

Learning to Live Sustainably

Marilyn MEHLMANN,^{1*} Nadia MCLAREN² and Olena POMETUN³

¹Global Action Plan (GAP) International,
Brovägen 9, SE-18247 Stocksund, Sweden

Union of International Associations (UIA), Belgium

²Australian Conservation Foundation (ACF),
Floor 1, 60 Leicester St, Carlton VIC 3053, Australia
Green Cross Australia (GCA), Australia

³Academy of Pedagogical Science of Ukraine (Kiev),
52-D Artema Street, Kiev 04053, Ukraine

Democracy and Partnership, Ukraine

*e-mail: mmehlmann@gmail.com

Abstract

This paper is about the challenges of “education for sustainable development” (ESD), by which we mean: how we learn to live in ecological and socio-cultural harmony with our neighbours and the Earth and choose to act for sustainability on a daily basis. We contrast conventional pedagogical approaches and curriculum design with the emerging body of good practice in ESD. We regard “learning to live sustainably” and “learning for sustainable development” as pedagogical equivalents, the first centred on individual and small group learning, the second centred on large group and societal learning. Knowledge transfer, the backbone of most education, has in our view only a modest role to play in learning to live sustainably. Indeed, the focus needs to be on the learning rather than the teaching. Further, we argue that nurturing the components of “action” and “care” in ESD will balance the bias towards “information” and produce a virtuous cycle of continuous learning for sustainability. In formulating the lessons we have learned about ESD, we bring into relief the essential (and undervalued) contributions of synthesis and leadership. We point to methods of accelerated learning and experiential learning and the role of feedback and indicators. In doing this, we draw on over 20 years’ experience with Global Action Plan (GAP) – an international community of practice, currently with member organizations in 20 countries – working at the forefront of education for sustainable development and related programs for sustainable behaviour change, including ‘carbon neutral’ households, communities, work places and schools.

A close reading of the paper should make clear that our ideal for ESD is to educate for *strong social learning for strong sustainability*.

Key words: action, empowerment, experiential, leadership, learning, synthesis

1. Learning to Live Increasingly Sustainably: Is It Useful, or Even Possible?

The world is coming to an end, and you tell us to change our light bulbs!

– Pupil at a ‘sustainability’ lesson

On the one hand, sustainable development can only be achieved with a radical, systemic shift throughout human society, so that instead of depleting the natural capital on which we depend, we preserve and begin to restore it; this is sometimes referred to as ‘strong sustainability’ (Lenglet & Rönnbäck, 2010). So does it really make sense to spend time and energy teaching people, young or old, to focus mainly on saving resources

and reducing waste? Is this not a drop in the ocean? Should we not be tackling head-on the ‘real’ problems? This is one perspective.

On the other hand, the arguments for strong sustainability have been well known for several decades (e.g., Robért, 2002), and they are totally compelling: *If we don’t all do it, we all die*. Yet somehow we are still not doing it. Instead, we are depleting our natural capital at, in many instances, an accelerating rate (Pearce, 2010). We are backing faster into the future and off the edge of a cliff.

When you are standing on the edge of a cliff a step forward is not progress.

– Anonymous, quoted by Tom Atlee

Human society is a mosaic of cultures, and of decisions made day by day and minute by minute. The unsustainability of current development is a product of all those myriad decisions, made by every person on the planet: at home, in the streets, at their workplace. Often they are not even experienced as decisions; they are just ‘the way we do things.’

From this perspective, it makes perfect sense to teach people new habits, no matter how apparently marginal. Not only are resources saved (Staats *et al.*, 2004), but creativity is unleashed, and the groundswell of opinion is shifted to give greater support to sustainability initiatives by public authorities, businesses, community-based organizations and others (evidenced by the growing adoption of green public procurement, corporate social responsibility, carbon pricing, transition initiatives and the like).

We can celebrate triumphs that are no less great because they did not solve the whole problem; we must recognize needs that are no less pressing because others were met.

– Luis de Baca

There is, however, a condition: the change of behaviour needs to stem from a conscious decision rather than an unreflected response. Simple propaganda does not do the job. While it is true that people have adopted new behaviours as a result of information campaigns – which, like some online social movements (such as Avaaz.com and diverse pledge, petition and community websites) empower the individual by providing compelling facts, attachment to common purpose and a facilitated process for action – when the campaign stops, most of the behaviour reverts because the external stimulus and support is gone (Jacometti, 2008). This observation is a reasonable explanation for such clichés as ‘You can’t teach an old dog new tricks,’ despite their obvious nonsensicality. Yet we all know, on reflection, that we frequently change our habits (Heath & Heath, 2010) – often as a result of advertising or by following family and friends (Bandura, 1977).

So what are the keys that open people to make changes in their lives and how do these relate to learning for sustainability? We offer three: empowerment, context and experience.

2. Key Elements of Effective Learning for Sustainability

As we have mentioned, effective learning for SD is clearly linked to changes in daily behaviour, or way of life. The learners take action – not primarily *in order to learn*, but because the action in question contributes to improved sustainability. Learning usually follows. Incidentally, this challenges the common perception that awareness and understanding come first, to be followed by action (Roberts, 2010).

2.1 Key element 1: Empowerment

At Global Action Plan (GAP) – an international group of NGOs working for sustainable behaviour change – we asked ourselves: “What makes the difference? What enables an effective bridge between information and responsible action?” One clear answer right from the start, in 1989, was ‘empowerment’. Empowerment, or the exercise of will, has been described as an exercise in attention and intention (Assagioli, 1973).

When people are empowered to make more sustainable decisions they learn to pay attention to sustainability issues and then to formulate intention. They are thus supported to *choose for* sustainability in their daily lives. When this takes place, the new behaviour tends to be sustained long after the events that triggered it – as researchers at the University of Leiden showed for GAP Netherland’s *Household EcoTeam Program* (Staats *et al.*, 2004; Harland, 2001). For two decades now we have been exploring, in projects in a score of countries, the conditions that promote or hinder empowerment.

An increasing interest in the phenomenon of empowerment may be connected with the spread all over the world of a growing feeling of powerlessness. Many people today experience a lack of choice in their lives at any level (Stewart, 2001). Curiously, this experience seems to be at least as, if not more, widespread in the affluent countries as in the poorer. Yet few kings in history have had as many choices open to them as people living in today’s western and westernized societies. So at an *individual* level, contemporary experienced disempowerment is an expression less of “fact” than of perception.

At the *collective* level, however, as Stewart points out, contemporary society is structured along lines of domination (systemic control through economic, political and ideological power) rather than empowerment (Stewart, 2001, p.100), leading to such trends as declining electoral participation and loss of confidence in the power of the collective. This deficit of collective will is, then, the likely source of people’s felt state of powerlessness. It is currently present, for example, in the ambivalent response of large institutions to global climate change, biodiversity loss and poverty alleviation, and it contaminates the citizen’s desire for personal change: “*Why bother?*” Individual choice is still there, but the spirit is not. In other words, choosing to live sustainably, or not, has a strong psychological dimension which, additionally, can be influenced by the social context.

At GAP’s first research meeting (Mehlmann, 1996) we explored the nature of empowerment as we had experienced it to that time, and found that it can be viewed both as a condition and as a process. The *condition* of empowerment implies a feeling of being reasonably in charge of a situation. The condition can be general (“I feel in charge of my life”) or specific (“When my children are threatened, I become a tiger”).

Further, the *process* of empowerment is either inner (“I learn to progressively experience more choice in my own life”), which can be compared to a general maturation

tion process; or the result of external support, for example through an empowerment program: an educational program designed to evoke the values and inner strength of the learners. An empowerment program designed with this in mind can support participants to care about and long for things they would once have thought beyond their power to influence: a shift takes place in how they view and assess their individual and collective futures.

2.1.1 Anatomy of behaviour change

In the context of Education for Sustainable Development (ESD) – a concept popularized by its adoption as the focus of a United Nations Decade, 2005~2014 – the process of empowerment is interesting to the extent that it can lead to more sustainable lifestyles. Such a process inevitably comes up against barriers – psychological and social (Sattmann-Frese & Hill, 2010) as well as economic (Greco, 2009).

Theories of personal change are many (Watzlawick *et al.*, 1974; Fritz, 1996; Chaldini, 1999). What they seem to have in common is the perception that individual behaviour change is not – as frequently assumed in mass behaviour-change programs – repeat, *not* brought about, or engineered, with a conventional, linear education approach, which takes information and knowledge as the starting point (Fig. 1). Nonetheless almost all governmental approaches to societal change (including legislation and regulation) follow this pattern and the degree to which they succeed in changing behaviour has much more to do with the reactive “sticks and carrots” type of learning than with engendering conscious understanding and value shift.

One of the missing links in the linear path model (Fig. 1) is the non-rational aspect of expressed behaviour (Bohm, 1972): most significant lifestyle change comes about not as a result of rational process but when emotions, desires and beliefs are engaged (Heath & Heath, 2010). This is commonplace and so often overlooked, but



Fig. 1 Linear view of behaviour change.



Fig. 2 Cyclic view of behaviour change.

striking in instances of personal change consequent on, for example, diagnosis of serious illness and other life crises. We call this missing link “care” and it closes the loop (Fig. 2).

In contrast with the linear change model (Fig. 1), our observation of actual, long-term behaviour change achieved through GAP programs leads us to propose a circular picture of how change happens (Fig. 2, Mehlmann, 1996; Mehlmann & Pometun, 2010, 2011). Each step – “acting,” “caring,” “informing” – prompts the next. It does not matter where you start; and the cycle is potentially self-reinforcing: a positive feedback loop. So the change cycle need not stop – the circular path can be drawn out, over time, into an open-ended spiral of continuous behaviour change.

A key to the cyclic path of behaviour change is the link between acting and caring. *If I believe that I have no scope for effective action, I will find it difficult to care – and without this emotional investment, I am unlikely to take action. On the other hand, if I can be attracted to take experimental action, my beliefs about what is possible may shift and I may consequently change my attitudes and behaviour.* As already noted, this is contrary to the conventional wisdom that information and knowledge necessarily precede attitudes and action. We deal further with the empowering nature of taking action and experiential learning in section 2.3 *Key element 3: Learning by and from experience.*

I don't care what you know until I know that you care.

– Anon., quoted by Anthony Gioko

Note that *not* included in the diagram of the cyclic path of behaviour change (Fig. 2) are two important elements: the focus, and the environment or context. The focus helps to shape the content of conscious decisions and is an essential component of “strong social learning” (see 2.1.2 *Individual and collective empowerment* below). The environment – physical or social – makes it easier or harder to stick to conscious decisions until they become habit (Heath & Heath, 2010). This is discussed further in section 2.2 *Key element 2: Context.*

2.1.2 Individual and collective empowerment

Focus and context become critically important in the shift that happens from the individual to the collective.

Empowerment of a group or collective inevitably begins with the individuals and their participation in the life of the collective (Gershon, 2009).

When intention is shared, individual empowerment becomes collective empowerment (which, as we have noted in the previous section, is in short supply). Similarly, when the need to learn is shared, individual learning becomes collective learning.

There is a parallel to the concept of social learning, which has weak and strong expressions. George Pór writes:

“All learning is social but when we talk about social learning we mean something more specific in a sense of a weak and a strong case. Weak social learning occurs in communities or networks of learners, strong social learning is a result of communities or networks that learn. In the first case, we talk about a collection of intelligences, where the individual is using the shared resources for the benefit of his own learning and development. In the second case, we talk about collective intelligence, where the result aimed for is not only individual but group or social development, as well.”

“Strong social learning is a co-creative quest for meeting problems or opportunities that affect a group or society, which requires collective sensing, intuition, meaning making, and other qualities of collective intelligence.” (Pór, undated).

An open question is whether learning for sustainable development (*i.e.*, by large collectivities) needs to be “strong social learning”? If so, as we think it is, then what do the insights of those working with collective intelligence imply for educators of ESD?

2.2 Key element 2: Context

2.2.1 Analysis vs synthesis

Most education systems, especially but not only systems of formal education, are designed to transfer established knowledge, with little active role for the learner (Unrau, 1997). Any opportunity for critical learning (Bean, 1997) is likely to emphasize analysis (“what are the different diseases?”) rather than synthesis (“what is health?”). Little wonder, then, that most efforts to promote sustainable behaviour fall quickly to the temptation to compartmentalize: to focus only on CO₂ reduction, or cleaner water, or peace-building, or debt elimination, or recycling, or... In such circumstances, even real change can indeed be marginal because it has few spin-off effects.

In today’s complex world it is generally impossible to understand by analysis all effects of proposed actions into the indefinite future. The use of “impact assessments” in development projects, for example, in terms of environment, economics and gender, is an attempt to capture the different effects. However, while greater transparency is claimed as a strength of impact assessment, common weaknesses are stakeholder dominance, exclusion of factors and political short-sightedness, as well as poor processes of public participation – reflecting weak, rather than strong, social learning.

To overcome the risks of compartmentalization, there are some quite sophisticated tools such as multi-stakeholder analysis and scenario planning. Nonetheless where undesired effects are found to be probable, findings are often framed in an inconclusive or ambivalent form such as “There is no evidence that significant impact would arise...” This may sometimes be better than ignoring the question of long-term impact. However, an Australian survey indicates that “only in around ten per cent of cases is the environmental impact assessment process actually generating significantly better outcome”

(Mackintosh, 2009). So while impact assessment may help avoid some of the grosser mistakes of “development as usual,” it alone cannot put us on the right track of learning to live more sustainably.

The limitation of impact analysis is a standard outcome of the analytical, reductionist method – not to be underrated, but more suitable for convergent problems (which have a correct solution) than for divergent problems such as sustainable development, where what is ‘correct’ from one perspective may well be disastrous from another; and where an ability to explain the past by no means implies an ability to predict the future. This observation is not new. Systems theory and relativity theory have observed and explained it for a long time. As Philip Anderson points out:

“The ability to reduce everything to simple fundamental laws does not imply the ability to start from those laws and reconstruct the universe. The constructionist hypothesis breaks down when confronted with the twin difficulties of scale and complexity. At each level of complexity entirely new properties appear. Psychology is not applied biology, nor is biology applied chemistry. We can now see that the whole becomes not merely more, but very different from the sum of its parts.” (Anderson, 1972).

If you want to build a ship, don't herd people together to collect wood and don't assign them tasks and work; but, rather, teach them to long for the endless immensity of the sea.

– Antoine de Saint-Exupery

Given the weakness of the analytical approach there is a need to look elsewhere for guidance as to how to steer a development process in a sustainable direction. Some relevant questions are:

- Are there any reliable indicators of increasing or decreasing sustainability, a question to which we return under the heading 2.3.2 *Feedback and indicators*?
- How can we teach synthesis?
- How can adequate decisions be made under conditions of uncertainty, and what implications does this carry for leadership?

We need, as part of any ESD program, to learn, to teach and to long for the endless immensity of a sustainable future: to create a hunger for sustainability (Wackernagel & Rees, 1996). This is the caring aspect of the change process. We also need to teach and learn how to envision the whole ‘ship’ of sustainability, not as a pre-existing, predefined entity but as a visionary experience (Ziegler, *unpubl.*); so that each part can be crafted with a view to the best functioning of the emerging whole.

There are no standard recipes for such teaching. Certainly they need to be based on dialogue, Socratic or deductive approaches, starting with the everyday realities of participants (Freire, 1970). Other sources of inspiration are Action Learning (a pedagogy developed for team learning; Revans, 1980) and Active Learning (Rubin &

Hebert, 1998). But even these are not enough, because still there is an assumption that the teacher or facilitator possesses the key to what is right and what is wrong. This assumption is challenged with Community-Based Research (a form of Action Research, see section 2.3.3 *Learning by doing*), in which the community is viewed and treated as a *subject*: as one of the holders of the key to what constitutes an improvement and what does not.

In GAP our partial response to this need to go beyond action learning has been to include emotional intelligence (Goleman, 2006; Gardner, 1993) in our dialogues and to focus on the quality of listening (Ziegler, *unpubl.*; Pometun, 2008). This is further explored below under *Implications for education and pedagogy*.

2.2.2 The role of leadership

So how does an educator, or any other leader, make reasonable decisions under the conditions of uncertainty with which people across the world are increasingly confronted? It is easy to see the ideal process of sustainable development as so participatory that it is virtually leaderless. But this is to confuse leadership with domination. Leadership – empowering leadership – is vital for sustainable development. Without leadership, change processes tend to dissipate, disintegrate or stagnate. Leadership is needed to inspire, to create focus, to foster discovery and creativity, to align intentions, to keep moving and to keep faith with visions and values.

It takes some highly skilled navigation to steer between extremes: to inspire without dominating, to create focus without manipulation, to foster discovery and creativity without losing focus, to align intentions without becoming deaf to inconveniently divergent views, to keep moving at a pace that suits those most affected. To keep faith.

It is sometimes said that a desire to be of service is the starting point for empowering leadership (Rost, 1991). Robert Greenleaf coined the term ‘servant leadership.’ In describing it, he put his finger on a point that is central to all forms of empowerment, not only leadership as generally understood, but also educating, coaching or parenting: “*It begins with the natural feeling that one wants to serve... To make sure that others’ highest priority needs are being served.*” (Greenleaf, 1970)

Greenleaf proposed a test: “Do those served [by the leader] grow as persons? Do they, while being served, become healthier, wiser, freer, more autonomous, *more likely themselves to become servants*?” He added, “And, what is the effect on the least privileged in society? Will they benefit or at least not be further deprived?” (Greenleaf, 2002, p.27). This could serve as a working definition of the leadership qualities needed for empowerment in situations of learning for sustainability.

2.3 Key element 3: Learning by and from experience

2.3.1 Learning-education-information

When we talk of learning for sustainability, we are not talking of learning *about* sustainability. We are talking of a deep, life-enhancing, ongoing process of discovery and

enactment.

While education refers to collections of worldly facts, educare [Latin root] is to bring out from within. Education is for a living while educare is for life.

– Sri Sathya Sai Baba

Education interweaves “person” and “context” and refers to both the process of learning and the product or result of learning. In a similar manner, information has both internal and external aspects: “education-learning” both *informs* by releasing native ability and insight for personal growth, and *informs* by conveying accepted wisdom, knowledge, experience and skills [in]to the learner.

Herein lies the distinction between education and learning *for* sustainable development and education and learning *about* sustainable development. The first focuses more on facilitating and revealing unique expressions of personal knowing; the second works to efficiently make available organized knowledge through shareable content. An “educator” may be involved with both modes of information; but we all know that “good teachers,” those skilled in the first mode, are regrettably rare.

Regret now must shift to imperative for educational change that is responsive to our time. The accelerating pace of global change is outpacing traditional modes of pedagogy and weakening the relevance of the information and knowledge conveyed across generations. “This is how we’ve always done it” has little value when applied to situations we’ve not previously encountered, like mass species extinctions and climate change.

Education is ‘the art of learning’ (Majasan, 1976)

In our opinion (and as we will illustrate in the section 3. *Implications for education and pedagogy*), the main challenge for SD educators is to equip students to learn from their own and others’ experience in order to act *for* sustainability. We may know very little about the destination, but we do know the direction in which we need to move. And there are methods and tools available to help us do so, and to manage the anxiety that inevitably accompanies the daily uncertainty of our rapidly changing world (Pattyn & Van Liedekerke, 2001).

It may indeed be the case that our young people, rather than learning primarily from teachers, take their most valuable lessons from personal and peer experience; and that the chaos of environmental breakdown may become the proxy classroom for SD.

2.3.2 Feedback and indicators

Feedback is an essential tool for learning from experience. Feedback may be instantaneous – a reflex reaction. It may be qualitative and subjective – a considered opinion. Feedback that is measured (“objective”) relies on indicators to provide independence and “benchmarking” (against verifiable references). Experts

often dominate the selection and measurement process. This is fine for control systems and where the interaction of factors is predictable. However, since sustainable development is an optimizing process, its indicators are not categorical; rather they are dynamic measures of an evolving process, needing contribution from both expert and ‘grass-roots’ elements.

A decade ago, one of us was at a conference in London jointly organised by UK, Dutch and Danish agencies concerned with environmental statistics. Called “Bridging the Gap” (no connection with our GAP), the conference explored the status, uses and value of environmental indicators. Can indicators be relied upon to “indicate” what they are claimed to indicate?

It seems that indicators chosen for political motives, which they help to further, are rewarded with a continuing existence almost regardless of their practical or scientific usefulness. Their focus is generally on ‘standard of living,’ expressed in monetary terms, whereas ‘quality of life’ is of more direct relevance to most people. Statistician Nic Marks eloquently makes this point in his TED talk about the development of the Happy Planet Index (New Economics Foundation, 2009). In the same vein, Bhutan’s adoption of a Gross Happiness Index (Ezechieli, 2003) is an example of pioneering work in developing an indicator of ‘progress’ of greater immediate relevance to its population than GDP.

Clearly we can’t expect all indicators to be as involving and comprehensible as the marks on the wall that showed our growth through childhood. However, we do deserve indicators that are in touch with our values, that we can relate to personally, and which can capture the difference between the current unsustainable present and our preferred vision of a sustainable future for ourselves and our children.

In this context, the main feedback challenges for educators are

- To encourage and help learners identify indicators meaningful to them and that inspire continuous learning and change,
- To help learners become aware of indicators and progress within a global sustainability context, and
- To encourage and help learners to keep track of their chosen indicators.

And so we have moved from descriptive and performance indicators (“how good, or bad, things are,” “how well we are doing along a preset trend”) to the notion of an indicator that contains the *seed of meaningful change*. Such an indicator would recognise the significance of its measured value and have the capacity for generating an appropriate response. It might also anticipate its own replacement by another more suitable to the change process in which it is implicated. A case in point might be an indicator that recognises a spontaneous transition from individual to collective learning and reconfigures the curriculum, the learning space and education resources accordingly.

Indicators are not unbiased objective measures, nor is their choice innocent. The indicators we choose today

will significantly determine the quality of our future life. The transformative power of indicators is very much determined by their framing. The kind of dialogue implicit in this reframing helps to raise awareness to a level where we can talk about what we, teachers as well as pupils, are *all* learning for *all* of us (Unrau, 1997). It approaches our ideal for ESD to educate for *strong social learning for strong sustainability*.

2.3.3 Learning by doing

Early in this paper, we made the case for empowerment being the bridge between information and responsible action (2.1 *Key element 1: Empowerment*). It now becomes necessary to tease out the relationship between empowerment and learning.

We contend that without empowerment there is no *fresh* learning. There is, of course, rote learning and that type of reactive learning that is steered by external circumstances or is essential for basic survival, like learning language, social skills or a trade. This is not to make light of such learning. Most opportunities for education and learning, in schools, work and play, in fact are blended; and, without question, knowledge acquisition that confers competence and status is itself empowering. But what is “empowered learning” and what is its role in ESD?

At the start of Section 2 of this paper we said, “[ESD] learners take action – not primarily in order to learn, but because the action in question contributes to improved sustainability.” Let’s call this “acting to care” or “caring to act” – the phrasing matters not, because the relationship is dynamic. We then said, “*Learning usually follows*.” This is what we mean by “fresh learning.” It is learning that arises from the impulse to learn and so is very likely to be relevant, needed, surprising and new to some degree. It is also context-sensitive. It is the form of learning that is most likely to extend our appreciation of learning to live sustainably.

In recognizing the triple contributions of care, action and information in behaviour change (Fig. 2), we now propose that “empowered learning” has elements of caring, acting and informing. An example of empowered learning would be empowering (servant) leadership (see 2.2.2 *The role of leadership*).

In particular, we draw attention to the potential within ESD of “caring to learn” and “acting to learn” and their generated counterpoints for human development of “learning to care” and “learning to act.” This is the type of education, called “educare” at the beginning of this section, that *informs* by releasing native ability and insight for personal growth.

I hear and I forget; I see and I remember; I do and I understand.

– Confucius

More than at any time in our past, we need to harness all our intelligences, and learning capacities, to make the transition to a new relationship with ourselves, with other

species and with the planet that is our home. This involves activating an internal feedback system that includes head, heart and spirit.

As has been argued above, ESD is of necessity experiential. Action alone is not, however, sufficient for globally sustainable outcomes: the action, whether individual or collective, needs to take place in a global context. This may mean

- Choosing indicators that have both local and global relevance;
- Evoking and activating feelings, dreams or values in the form of visions of desired / sustainable futures; and
- Going beyond simple evaluation of actions, to explore underlying functional and dysfunctional patterns and draw conclusions for future actions.

Educators can look for help to Action Research methods (first mentioned under *Key Element 2: Context*). “[AR] attempts to generate knowledge of a system, while, at the same time, trying to change or develop it ... Ideally, this leads to developing a system that is continuously learning from experiences, learning how to learn, and creating conditions (structures, processes and culture) that support and foster learning.” (Reason & Bradbury, 2001)

3. Implications for Education and Pedagogy

3.1 Challenges to existing sectors and systems

Essentially, empowerment presents a new model of curriculum design both for children and adults. This new curriculum model is developed with a focus on empowerment pedagogy principles defined within the GAP network of NGOs. In contrast to traditional approaches in the education system, which aim to ‘equip students with knowledge and skills,’ the main purpose that teachers set for themselves is to develop student behaviours and lifestyles for sustainable development, a goal in line with global ESD objectives.

In order to support an appropriate focus of attention, as described above, such a course for learners of any age will include a number of topics related to everyday life – for example, ‘Water,’ ‘Shopping,’ ‘Garbage,’ ‘Energy’ or ‘Personal relations.’ The selection of topics depends on the economic, social, ecological and socio-cultural contexts.

Clearly, the content of topics formulated in this way is cross-curricular and trans-disciplinary, reflecting the trans-disciplinarity of SD as a phenomenon (Mehlmann, 2006). In schools it means that the ESD curriculum should consist of elements from many different subjects, and not only such elements, but also a lot of information from and about real (everyday) life.

3.2 From principles to practice – Ukrainian example

In Ukraine we decided to create a new, integrative and inclusive curriculum for ESD, rather than offering additional material for existing school subjects: and to implement it within the current model of state school

education.

Ukrainian educators, like those in many other countries, are used to linking SD with the sphere of natural science. And there is certainly something in this. For example ESD students can definitely benefit from their classes in chemistry (composition of water, air), physics (measuring of energy and power intensity), biology and other knowledge about nature. However, ESD also demands great attention to social aspects, because a sustainable society cannot function without democracy, ongoing dialogue, participation and the empowerment of people – individuals and groups. Also SD is only possible when human relationships are based on respect, tolerance and intercultural cooperation, so from the perspective of the standard school curriculum this is already ‘social studies’ and even social psychology, social ‘engineering,’ or even philosophy.

This very short list, which can be expanded, shows what a complex and challenging curriculum topic we have. We believe that we need not only separate curricula for ESD as a subject of its own, but a general ESD approach for the whole curriculum development process as well.

Each topic in our ‘Lessons for sustainable development’ course for 14-15 year olds (Pometun, 2010) spans three or four learning sessions (lessons), with at least one week between them. The pause is vital, because it gives students time, space and opportunity to test and reflect on their own experiences of actions and activities that are new to them.

The basic idea is to involve students in taking action (Buehl, 2001) for sustainable development (SD). Each topic of the course begins with students exploring their own lifestyle and habits. They go on to find information about the topic. Based on the results of their explorations, students develop an intention. They then are invited to take experimental action for SD, e.g., think before making a purchase, avoid buying anything for at least one day.

Each element (*below in italics*) of the “cyclic view of behaviour change” (Fig. 2) is translated into the learning process, lesson by lesson, within each topic (e.g., water). Therefore, every topic includes the following components:

- 1) An introductory (motivational) lesson-meeting, where learners get together and, as an outcome, focus their attention and develop a concern (“*begin to care*”) about a certain issue, for example the need to use water wisely.
- 2) A practical lesson, which
 - enhances students’ awareness of the issue and of possible solutions, in particular related to lifestyle choices (“*formulate questions*” and “*assemble information*”),
 - supports development of an intention to change their own lifestyles in this respect (“*formulate intention*”), and
 - supports planning of their own actions (“*take action*”).

- 3) A practical lesson where students discuss changes in their lifestyles; share additional information, experiences and new ideas on how to solve the problem; and strengthen their commitment to act further (“*give feedback*”, which leads to “*more care*”).
- 4) The final lesson, which leads students to draw their first conclusions about their lifestyle, reflect on successes and failures, and develop future plans (this refreshes the cycle to start over and generate an “*empowering behaviour change spiral*”).

3.3 Consequences for teaching methods

ESD calls for a special approach to instructional decision-making – a special methodology for designing every lesson to ensure that it achieves its learning objectives and that learners are actively engaged in trying out new actions to contribute to sustainable development. In this section, we develop our ideas for such a methodology.

The main goal of ESD is to equip the students with all necessary skills to act for SD; at the most basic level, to develop their skills to relate to themselves and interact with others and with the whole world more harmoniously. This is a special way of thinking and acting. Looked at as an educational objective, teachers thus need to train pupils to practice such modes of thinking and acting: to gain their own experience, discuss it with others and enrich each other with ideas – in other words, to move much further than teachers can propose or predict.

In fostering the self-development of the students, the main challenge for the teacher is to maintain a safe and creative atmosphere in the classroom. The teacher does not tell them what to do and how, or put pressure on them. Instead, s/he evokes the students’ own activity, their inward strength and motivation for action. In other words, the teacher acts as the leader described above (see 2.2.2 *The role of leadership*).

In supporting students on their journey, the teacher invites them to act independently, *e.g.*:

- To set individual and group goals,
- To experiment and to learn from their experience,
- To reflect, and
- To support each other and learn from each other.

So, the role of the teacher is to invite the students to act; to hear and see them; and to be as responsive as possible to their needs. Similarly, these principles are vital in developing any ESD materials for students and teachers. Texts cannot rely on imperatives or directions; rather they need to encourage participants to make their own choices based on awareness and insights, attention and intention.

In summary, the practical realization of such an appropriate environment for ESD gives rise to specific pedagogical challenges, because it requires the:

- Creation of a safe, stimulating atmosphere during the lessons: a democratic learning space which awakens and encourages the creative abilities of students (Bonwell & Eison, 1991; Bonwell, 1996);
- Use of teaching methods and procedures that help to

involve the capabilities of each student to enter into dialogue and to engage in cooperation based on her/his individual style of learning (Baloche, 1997; Kagan, 1997; Slavin, 1994); and

- Development of an image of sustainable lifestyle issues as they relate to student behaviour.

While there is no formula that will guarantee good ESD learning for every student in every context, there is extensive and well-documented evidence (Pometun, *op. cit.*) about the kinds of teaching approaches that consistently have a positive impact on student learning. This evidence tells us that students learn best when teachers, in addition to the above list:

- enhance the relevance of new learning,
- make connections to prior learning and experience,
- provide sufficient opportunities to learn, and
- enquire into the teaching–learning relationship.

In this picture, the student is an active and creative personality, capable of learning, action and self-development. This fundamental notion underlies both the content and methods used in the Ukrainian ‘Lessons for sustainable development.’ The curriculum has a number of distinctive characteristics: it combines knowledge and action; focuses on easy-to-track changes in students’ daily life and behaviour; and, most importantly, is open to embracing the wisdom of children, who then have the opportunity to explore and create their own way of life and their own values uniquely and beyond their teacher’s ability to convey.

Involvement of students in ESD is much more than an enjoyable learning process. It gives them methods, skills and tools that will help them to be successful in many spheres of life and develops their confidence that they, their community and humankind have a worthwhile future that they can help shape.

4. Research, Past and Future

4.1 Does it work?

This paper is about the challenges of learning and teaching how to live in ecological and socio-cultural harmony with our neighbours and the Earth, and choosing to act for sustainability on a daily basis. It refers, but not exhaustively, to the extensive research showing:

- on the one hand, the difficulty of inculcating widespread behaviour change, an exception being narrowly-defined, binary single behaviours backed up by substantial sanctions (*e.g.*, the use of seat belts in cars, smoking prohibition in public places);
- on the other hand, the success of behaviour-change programs rooted in an empowerment approach, such as that developed by GAP, in bringing about multiple, long-term, generative behaviour changes – *i.e.*, changes that are highly likely to entrain or engender further sustainable behaviour change.

GAP programs have been studied and reported on by academics in several countries (most recently Jacometti, 2008); and shown to lead to significant resource use savings among participating households, schools and

workplaces, with consistent long-term results such as 38% reductions in solid waste, 18% reductions in electricity use (Staats *et al.*, 2004; Harland, 2001).

Even more important, we believe, are the overall empowering effects of these programs, leading to increased willingness and capability to engage in sustainable development both locally and globally. These effects have not yet been adequately researched.

4.2 Some open research questions

The journey is just beginning. Over the past 20 years we have learnt a lot about how to engage individuals and small groups. It is time to scale up. There is a great need for further research on how to engage many more people in the search for more sustainable lifestyles, and how to do it most effectively. Some of the research questions we have identified are:

- What is the relative effectiveness of different approaches, and possible synergy effects between them?
- When individuals are empowered within a specific context, or focus (such as SD), does this empowerment tend to ‘spill over’ into other arenas, and if so how?
- How can triple-loop learning (Hargrove, 1995) and other learning-enhancing elements for “accelerated learning” be widely introduced, in order to achieve a transformation rather than marginal improvements?
- What is the relevance of different theoretical models to practical pedagogical results?
- How can social media – an emerging educational arena – be effectively used to empower the individual by providing compelling facts, attachment to common purpose and a facilitated process for action?
- What are the useful roles for different actors: public, private, business; local, national, international?
- How can artificial intelligence contribute to enhanced learning, especially in the field of ESD?
- What is the role of strong social learning in collective learning for sustainable development and what does this imply for ESD?

In all this work there is a strong need for synthesis, cooperation and exchange, and for research based on an action approach in order to speed up the application of findings.

The views expressed in this article are personal and not those of any organisation.

References

Anderson, P. W. (1972) More is different: Broken symmetry and the nature of the hierarchical structure of science, *Science, New Series*, 17(4047): 393-396.

Assagioli, R. (1973) *The Act of Will*, Barnes and Noble, New York, NY.

Baloche, L. (1997) *The Cooperative Classroom: Empowering Learning*, Prentice Hall, New York, NY.

Bandura, A. (1977) *Social Learning Theory*, General Learning Press, New York, NY.

For an introduction to this literature, see the first section of the

article ‘Social learning theory.’ [http://en.wikipedia.org/wiki/](http://en.wikipedia.org/wiki/Bean)

Bean, J. (1997) *Engaging Ideas: The Professor’s Guide to Integrating Writing, Critical thinking, and Active Learning in the Classroom*, Jossey Bass, San Francisco.

Bohm, D. (1992) *Thought as A System*, Routledge, London.

Bonwell, C. C. (1996) Building a supportive climate for active learning. *The National Teaching and Learning Forum*, 6(1): 4-7.

Bonwell C. C. and J. A. Eison (1991) *Active Learning: Creating excitement in the classroom*, George Washington University, Washington DC .

Buehl, D. (2001) *Classroom Strategies for Interactive Learning*, International Reading Association, Newark, DE.

Chaldini, R. (1999) *Psychology of Influence*, St Petersburg, Russia.

Ezechieli, E. (2003) *Beyond Sustainable Development: Education for Gross National Happiness in Bhutan*. <http://suse-ice.stanford.edu/monographs/Ezechieli.pdf>

Freire, P. (1970) *Pedagogy of the Oppressed*, Herder and Herder, New York, NY.

Fritz, R. (1996) *The Path of Least Resistance*, Fawcett Columbine, New York, NY.

Gardner, H. (1993) *Multiple Intelligences*, Basic Books, New York, NY.

Gershon, D. (2009) *Social Change 2.0: A Blue Print for Reinventing Our World* Empowerment Institute, Woodstock, NY.

Goleman, D. (2006) *Emotional Intelligence*, Bantam Books, New York, NY.

Greco, T. (2009) *The End of Money and the Future of Civilization*, Chelsea Green Publishing, White River Junction, VT.

Greenleaf, R. (1970) *Leading by Serving First*. <http://www.greenleaf.org/whatiss/>

Greenleaf, R. (2002) *Servant Leadership: A Journey into the Nature of Legitimate Power and Greatness* (25th anniversary ed.), Paulist Press, New York, NY.

Harland, P. (2001) *Pro-Environmental Behaviour*, PhD thesis, Leiden University, Netherlands.

Hargrove, R. (1995) *Masterful Coaching*, Pfeiffer, San Francisco, CA.

Heath, C. and D. Heath (2010) *Switch: How to Change Things When Change is Hard*, Broadway Books, New York, NY.

Jacometti, S. (2008) *Creating and Sustaining a Behavioural Change in Energy Conservation*, Masters thesis, Imperial College London, UK.

Kagan, S. (1997) *Cooperative Learning*, Kagan Cooperative Learning, San Clemente, CA.

Lenglet, F. and P. Rönnbäck (2010) *Strong Sustainability*, Working document of SWEDES, the Swedish International Centre of Education for Sustainable Development, Gotland.

Mackintosh, A. (2009) *Environmental Scheme Costly and Ineffective*, Australian Centre for Environmental Law, Australian National University, Canberra.

Majasan, J. A. (1976) Indigenous education for development. In: G. O. Onibonjo, K. Omotoso and O. A. Lawal, eds., *The Indigenous for National Development*, Onibonjo Press, Ibadan, as cited in Adeyemi M. B. and A. A. Adeyinka (2003) The principles and content of african traditional education, *Educational Philosophy and Theory*, 35(4): 425-440.

Mehlmann, M. (1996) *Eko Team: Ta makten Över Miljöutvecklingen*, Bilda Förlag, Stockholm.

Mehlmann, M. (2006) *The Blind Men and the ESD Elephant*, Aduktor, Minsk, Belarus / (2009) *Blinda Gubbar Och UHU-Elefanter*, Education and Sustainability Issue 2, Dalarna, Sweden.

Mehlmann, M. and O. Pometun (2010) *Principles for Design of Empowering Programs*, Course material for GAP international workshops, unpublished.

Mehlmann, M. and O. Pometun (2011) *A Pedagogy for Sustainability*, Manuscript in preparation.

New Economics Foundation (2009) *The Happy Planet Index 2.0:*

- Why good lives don't have to cost the Earth*, New Economics Foundation, London.
<http://www.neweconomics.org/publications/happy-planet-index-20#download-buy>.
<http://www.happyplanetindex.org>
http://www.ted.com/talks/nic_marks_the_happy_planet_index.html (Nic Marks, TED Global 2010 Talk Happy Planet Index)
- Pattyn, B. and L. Van Liedekerke (2001) Anxiety and uncertainty in modern society, *Ethical Perspectives*, 8 (2): 88-103.
- Pearce, F. (2010) *From Ocean to Ozone: Earth's Nine Life-support Systems*.
<http://www.newscientist.com/special/ocean-to-ozone-earths-nine-life-support-systems>
- Pometun, O. (2008) *Encyclopedia of Interactive Learning*, A.S.K., Kiev.
- Pometun, O. (2010) *Lessons for Sustainable Development*, Textbook for 8th grade students, Litera, Kiev.
- Pór, G. (undated) *Strong and Weak Social Learning*.
http://p2pfoundation.net/Social_Learning#Strong_and_weak_social_learning
- Reason P. and H. Bradbury, eds. (2001) *Handbook of Action Research: participative inquiry and practice*, Sage Publications, London.
- Revens, R. (1980) *Action Learning: New Techniques for Management*, Blond & Briggs, Ltd., London.
- Robért, K-H. (2002). *The Natural Step Story: Seeding a Quiet Revolution*, New Society Publishers, Gabriola Island, BC, Canada.
<http://www.naturalstep.org/>
- Roberts, D. (2010) *Behavior Change Causes Changes in Beliefs, not Vice Versa*.
<http://www.grist.org/article/2010-11-23-behavior-change-cause-s-changes-in-beliefs-not-vice-versa>
- Rost, J. C. (1991) *Leadership for the Twenty-First Century*, Praeger, New York, NY.
- Rubin, L. and C. Hebert (1998) Model for active learning: collaborative peer teaching, *College Teaching*, 46(1): 26-30.
- Sattmann-Frese W. J. and S. Hill (2010) *Learning for Sustainable Living*, Lulu.com.
- Slavin, R. (1994) *Cooperative Learning: Theory, Research, and Practice*, Allyn and Bacon, Boston
- Staats H., P. Harland and H. A. M. Wilke (2004) Effecting durable change: A team approach to improve environmental behaviour in the household, *Environment and Behaviour* 36: 341-367.
- Stewart, A. (2001) *Theories of Power and Domination*, Sage Publications, London.
- Unrau, N. (1997) *Thoughtful Teachers, Thoughtful Learners*, Pippin, New York, NY.
- Wackernagel M. and W. Rees (1996) *Our Ecological Footprint: Reducing Human Impact on the Earth*, New Society Publishers, Gabriola Island, BC.
- Watzlawick, P., J. Weakland and R. Fisch (1974) *Change: Problem Formation and Problem Resolution*, W. W. Norton, New York, NY.
- Ziegler, W. (unpublished) *Deep Listening and Deep Learning*.

WEB References

- To further explore the economic dimension of sustainability see:
- Tom Greco's website for problems and solutions in regard to money and banking;
<http://www.reinventingmoney.com/>
 - Herman Daly's classic work on steady state economics, now promulgated through the Center for the Advancement of the Steady State Economy (CASSE);
<http://steadystate.org/>
 - The work of "the new economics foundation";
<http://www.neweconomics.org/>
 - The Foundation for the Economics of Sustainability (Feasta);
<http://www.feasta.org/>
- For more information on Global Action Plan (GAP) International, please see <http://www.globalactionplan.com>.



Marilyn MEHLMANN

Marilyn Mehlmann has been engaged in questions of behaviour and sustainability since the mid 1980s, serving since 1994 as Secretary- General of Global Action Plan (GAP) International. She is responsible for GAP's ongoing program of action research to identify, develop and improve methods and tools for effective sustainable behaviour change. She is also Vice-President of the Union of International Associations (UIA), a scientific centre in Brussels.



Nadia McLAREN

Nadia McLAREN is an ecofuturist and, for almost 30 years, an independent consultant and researcher. Her enthusiasms are for planetary and human wellbeing; collaborative leadership and collective intelligence; and technologies for community building, accelerated learning and social transition: "methods that work," "learning through doing" and know-how sharing. She is a Research Associate of GAP and currently also facilitates projects of Sustainable Communities South Australia (SCSA) and the revegetation of the local St Peters Billabong.



Olena POMETUN

Olena Pometun is a Professor of Theory and Methodology of Teaching at the Academy of Pedagogical Science of Ukraine (Kiev). She is also a Director of Democracy and Partnership of Ukraine. Since 2005 she has been involved in research on pedagogical aspects of Education for Sustainable Development integrated into a secondary school curriculum. She has developed numerous textbooks and teachers' manuals for school grades 3,4,8 and 9 based on a combination of empowerment pedagogy, active learning and critical thinking strategies. She is also involved in training teachers and teacher trainers, and in producing manuals for ESD teacher trainers.