainable over time. But the parallel between ESD and SD goes further. There is a resonance between between the holistic educational values often associated with ESD relating to developing resilient learners; and the kinds of values reflected in the SD community, relating to developing resilience and adaptive management in socio-ecological systems (Folke *et al* 2002, Sterling 2011) (see Figure 1). Both are essentially about process, emergence and diversity, rather than about product, control and homogeneity. This underlines the mutual interest between the ESD and SD communities - and the real potential for greater synergies and collaboration.

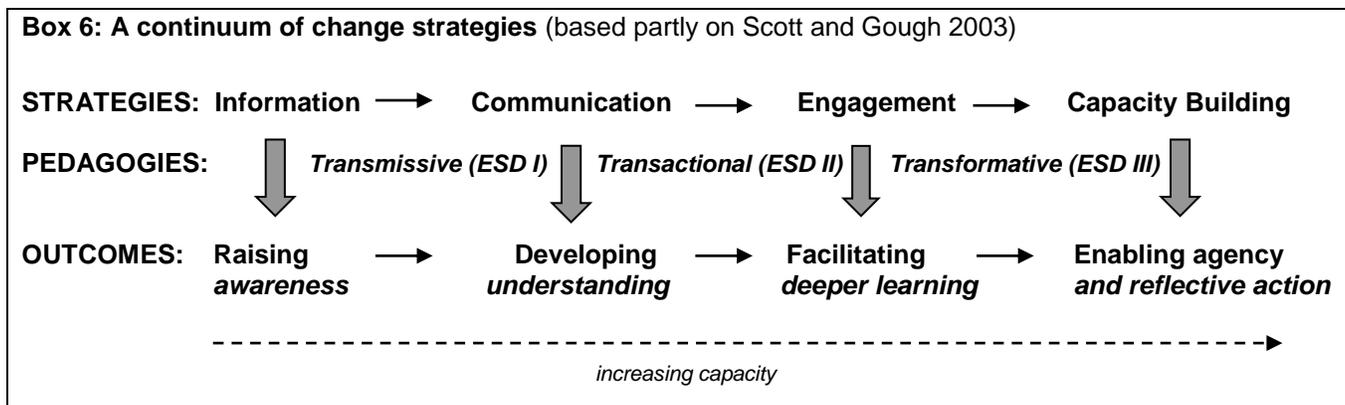
Figure 1 Parallels between ESD and SD values



The next section looks at this relationship further by looking at strategies for change.

Change strategies and ESD

This model maps out four main categories of educational/learning strategies that can be employed to advance sustainable development (whether advanced by ESD practitioners *or* by SD practitioners). The three forms of ESD and associated pedagogies (Box 5 above) are shown, and the four kinds of main outcomes also indicated.



Information is the one-way dissemination of sustainability messages, aimed at raising awareness of issues, and this includes campaigns. *Communication* takes more account of the existing knowledge and values of the target group and may involve exchange and dialogue, although assumptions amongst both teachers/leaders and learners may not be questioned. *Engagement* involves people in their own learning, and second order 'learning about their learning' - developing not only understanding and skills, but critical questioning and clarifying of assumptions, values and commitments. *Capacity building* enhances individual, group, community and institutional ability to participate effectively in owned change, through building the kinds of competencies and outcomes outlined above.

Each strategy has value depending on the context in which it is applied. However, the idea of continuum - represented by the horizontal arrows - is to suggest that each strategy, from left to right, can contribute to the next, that is, a shift towards deeper learning and engagement moving from left to right across the spectrum. The capacity of the learner increases as deeper learning takes place.

It is clear from educational research that just providing information (first strategy shown above), that is, raising awareness of sustainability issues may make little difference to people's real understanding, caring or sense of engagement. It might be a first step, but clearly – taking climate change as a prime example – it is important to develop agency and engagement if we are to make significant progress in winning 'the future we want'.

As noted in the diagram above (Box 6), the four strategy modes are relevant whether change is sought by ESD practitioners *or* by SD practitioners: therefore there is *significant opportunity for better and closer dialogue, collaboration and synergy between these two communities*. The paper now employs some of this mapping of ESD as a kind of benchmark to critically review some key international reports – both those on ESD, and those on SD - to see how far the contribution of ESD is properly recognized.

3. Reviewing the post 2015 debate

The role of education and learning in SD reports

This section looks at how far the role of education and learning is recognized as key to the realization of broader sustainable development goals (SDGs). The analysis is based on the logic that learning is inherent to personal and social change.

An Action Agenda for Sustainable Development – Report for the UN Secretary-General, (June 2013)
<http://unsdsn.org/files/2013/06/130613-SDSN-An-Action-Agenda-for-Sustainable-Development-FINAL.pdf>

General comment: this report is an exploration by the international Leadership Council of the Sustainable Development Solutions Network (SDSN) 'of what an integrated, concise, science-based, and action-oriented agenda for the world might look like' (pviii) in the context of the post-2015 global sustainable development debate. It lays out 'ten priority challenges of sustainable development' including ending poverty, development within planetary boundaries, gender equality, health and

wellbeing, curbing climate change, and securing ecosystem services and biodiversity. One of these ten priorities is, 'Ensure effective learning for all children and youth for life and livelihood'. Beyond this category, there is limited recognition of the role of learning in helping meet other challenges. The report stresses the need for 'social mobilization and political leadership'(px) and puts faith in 'well-crafted SDGs' which will 'help guide the public's understanding of complex sustainable development challenges, inspire public and private action, promote integrated thinking, and foster accountability' (px). The potential of education and learning in supporting such mobilisation is not recognised.

Key points on education: The priority entitled, 'Ensure effective learning for all children and youth for life and livelihood' covers the need for universal access to quality education. There is an emphasis on schools, on skill development and vocational education. The one reference to adult education concerns literacy. Whilst the measures recommended contribute to sustainable development, there is very little explicit recognition of ESD, other than a suggestion that, 'Schools should...teach the SDGs to promote the transition to a sustainable development trajectory in every country.' (p12). There is no recognition that ESD policies and programmes could play a vital role in achieving the other nine SDGs proposed in this report.

The Global Thematic Consultation on Environmental Sustainability in the post-2015 Development Agenda, (July 2013)
<http://www.worldwewant2015.org/node/360463>

General comment: reflects passion and determination for change, which it sees as necessarily 'transformational' in all areas, specifically - Governance and accountability, Local action and empowerment, Education, and Economic transformation. Strong emphasis on integrated approach.

Key points on education: there is recognition of the potential of education, but also that 'education systems need to be radically changed' p22. It resonates with ESD III (see above) yet there is insufficient clarity about how education systems can be transformed so that they can, in turn, be transformative in their effects - which is rightly seen as critically important. At minimum, there should be acknowledgement of the need to change the current dominant *purposes* of education towards cultivating sustainability and wellbeing. (From a systems point of view the 'purpose' of any system is key to understanding its functioning). Some outline of desirable learning outcomes and competencies that education should foster would also help further discussion and action. The whole paper would be strengthened if the role of education and learning was acknowledged *within* the four key areas outlined: Governance and accountability, Local action and empowerment, Education, and Economic transformation.

These can only be 'drivers of change' if sufficient learning takes place, otherwise old assumptions, policies and patterns of activity will remain. The critical issue, which is not really addressed, is how such learning can be encouraged, supported and scaled up.

United Nations Secretary-General's High-level Panel on Global Sustainability (2012) *Resilient People, Resilient Planet: A future Worth Choosing*, New York: United Nations.
http://www.un.org/gsp/sites/default/files/attachments/GSP_Report_web_final.pdf

General comment: This report shows a somewhat stronger recognition of the role of education and learning as essential to SD: 'Sustainable development is not a destination, but a dynamic process of adaptation, learning and action. It is about recognizing, understanding and acting on interconnections — above all those between the economy, society and the natural environment.' (p6). Strong emphasis on integrative and systemic thinking taking account of interconnections both between areas of concern and proposed ways forward – 'seeing the whole picture' (p15).

Key points on education: Despite the recognition of the importance of learning (above), the report does not then elaborate explicitly on how individual and social learning are central to delivery of many of the goals that are presented throughout the report. Apart from necessary references to better access to education, the potential of ESD is under-discussed, and just one recommendation refers to ESD (no 13, p38) 'Government and non-governmental entities should promote the concept of sustainable development and sustainable consumption, and these should be integrated into curricula of primary and secondary education.' This is part of a whole section on 'Empowering People to Make Sustainable Choices' but the centrality of educational processes, not least where it affects civil society - so that people have the understanding and ability to make such choices, or press for change where such choices do not exist - is virtually missing. Of the proposed SDGs, one recommendation (48, p73) states that 'such goals should galvanise individual and collective action' but again, the role of education in all its forms in embedding these ideas in public consciousness is not acknowledged.

From Green Economies to Green Societies: UNESCO's Commitment to Sustainable Development (2011)
<http://unesdoc.unesco.org/images/0021/002133/213311e.pdf>

General comment: Good to see education recognized as a key driver for progress towards more sustainable economies and societies, and the role of education reflected to some degree across the topic areas covered such as oceans and freshwater, climate change, and disaster preparedness. But rather uncritical regarding dominant socio-cultural and economic assumptions and models which contribute to unsustainability.

Key points on education: The report states that *'In green societies, education needs to be grounded on the values of peace, non-discrimination, equality, justice, nonviolence, tolerance and respect for human dignity'*. This is strong on human rights, but weak on environmental care and bioethics. The section on ESD (p16) would benefit from a clearer outline of the learning outcomes and competencies that would help address the need for 'active and ecologically responsible citizens and consumers who are prepared to address the complex global and local challenges facing the world today'. Some mapping of the stages of change from unsustainable societies towards green societies, and the role of learning in facilitating that change would be welcome.

Putting people and planet first: Concord – Beyond 2015. European Task Force Recommendations for the Post-2015 Framework (May 2013)
http://www.cidse.org/content/publications/rethinking-development/beyond-2015/beyond-2015_european_task_force_recommendations_post-2015_framework.html

General comment: A civil society and NGO paper of the European Task Force that proposes 21 global goals across four categories: inclusive social development, economic transformation, environmental sustainability and just governance. 'Meaningful participation and people's empowerment' is emphasised as one of three 'critical success factors' which, the report argues, apply 'across all goals, targets, goals and indicators' (p32).

Key points on education:

The report recognises the importance of education (including, but going well beyond 'education for all'):
'Adequate civic education programmes must be envisaged to enable an informed, critical and meaningful engagement and systems must be created or strengthened to allow civil society and individuals, particularly the most vulnerable, to participate fully – both in decision-making processes (such as in the elaboration of national sustainable development policy, plans and budgets) and in monitoring and reporting on progress made.' (p40). It also argues for more attention to learning outcomes in educational policy and programmes towards those *'values, behaviour and lifestyles required for a sustainable future'* (p32), thus echoing DESD principles. However, despite some cogent arguments and the quote above, the links between 'education and learning' on one hand and 'participation and empowerment' receives little attention. Further, the role of learning amongst all stakeholders in facilitating movement towards the key 21 goals laid out is not really addressed.

Summary comment on reviewed reports

These reports commonly share three weaknesses with regard to the role of education and learning:

- i) Thinking about education tends to be equated with - and limited to - 'Education for All', that is, the right to basic education, normally in the formal sector. Universal basic education is a necessary component of SD, but ESD offers a new vision, values, concepts, skills and methods for education as a whole, which is largely unrecognised here.
- ii) Non-formal, informal and life-long learning for SD is greatly underplayed, not least in terms of how the goals set out in the report can be addressed.
- iii) The recognition of education and learning as a positive force and driver in the achievement of SD goals and SDGs is very largely unacknowledged.

There is a good deal of common ground about the challenges facing us globally, and about their complexity, severity and urgency. There is much agreement that 'business as usual is no longer tenable', that integrated thinking and responses are required, and that this will necessitate 'transformation' in thinking, policies, structures and actions. But this should not be seen as a 'once and for all' process, but rather, on-going: Donald Schön, an expert in learning theory, asserts that in situations where there is no stability, 'we must become able not only to transform our institutions...we must develop institutions which are "learning systems" that is to say, systems which are capable of bringing about their own continuing transformation' (Schön 1973:30).

Transformation – a shift in perception, understanding, and ability to act differently – is *essentially a learning experience*, but there is very little attention given in these reports to cultivating basic sustainability literacy (ESD I above), let alone transformative capacity building (ESD III above). This is a serious omission. Further, the SDGs beg a critical question of *translation and scale*: what will the proposed SDGs *mean* to particular groups, to different cultures and contexts, from global

to national to regional and local scales? Again, education has a vital role in helping people translate very generic goals to more specific plans and actions appropriate to their current interests, understanding, role and context.

With this in mind, a revised or new SDG might be along the following lines:

‘Reorient formal and non-formal education policies and programmes towards supporting sustainable development. *To achieve universal and life-long sustainability literacy, encourage government, and formal institutional and non-formal education policy makers to evaluate how far sustainable development principles and participative pedagogies are reflected in educational purposes, policy, provision and practices, as a key part of access to quality education for all. Encourage media in all forms to devote improved and more extensive coverage of sustainability related issues and stories, to promote widespread critical understanding and engagement.’*

Further, education and learning has to be properly recognised as a cross-cutting issue and essential element of delivery across all prospective SDGs (TST 2013; UNICEF 2013).

The role of education and learning in ESD reports

The Bonn Declaration: UNESCO World Conference on Education for Sustainable Development held in Bonn, Germany on 31 March to 2 April 2009

http://www.esd-world-conference-2009.org/fileadmin/download/ESD2009_BonnDeclaration080409.pdf

UNESCO World Conference on Education for Sustainable Development: Proceedings

<http://www.esd-world-conference-2009.org/fileadmin/download/ESD2009ProceedingsEnglishFINAL.pdf>

General comment: The Declaration and Proceedings from the 2009 UNESCO Bonn conference present an impressive summary of the characteristics, current status and potential of ESD as an emerging and growing field, based on the discussions of 900 people drawn from nearly 150 countries.

Key points on education: One real strength of the conference was to look at ESD in relation to specific sustainable development issues, namely Water and Sustainability, Climate Change, Sustainable Lifestyles and Responsible Consumption, Disaster Risk Reduction, Food Security, AIDS and Health, Biodiversity, and Economics, demonstrating the importance of education in addressing these issues. In addition, workshops were held on *building partnerships*, including with business, media, and North-South linkages; *building capacity* for ESD, including the role of civil society and monitoring and evaluation of ESD; and improving the take up of ESD in the teaching and learning process in educational systems. Each workshop discussed the relevance and application of ESD to their topic area, what has been learnt to date, and how to move forward.

Although the conference recognised that much more needs to be done to realise the potential of ESD across all sectors, there is an optimistic note sounded in the Executive Summary (p8): *‘By dealing with the problems faced by humanity in a globalized world, ESD will shape the purposes and content of all education in the period ahead – ESD is, indeed, education for the future.’* There is therefore, some tension between ESD as a new paradigm or vision for education as a whole, or less ambitiously, as an important dimension of educational thinking and practice.

Learning for a Sustainable Future - Maximizing the synergies between quality education, learning and sustainable human development, John Fien/Inter-Agency Committee for the UN Decade of Education for Sustainable Development, June 2013

General comment: This paper covers the relationship between quality education, ESD and SD, and seeks to present as a coherent whole the need to extend access to quality education - and the need to prioritise the importance of education in addressing sustainable development challenges. It argues that education is an essential but under-utilized resource in addressing these challenges.

Key points on education:

The paper makes a case for the role of education in helping achieve the MDGs, but also links quality education with ESD by arguing that evaluation criteria for quality education should shift from ‘years spent in formal study’ to learning outcomes compatible with higher order learning and skills needed to contribute to sustainable development. Strong and well-argued cases are made for: re-assessing the relevance of the formal curriculum both to young people and sustainability; building on and scaling-up significant progress in the TVET and higher education sector particularly in relation to the green economy; integrating sustainable development contexts and learning processes into non-formal and informal learning particularly as regards employability for young people, health, and building on the concern and energy that many young people have with regard to shaping the future; and lastly, prioritizing the importance of education in addressing significant challenges such as climate change, disaster risk reduction, desertification, AIDS

and health, and sustainable consumption. A set of comprehensive recommendations follow. Although it does not explicitly acknowledge levels of learning this is a sound paper which underlines the transformative ability of education to change lives and people's prospects in relation to their circumstances and environments.

4. Sustainable change: ESD as key to SD

The SDSN's '*Action Agenda for Sustainable Development*' (reviewed above) details 'ten priority challenges of sustainable development', summarised here as: ending poverty, development within planetary boundaries, effective learning for children and youth, gender equality and human rights, health and wellbeing, improving agricultural systems, curbing climate change, resilient cities, securing ecosystem services and biodiversity, and transforming governance. These are proposed as SDGs - as vital goals to be achieved. Each SDG is broken down into three targets which are proposed as sub goals necessary to achieve the respective SDG. The means by which these are to be achieved are presented as: *policy, assistance, monitoring, finance and incentives, and legislation and regulation*.

The goals outlined here and reflected in other key reports are deeply challenging – the need for 'transformation' in values, in systems and activities is widely stressed. Yet unless stakeholders, policy makers, legislators, businesses, agencies, NGOs, media and civil society are involved in learning processes, the proposed SDGs will not be achieved. This is because change cannot happen without learning. For any positive social and economic change to happen towards SD - from micro to macro scale - people need to:

- a. Be *aware* that change is needed → otherwise why change?
- b. *Understand* something about the change involved → otherwise it will mean little
- c. Have *sufficient ownership*, agency and ability to make a difference → otherwise little can or will happen
- d. Have some *commitment* → or change will be short-lived

This is about developing capacity through learning, and it is key, for these reasons:

- Legislation, policy change, financial incentive and sanctions will have *some* effect, but if all affected stakeholders understand the change involved, particularly where this may be uncomfortable or demanding, these instruments are likely to be far more successful.
- Conventional instruments are only effective as long as they are applied. If they are withdrawn, people are likely to revert to former practices and behaviours: the change is not sustainable.
- Those involved in framing policies and practices may not themselves be familiar with sustainable development. Indeed, this is often the case. So reliance on policy makers and legislators to help implement SDG goals is risky without their understanding of and commitment to SD.
- Levered or enforced change without participation of stakeholders requires compliance; whereas participative change engendering a sense of ownership, self-interest, and agency is often self-perpetuating.

In essence, *change towards sustainability needs to be sustainable*, and education and learning is central to this process. This view is reflected in much of the high-level documentation that has arisen over recent years. For example, the 2005 meeting of ministers of the UNECE countries endorsed an ESD strategy which affirms that ESD:

...develops and strengthens the capacity of individuals, groups, communities, organizations and countries to make judgments and choices in favour of SD. It can promote a shift in people's mindsets and in so doing enable them to make our world safer, healthier and more prosperous, thereby improving the quality of life. Education for sustainable development can provide critical reflection and greater awareness and empowerment so that new visions and concepts can be explored and new methods and tools developed. (UNECE, 2005)

This kind of thinking on ESD illustrates a critical point. ESD can operate in two modes. One is *remedial*. Given the extent unsustainable policies and practices occurring across all sectors – for example, in agriculture, energy, business, housing, transport, production and consumption – education and training can help limit damage and develop new practices that can address and ameliorate issues. In reality, this might often mean making established modes of activity 'less unsustainable'.

However, the second mode is solutions-led and *preventive (or curative)*. This is about building a sustainability oriented culture which 'designs in' positive solutions and synergies in the first place. This is manifested through such areas as sustainable agriculture, green building, sustainable design, green chemistry, renewable energy, fair trade, ethical investment, the circular economy, ecosystem restoration, genuine participatory democracy, and the transition town movement. Whilst we certainly need to address and lessen existing problems (tackling unsustainability symptoms and damage limitation – remedial ESD), the real promise of *systemic sustainable change* comes from developing modes of living, and creating resilient systems which manifest economic, social and ecological health and wellbeing - through a continuous and dynamic learning process .

This mode of ESD is not only preventive, addressing directly the issues raised by unsustainable practices and behaviours, it is pro-active, creative and constructive. People engaged in these initiatives and movements can be said to be involved in

learning characterised by ESD III: education/learning 'as' sustainable development and change (see Box 5). This engenders a shift away from unthinking individualism, materialism, competition and consumption towards a more *relational* (some would say, *ecological*) worldview which is more connective, cooperative, holistic, open-minded, caring, engaged and future oriented.

Many key documents stress the need for a significant cultural shift if, collectively, we are to surmount the profound challenges of unsustainable patterns and attain a safe, healthy and liveable future for all. But as Rosen *et al* (2010:15) state, 'such a deep shift in values and institutions can only emerge as a collective project of global citizens for a Great Transition, a development that is far from guaranteed'. Realistically, it will not be possible, or indeed necessary, for entire societies to attain the deep level of change of outlook and practice associated with ESD III, but it is vital that sufficient people, particularly those in positions of influence and power, experience at least ESD II (involving a questioning of dominant assumptions and values), or ESD III (a shift towards a more relational worldview). The centrality of learning to developing effective leadership for sustainability is increasingly recognised in the business world (Courtice 2012). At the same time, the sustainability revolution, 'requires each person to act as a learning leader at some level, from family to community, to nation to world' (Meadows *et al* 2005:280). For this to happen everywhere, at least some basic sustainability literacy (ESD I) is crucial.

For developed countries, it is not a lack of education which is at stake - as there is some correlation between countries with high educational attainment and high ecological footprint (Orr 1994) - but education which makes a positive rather than a negative difference to sustainable development. Globally, the policy-makers, politicians, scientists, technicians, engineers, economists, bankers, law makers and legal experts, farmers, industrialists, media personnel, academics and researchers, transport industry, teachers and so on – all professional groups – need to attain a level of sustainability literacy consistent with their impact in and on the world, through pre-service and in-service education and training.

Let's put it very simply. The sustainable development agenda begs myriad 'what, why and how' questions, from the global scale to the local and micro scale. There is no blueprint. It is complex, contested, sometimes conflictual, and ways forward are diverse and emerging over time, through innovation, experimentation, research, collaborative effort, learning and reflection. To move towards more sustainable living patterns in conditions of uncertainty and complexity, people at all levels of society and in all sectors need to be empowered and engaged in this movement. For many, initial involvement is learning around these kinds of questions:

- what is this about?
- how does it affect me/us?
- why is change necessary or desirable?
- why should we change?
- how might we need to see things differently, or do things differently?
- how is our voice heard?
- how can we make a difference?
- what do we need to learn to make that difference?
- what have we learnt from making a difference?
- how can this be taken further?

This is how ESD begins. It is a life-long process and is in essence about building resilient and socially-responsible citizens, communities and economies within a context of healthy ecological systems. It is relevant to all, and needs to be made available to all.

Necessarily, this involves a re-thinking of the *purposes, policies, provision and practices* of much current education and learning to fit the realities and conditions of the 21st century. The following paragraph from the Global Thematic Consultation on Education in the Post-2015 Development Agenda indicates the kind of changes that are required:

In order to be relevant, education must prioritize the acquisition of knowledge, skills and competencies that are linked to twenty-first-century livelihoods, and must also contribute to shaping learners' attitudes and behaviours that promote social inclusion and cohesion as well as environmental sustainability. These skills include critical thinking, problem solving, conflict resolution, living and learning to live together in a multicultural world. Other relevant content knowledge should include environmental and climate change education, disaster risk reduction and preparedness, sustainable consumption and lifestyles, and green technical and vocational education and training (UNICEF 2013:7).

5. Reviewing evidence

This section considers the evidence that ESD makes the kinds of difference that are claimed – *does ESD advance sustainable development?* This implies two sub-questions, which should be seen separately: one relating to how far ESD has been *adopted* worldwide, and the second relating to its *effectiveness*.

Both issues hark back to the vision, aims and objectives of the DESD. With the end of the Decade upon us, regarding *adoption*, it has clear that it has only partly succeeded in its goal of integrating 'the principles, values and practices of sustainable development into all aspects of education and learning' and realising the vision of a 'world where everyone has the opportunity to benefit from education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation' (UNESCO 2005:6). But the massive ambition of this goal and vision was bound to result in shortfall. A good deal has been achieved, and many initiatives taken root worldwide, but inevitably, the work has to continue (Wals 2012).

The role of education does seem to be receiving more attention. For example, the UNESCO/UNEP Intergovernmental Conference on Environmental Education for Sustainable Development held in Tbilisi, Georgia, in September 2012, attended by Government representatives from 104 countries and international intergovernmental organisations and NGOs, affirmed that:

education is critical to achieve sustainable development and to foster green economies and sustainable societies, to overcome social and economic inequality and to promote inter and intra-generational solidarity, peace and responsible lifestyles. (UNESCO, UNEP, Government of Georgia, 2012)

The second sub-question concerns *effectiveness*, and here the DESD intended that ESD would 'encourage changes in behaviour that will create a more sustainable future in terms of environmental integrity, economic viability, and a just society for present and future generations' (UNESCO *ibid*). Again, this is a vast ambition, and it cannot be surprising if progress, even after ten years, is partial.

In evaluating the impact of ESD, there are a number of factors that complicate the issue.

Learning as process rather than product: as noted above, learning is a continuous process which can take place at a basic informational level, through to a transformational and deep level. Whilst successful work in ESD often takes place within fixed time frames, learning is rarely 'finished' as such.

Depth of learning, and time issues: whilst basic learning can be evaluated in terms of, say, what is known, deeper learning is far more difficult to evaluate as it concerns affective and valuative aspects of thinking and identity and can emerge long after any particular programme is finished.

Labels and interpretations: many programmes that reflect ESD principles are not called 'ESD' as such. The DESD sought to integrate ESD ideas and principles into policies and programmes, but the manifestations of such integration can blur any reference to ESD *per se*. It may be found in awareness campaigns, capacity building, knowledge transfer, corporate social responsibility, leadership training, adaptive management, environmental training, communication, community education, professional, vocational and technical skills training - and as a component of any established subject based programme in say engineering, science, business studies, health, law etc. Secondly, ESD is interpreted, adopted and adapted differently depending on cultural, organizational, and thematic contexts. This diverse manifestation of programmes which relate to sustainability education and learning in many ways a strength, but makes systematic and large-scale evaluation more difficult.

Funding: evaluation and research on ESD over the course of the DESD has tended to be small scale and localized. However, UNESCO has supported a Monitoring and Evaluation Expert Group (MEEG) throughout the DESD supporting a Global Monitoring and Evaluation Process and this has resulted in two key reports, which indicate that significant progress has been made in terms of seeding of ESD internationally and the effect this has had on assisting a re-thinking of purposes, content and pedagogies in education communities. As the second UNESCO report on the Decade (Wals 2012:84) states:

ESD is increasingly seen as a means to renew education, teaching and learning in ways that allow schools, universities, VET institutes, communities and businesses to deal with the challenges posed by sustainability and SD.

The report *inter-alia* also found evidence of increasing multi-stakeholder social learning in the context of ESD, bringing together private and public interests and blurring the lines between formal, non-formal and informal education, partly driven by ICT, and offering new avenues for the expansion of ESD. This report is based largely on evidence of the extent and interpretation of ESD internationally, although some evaluation of quality of ESD manifestation has been possible. Overall however, there is a lack of large-scale rigorous research on the effects of ESD. However there are country case study accounts such as 'National Journeys towards Education for Sustainable development' reports highlighting Chile, Indonesia, Kenya, the Netherlands and Oman (<http://unesdoc.unesco.org/images/0019/001921/192183e.pdf> (2011); Costa Rica, Morocco, South Africa, Sweden and Vietnam (<http://unesdoc.unesco.org/images/0022/002210/221008e.pdf>) (2013); and the Asia-Pacific region (Cambodia, China, Japan, Malaysia, the Philippines, Republic of Korea, and Thailand) (<http://pub.iges.or.jp/modules/envirolib/view.php?docid=4624> (2013). Some varied examples of ESD-related initiatives may be found in the Appendix.

6. Summary and conclusion

We need both the thinking and the feeling: to reframe public engagement, we need creative solutions in every sense. We need to win hearts and minds to achieve change.

Buckland, 2012: 61

Stepping back, it is clear that the evolving debate around sustainable development, particularly since the launch of Agenda 21 in 1992, is evidence in itself of a deep learning process amongst all sectors and players involved, as the need for questioning ingrained assumptions and practices has become clearer and the need for new pathways been recognised. Yet the key role of learning is curiously unacknowledged and underplayed in this discourse.

The global post 2015 reports frequently employ the word 'must'. For example 'sustainable development challenges must be addressed at global, regional, national, and local scales (*Action Agenda for Sustainable Development*, px); 'Each of us must be a part of the solution' p1 (*Resilient People, Resilient Planet*, p1). Whilst the word 'must' denotes that SD is imperative, we need to face up to the fact that for large numbers of people, there is either nil or minimal understanding or recognition of this unprecedented challenge. Yet, as UNESCO rightly states:

Sustainable development cannot be achieved by technological solutions, political regulation or financial instruments alone. Achieving sustainable development requires a change in the way we think and act, and consequently a transition to sustainable lifestyles, consumption and production patterns. Only education and learning at all levels and in all social contexts can bring about this critical change. (*From Green Economies to Green Societies, 2011*)

The global reports reviewed above, understandably, are addressed largely to governments, government agencies and high-level decision makers. As the reports emphasise, better governance is crucial. But policy and structural change has to be mandated, understood, supported, and its ramifications translated, adopted and implemented right across civil society. And wherever appropriate there should be meaningful participation in the decision making process, both influencing policy and holding policy makers at all levels to account where necessary. Without the participation and engagement of civil society in all its diversity, the SDGs will not succeed. And without inner change - in the way that many people perceive and think, and towards a more relational and holistic worldview - outer change in the form of policy change will never be enough.

'The major challenges to sustainability' write Moore and Rees (2013: 49), 'are in the social and cultural domain'. ATKisson adds (2011: 16), 'We *must* do sustainable development as though our lives depended on it – because increasingly, many people's lives do'. As far as sustainable – or unsustainable - development is concerned, we are all actors. ESD is not about 'telling people what to do'; it is about harnessing the power of ownership of ideas, of enlightened self-interest, of self-organisation, worldview change and leadership as powerful keys to the kinds of deep systemic change and building of resilience that sustainable development requires. It is essential to making and winning the 'Future we want'.

- Despite the successes of the UN DESD, we are in an undesirable situation where much sustainable development discourse and policy underplays the role of education, whereas much education discourse and policy underplays – or ignores – sustainable development. This has to change, and fast.
- ESD is not just necessary to introduce people to sustainability thinking, ideas and practices. Genuine and radical progress will depend on tapping and cultivating ideas, imagination, creativity, and enthusiasm and engagement of as many people as possible across all walks of life and sectors. Every person, adult and child, without exception, is a stakeholder in the future of the Earth and the world. ESD can unlock their contribution – it is less about inculcation, and more about *cultivation*.
- Learning is an inherent part of change, whether at the level of the individual, the group, the organisation, or entire societies. Where there is no learning, there is no lasting change. Sustainable development seeks lasting change in a desirable direction. So where there is no learning, sustainable development cannot flourish.
- The global ESD community sometimes lacks real world contexts, case studies, research and data. The global SD community tends to lack educational expertise. Each has got what the other needs, so the scope for much closer collaborative working, synergies and exchange is considerable.

There is a good deal happening that is positive (see Appendix), but much more remains to be done to ensure a kind of global breakthrough sufficient to address the nature of the global challenges we face. Research and experience of the UN DESD across the globe shows that systematic progress in each country depends on, *inter alia* and in sum:

- Strong and consistent governmental support for ESD as a critically important element of education policy, together with a national strategy and a central representative coordinating body to oversee implementation
- Sufficient funding, research, monitoring and evaluation
- Involvement and participation of multiple stakeholders towards effective partnerships.

Cross-cutting questions

- How can the considerable expertise and body of knowledge of the sustainable development community be best used to exert leverage on the purposes and policies of educational decision makers and providers, so that the huge resource of the education community worldwide can be much better aligned to the imperatives of sustainable development?
- Taking the established consensus of opinion on sustainability competencies as a baseline, what *additional or specialist* competencies are needed for advancing policies and practices in specific areas, such as biodiversity, climate change, sustainable production and consumption etc?
- Taking the major post-2015 reports as a benchmark, what are the main elements of possible sustainability scenarios over the next 10-20 years with regard to such areas as water and sanitation, energy, health, sustainable cities, climate change etc? What competencies will a) policy makers, b) specialists and c) the public need to ensure that desirable scenarios are realized?

Professor Stephen Sterling, Centre for Sustainable Futures, Plymouth University, UK

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Appendix – looking at examples of ESD related initiatives

As noted under section 5 above, there is little systematic and large-scale research on the effectiveness of ESD. But there is a good deal of successful ESD-related work taking place across the globe in many varied contexts - although it may not be called 'ESD' as such. Expanding search terms to embrace - capacity building, knowledge transfer, corporate social responsibility, leadership training, adaptive management, environmental training, communication, community education, professional, vocational and technical skills training, organizational and institutional change etc – opens the door to recognising myriad initiatives globally that may be seen as forms of ESD in practice.

A handful of varied examples are indicated below as illustrative of this growth of interest in new approaches to addressing sustainability related issues through learning.

- **UNCCD – United Nations Convention to Combat Desertification:** holds an important place under the 'awareness raising' banner. 'Advocacy, awareness raising and education' are one of main pillars of 10 year strategy of UNCCD. Produced teachers' toolkit for primary and secondary schools, and informal learning activities such as Treeplanet – a downloadable game for smartphones with over 100,000 users have played the game, and 50,000 trees have been planted in the desert of Mongolia.
- **Community participation in creating sustainability indicators:** development of indicators using top-down or bottom-up approach as a learning process, successfully conducted in UK, Thailand, and Botswana. The learning process builds on strengths of top-down, 'expert' driven approaches, but brings in more participatory, community-led bottom-up approaches. (Reed, et al 2006; see also Guevara 2004).
- **Business:** There is increasing recognition in the business world that technological innovations alone cannot make the shift to a sustainable business – organisational cultural change is needed, and organisational learning is a major facet of this change process (see Doppelt, 2010; Courtice 2012)

Ellen MacArthur Foundation – The Circular Economy 100 –strongly informed by the need to 'learn' new ways of doing business through access to best practice global library, regular Acceleration Workshops, distance learning Executive Education modules and networking and partnerships with innovators. Also work within schools developing circular economy and systems thinking. 31 large organisations (B&Q, National Grid, M&S, Coca-Cola, Unilever, Ricoh, Cisco, Renault, etc.) have already joined up. <http://www.ellenmacarthurfoundation.org/>

Most large corporations have produced their vision for sustainability (often included in Corporate Responsibility Report) and an action plan (see Haugh and Talwar 2010). For example, the world's largest professional body for the construction industry RICS have produced a strategy 'Vision for Sustainability' – this contains ESD elements for their employees – raising awareness, workshops, signage, website materials, global conferences and symposiums, seminars, inclusion in RICS magazine, research funding, sustainability RICS awards, CPD requirements for professionals to keep up to date with RICS standards and vision.

- **Engagement of multi-stakeholders in environmental management decisions:** Importance of multi-stakeholder processes feeding into policy making and planning decision process (Fraser et al, 2006).
- **Sustainability in agriculture/fishing:** the importance of learning in shifting agricultural methods towards more sustainable practices. For example, beef farmers in Australia experienced learning prompted by adversity, 'associated with financial difficulties, land degradation, loss of productivity, family succession and/or a drought event' leading to transformative learning and adaptive coping strategies facilitated by collective learning programmes. (Lankester, 2013: 189).

Participatory learning experiences in two Cambodian fishing villages involving creation of a community natural resource management plan, participation in learning activities relating to natural resource management, mangrove degradation, and waste management. (Marschke & Sinclair 2009).

- **Natural resource management (NRM):** shift from 'appraisal' form of learning from development agencies to 'participatory learning and action'. By 2012, it is noted that learning '*has become ubiquitous in natural resource management. One is hard pressed to find recent writings on the subject of natural resource management that do not include at least some reference to learning, and in recent years specifically to social learning.*' (Cundill & Rodela, 2012: 7). They cite the assertion in the recent literature that social learning improves decision making processes, by transforming relationships and social capital, enables socio-ecological systems to better adapt to change, and leads to integration of understanding over time.
- **Sustainability consultancy:** companies that work cross-sectorally, for example, BioRegional 'an entrepreneurial charity which establishes sustainable businesses and works with partners around the world to demonstrate that a sustainable future can be easy, attractive and affordable' - developing a cross-sector online learning programme based on 8 years' experience of BioRegional One Planet Living projects (for example, London 2012 Olympics Sustainability Strategy).
- **Urban planning:** use of learning process in multi-stakeholder planning processes which lead to 'the emergence of a clearly defined collective awareness that supplanted individual aspirations'(Joerin, et al, 2009). Notion of 'learning from what works' (LFWW) in sustainable communities and city planning (Deakin, 2011).
- **Supporting Urban Sustainability:** (SUS) programmes – enhancing capacity of key public, civic and private organisations to collaboratively learn about and take action for Ecosystem Services for Poverty Alleviation in Asian Cities; Collaborative Learning – creates shared understanding across stakeholders using an Inquiry-Based Learning approach, mapping, storytelling, group valuation, reflection and evaluation sessions [key cities involved = Dhaka, Ahmedabad, Makana (SA), Manguang (SA), Arusha (Tanzania) and Malmo (Sweden)]. (SWEDESD Uppsala University)
- **Governance:** UNESCO Report on ESD in UK (March 2013) found 'In Scotland, there is a greater focus on a more integrated and coherent approach to sustainable development and ESD with education being recognized by policy makers and practitioners as a key enabler in the transition to a sustainable society.' ESD is important part of national strategy to become greener and fairer society (UKNC 2013: 3). See also work on how evaluation systems can advance the agendas of sustainable development and good governance, opening up decision-making processes to stakeholders, integrating sustainable development into decision-making and supporting learning and capacity building (Sedlacko & Martinuzzi 2012).
- **Environmental education and leadership:** In India, a 'CO2: Pick Right towards Growth and Sustainability' campaign, and initiative of the Ministry of Environment & Forests is implemented by the Centre for Environment Education (CEE), in partnership with Arcelor Mittal, the world largest steel company. The campaign originated from the UNEP's 2008 campaign 'CO2: Kick the Habit towards a low carbon economy' and has two phases: 1. To choose an Environment Ambassador of India by involving students from 200,000 schools throughout India under the 'Kaun Banega Bharata Ka Paryavaran' initiative; 2. To spread awareness of environmental and climate change issues by educating 20 million children from 200,000 schools preparing them to be green leaders from 2010 onwards. The next challenge will be to expand this environmental education programme to reach the rest of India's adult population while supporting the continued development of India's green leaders.
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