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PEDAGOGY, PLACES AND PEOPLE

Ros Wade

London South Bank University, the United Kingdom

Abstract

The paper will explore the potential of new technologies in helping educators to play an active role in creating and promoting the learning that is needed for local and global communities to live sustainably. In particular, it will examine the potential of the virtual world to develop local and global communities for transformative learning for sustainable development. It is organised into three sections: 1) the need for new ways of knowing, learning and understanding; 2) the challenges an opportunities of the virtual world; 3) the role of virtual learning communities in education for sustainable education; 4) regional centres of expertise as a mobilising mechanism. Faced with the major challenges of climate change, environmental degradation, poverty and social inequality, it is clear that learning to live sustainably has never been more urgent. The credit crunch has thrown these into sharp relief and provided an opportunity to take stock of our current ways of organising the world economy which have led us to this unsustainable impasse. We are faced with a critical moment in world history which offers the chance to make the changes needed to set human beings on a path to a more sustainable future. In order to address these immense challenges, new forms of learning are needed, and the paper will argue that all educators, as responsible members of local and global communities, need to play key roles as agents for change. Globalisation and new technologies have changed the way we think about the world and about what constitutes the global and the local. It is clear that both local and global solutions must be found to address the serious dilemmas of the 21st century. This paper will see to examine the opportunities and challenges of the virtual world in enabling and supporting the development of effective ESD communities of practice.

Key words: education for sustainable education, regional centres of expertise, communities of practice, virtual learning communities

The need for new ways of knowing, learning and understanding

One of the obstacles to change has been a reluctance or an inability to integrate social and environmental concerns into policy making and practice. This in itself is in part a reflection of the divisions between the two agendas of environment and development (Wade & Parker, 2008) and the obstacles of language and understanding faced by the social sciences in working more closely with the natural sciences and vice versa. The three pillars of sustainable development are considered to be environment, economy and society, yet in much policy making the economic pillar is still privileged over the other two.

According to United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2012), investing in education is crucial for achieving sustainable development, poverty eradication, equity and inclusiveness. Education holds the key to productivity and sustainable growth, improves health and nutrition, income and livelihoods, creating a condition for achieving all of the millennium development goals (MDGs) and the education for all (EFA) goals. As economic models are still so central to our world view and as all people on earth need a livelihood in order to survive, we cannot afford to ignore some central questions: *What do we mean by sustainable growth? What kind of society do we need to build in order to achieve sustainable living? How can education for sustainable development (ESD) help to deliver this?*

In recent years, there has been a developing critique which indicates that our current economic paradigm of high consumption material growth is not appropriate and that business as usual is not an option (Stiglitz, Sen, & Fitoussis, 2009; Sachs, 2012). Some commentators would argue that the very notion of sustainable growth is a tautology since economic growth cannot of itself as presently constructed be sustainable. In relation to this, many commentators are also challenging the appropriacy of gross domestic product (GDP) as a useful measurement of human well-being. Stiglitz et al. (2009) noted that for a long time there have been increasing concerns about the adequacy of current measures of economic performance, in particular those based on GDP figures. Moreover, there are even broader concerns about the relevance of these figures as measures of societal well-being.

Following on from this discourse, in 2012 it was reported that Jeffrey Sachs, a special adviser to UN secretary-general Ban ki-Moon on the MDGs, is clear that the old economic paradigm, which is based on a fixation of GDP growth, is leading us to disaster, but that we need to find a completely new way of measuring the success of society. He (Sachs, 2012) believes that sustainable development goals could be one route towards achieving that. If such a set of sustainable development goals could be agreed, these could possibly set the parameters for a new notion of growth which would not depend on measurements of GDP. Education and learning would be essential to develop such a concept of sustainable growth and for a well-balanced society which values societal well-being and quality of life.

The politics of knowledge

Society has not always been constructed as it is presently. A few hundred years ago, religion and state held far higher sway than the economy, for instance. The parameters within which we lead our everyday lives are constantly shifting, but there are key elements which as human beings we seem to share in relation to overall well-being (Dolan, Layard, & Metcalfe, 2011).

Education policy over the past three decades has been very successful in many countries in raising standards of literacy and numeracy (especially with regard to the MDGs) – but mainly within a constrained and rather instrumental model of education. While many would argue that this model has been quite successful in delivering economic growth in many countries, it has not delivered sustainability. Since the birth of industrialisation, it has also presided over the fastest and most wide ranging ecological destruction of our planet. We are now said to be in a period of the 6th greatest extinction of natural life during our planetary history and a large body of scientific evidence attributes responsibility for this to our human actions. In addition, there is increasing evidence from the research on human well-being (Dolan et al., 2011) that after achieving the important threshold of income to maintain a reasonably comfortable life, economic growth and increased wealth do not add to the sum of human happiness. In fact, many of the wealthiest countries have very low indicators of human wellbeing. According to the 2012 New Economics Foundation, the country which seems to have the highest state of well being is Costa Rice with the USA only in 105th position out of a possible 151 countries (New Economics Foundations, 2012). And while Costa Rica has one of the smallest ecological footprints, the USA has one of the largest. Yet at the same time, many countries around the world, especially those with ongoing endemic conflicts such as Haiti and Afghanistan, exist with the lowest levels of well-being as they are still struggling to establish security and eradicate extreme poverty. Therefore, it is very timely to consider how we can learn to embed the values of community, social justice and ecological stewardship within future economic models.

Quality education and ESD

Pigozzi (2003) eloquently describes a vision of quality education which brings together these economic, social and environmental concerns. A quality education must reflect learning in relation to the learner as individual, family and community member and part of a world society. A quality education understands the past, is relevant to the present and has a view to the future. A quality education relates to knowledge-building and the skilful application of all forms of knowledge by unique individuals that function both independently and in relation to others. A quality education reflects the dynamic nature of culture and languages, the value of the individual in relation to the larger context and the importance of living in a way that promotes equality in the present and fosters a sustainable future.

ESD has much to offer and a key role to play here in influencing the agenda both in policy and practice within this discourse around quality education. There is now a level of consensus around the concept of ESD at the international level which has been brought about by the work of UNESCO, the United Nations (UN) body with the lead role in promoting the education commitments derived from Agenda 21. UNESCO has identified the following elements that characterise ESD which is facilitated through participatory and reflective approaches. According to UNESCO (2007), ESD

- is based on the principles of intergenerational equity, social justice, fair distribution of resources and community participation that underlie sustainable development;
- promotes a shift in mental models which inform our environmental, social and economic decisions;

- 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;
- promotes life-long learning;
- addresses content, taking into account the 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 cross-disciplinary. 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 critical reflective skills.

ESD stresses the importance of contextualisation, relevance and appropriacy of learning. It highlights the importance of breaking down barriers between formal, non-formal and informal education. It makes the links between scientific knowledge and local, indigenous knowledge - all of which are needed for the future sustainability of the planet. An in depth indigenous understanding of local ecology, such as plant and forest lore, is essential for addressing issues of climate change. Traditional home building in earthquake zones, together with modern scientific know-how has enabled safer dwellings to be built for people. Indigenous knowledge is, of course, often built up over many generations and centuries of experimenting - but this is rarely written down or recognised. As UNESCO (2012) emphasised, when addressing global environmental change, the knowledge and priorities of indigenous peoples and local communities are seldom considered in decision-making. However, indigenous knowledge offers insights, precision and nuance, which complement science. The Asia Pacific Cultural Centre for Unesco (ACCU, 2009) has also detailed many examples of the importance of what they call 'grassroots approaches to ESD' in "Tales of Hope II". These also highlight the importance of traditional spiritual values of care and community which are held by many indigenous groups and which in many ways embody the values we need for ESD.

Since the 1992 commitments of Agenda 21, policy and practice in ESD have developed considerably at the local, regional and global levels, and in many countries there is now government policy in place in all areas of the formal education sector, from schools to higher education. In addition, national legal requirements on sustainable development in relation to other sectors, such as the built environment, have created space and demand for training at a range of levels. As the focus for the UN Decade from 2005 to 2014, education is now viewed as a prime lever for social change, described by UNESCO in the implementation plan for the Decade in the following way: It means education that enables people to foresee, face up to and solve the problems that threaten life on our planet (UNESCO, 2005). More recently, ESD was further highlighted at Rio plus 20 Summit in 2012 when UNESCO again re-stated the case for the importance of education and called for mainstreaming ESD comprehensively into relevant national education policies and practices (UNESCO, 2012).

The role of networks and learning communities of practice (COPs)

Networks have long been an important mechanism for community action and engagement for mobilising groups of people around key issues, as, for instance, the Occupy movement illustrates. Networks are not new to universities either, but in the past many of these have developed in relation to subject specific areas, through, for instance, subject bodies like the Political Studies Association and the Geographical Association. Informal higher education networks have also emerged through shared interest (particular projects, social networks).

However, a network is not necessarily the same thing as a community of practice as Wenger (1998) makes clear, although sometimes they may share some of the same characteristics. In their work on social networks, Wellman and Berkowitz (1988) focus on networks in relation to communications through interpersonal relationships via a level of informal structure. Lave and Wenger (1991) have drawn on this in their investigations of situated learning and communities of practice which looks at social networks more from the perspective of action and learning – many ESD networks can frequently more accurately be characterised in this way.

Network theory has provided some insights into relationships, though it has largely focused on communications in relation to business efficiency in organisations. The goal of ESD is certainly much more complex and multi-level than any organisational goal. ESD has a focus on developing relationships in order to transform practice and has a responsibility to both present and future generations. The notion of learning communities of practice thus seems very relevant to the goals and aspirations of ESD.

Developing a virtual learning community of practice for sustainability

An early example of a virtual learning community was the UK distance learning Masters programme in education for sustainability which was set up in 1994 by a consortium of non-governmental organisations (NGOs) through a collaboration with London South Bank University (LSBU). After 1992, governments were very slow to act on the educational commitments of Agenda 21, so in many cases NGOs decided to take the initiative. In this instance, the NGOs comprised both environmental and development agendas and included Oxfam, Save the Children Fund, Action Aid, Intermediate Technology, Council for Environmental Education, Development Education Association and World Wide Fund for Nature (WWF), which provided most of the financial backing and leadership of the project. From the start, it was envisaged that the programme would be primarily by distance learning, and one of the challenges was to develop a strong and supportive learning community. Initially this was through paper-based materials which were developed and posted to students, while tutoring was conducted mainly by phone or letter. It is hard to believe now, but in 1994 there was no email or internet communication available at universities in the UK! However, this

did not mean that it was impossible to create a virtual learning community, but it did make it more difficult. Students were encouraged to send in their biopics, and a student Guide was produced each year with information on individual student interests and contact details. A newsletter was also written and sent out on a termly basis with course updates and information about relevant conferences, books, etc. Optional day schools were held and a written report was circulated to students around the world.

"Communities are social systems intended to serve specific purposes" (Daniels, 2009, p. 2), however, Quinn (2010) critiques the term 'learning community' as she feels that is too unproblematised and limiting, and she puts forward an argument for the concept of "imagined social capital" (p. 12). However, to Wenger learning communities are not different from communities of practice. In fact, to him a community of practice provides the opportunity for learning, both for the acquisition of knowledge and for the creation of knowledge (Wenger, 1998).

Yet, Wenger was mainly talking about informal learning within the workplace and not about a specific formalised learning environment. The education for sustainability (EFS) community was specifically set up for the purpose of learning, so how could this equate to a community of practice? Wenger (2006) describes communities of practice as groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly. There is a relationship here to notions of social capital. An effective ESD learning community of practice might be considered to fulfil the criteria identified by Wenger (1998, 2006), but would clearly also need to include the key components of ESD (UNESCO, 2007) and would need to demonstrate a commitment to the values and principles of ESD.

The EFS programme described above could be described as an ESD learning community, but to what extent is this a community of practice? EFS students clearly shared a concern and passion for what they were doing as evidenced by their coursework and commitment to become agents for change. Their coursework indicated a range of work in formal, non-formal and informal settings, end-of-year evaluations indicated a shared ethos and a strong belief in the shared values of the course (Quality Assurance Agency, 2001). Interaction with tutors was taking place on a regular basis, but interaction between students was, of course, impeded by the difficulties and slowness of communication. The development of the internet has provided a tool which has changed this situation immeasurably.

Challenges and opportunities of the virtual world

The use of the internet in university courses has increased exponentially in the last five years, with most higher education institutions now offering a range of distance or blended learning course, at least partially mediated by online provision. This has thrown up a wide range of challenges and opportunities. Castells (1996, 2000) maintains that we are moving from the capitalist industrial age into the capitalist information age and the basis of the technological means by which it acts has changed from energy to information. New technologies allow for the collapse of space and for the potential for rapid and asynchronous communication which

also changes the relationship to time. Information and communication technology (ICT) has created new nodes of power centres within networks. Some networks, such as that of financial capital, are global in scale while others are local or organisational. Some can be captured by powerful interests and lobbying groups while others can be used in radical challenge to an established system, such as during the Arab spring.

There is no doubt that the internet has provided unprecedented access to information and that it is changing the way that human beings relate to information and to news media. In relation to ESD, Bowers (2000) is also concerned that computers are a culturally mediating and transforming technology and he warns about the fact that they are perpetuating unsustainable western perspectives of consumption. He recognises that the use of ICT is here to stay but that that we need to adopt a cautious and critical approach – otherwise there is a danger that environmentally destructive cultural practices will only increase.

There are also implications for the world's environmental resources as each new online innovation requires more and more energy to maintain servers and consumers vie to buy the latest gadgets, while often consigning older models to landfill. Valuable minerals are being exploited in vulnerable parts of the world in order to satisfy demand and are implicated in conflicts such as that of the Congo. ESD practitioners need to be wary of adopting the use of new technologies uncritically, and indeed this underlines the importance of critical thinking skills and competences as part of any ESD programme.

The development of social media and networks has also led to a blurring between the public and private spheres. Sites such as Facebook have provided opportunities for people to exchange and share personal photos, ideas, information on an unprecedented scale – which has enabled close friendships to be maintained and developed across space and time. At the same time, it has brought dangers to some when private information has become public or when the virtual world has enabled people to practise deceit and deception.

Unequal global access is also an issue, although this is changing fast, but currently many areas of the globe still have limited availability of broadband and wifi. This is the case in many of the poorest countries in Sub Saharan Africa and this can limit the potential to develop accessible virtual learning communities in these regions. Some African students on the EFS programme have found their internet very slow and have been unable to contribute as much as they would like to group discussions. Many do not own personal computers and are forced to use internet cafés which are expensive and also provide a very noisy and public environment.

Another implication for the increasing use of new technologies is the danger that people may become more detached from their own local communities and friends. This would clearly have implications for ESD if that were to be the case – because ESD learning communities of practice operate on so many different levels – from personal to local to global. Wellman, Quan-Haase, Witte and Hamtpon (2001) describes some critics' concerns that "we will become increasingly home centred and disconnected from our friends family, and communities" (p. 301). However, according to Atkinson (2012) "on examining the evidence there are a number of case studies which counter this view. In broad terms, local community

broadband has the potential to tackle social isolation, providing the opportunity for social interaction. But it also has a broader function. Far from reducing community feeling, the virtual communities that it helps shape can build social capital. It can act as a forum to discuss local issues, giving local people the opportunity to express their opinions and potentially have an impact on local policy. It can help build local campaigns (p. 10)". Atkinson also notes that a UK Department for Culture Media and Sport (DCMS) report encourages the development of community broadband and talks of the internet as "a participative, generative network promoting interactivity, collaboration and conversation" (DCMS, 2009, p. 1). The Community led broadband initiatives. This has enabled access to the internet for a number of isolated communities in sparsely inhabited areas. Other initiatives are providing access for people with disabilities or chronic ill health. Atkinson (2012) highlights one such initiative where "members of the local community have been working with Dundee University on projects for independent living for those subject to chronic ill health and for the introduction of so called tele-medicine. A fast and reliable community broadband network is key to this" (p. 114).

All these concerns are important, but essentially the internet is primarily a tool for communication, and like all tools it is one which can be used both positively and negatively. It should also be remembered that it is a tool which is socially constructed, that is to say, it is shaped by people – albeit with a range of different views, interests and power. Hence the importance of the critical dimensions in ESD – with regard to both sources and information and also to the wider implications of the use of ICT in education. The protocols for the use of social media and new technologies are still developing and ESD practitioners can contribute to this by ensuring that ESD principles and practice are part of this process. As a tool for the construction of virtual learning communities of practice, the way these are developed will, of course, depend on the values and ideologies of the people involved, and it is important to bear this in mind when examining the potential for ESD. It is the role of new technologies as a tool which will be examined here, in relation to supporting the development of learning communities of practice.

Key elements of a virtual learning community of practice

There are a variety of types of ESD learning communities of practice centred around different kinds of nodes. Some examples of these are identified below:

A formal taught course

The EFS programme at LSBU started life as a distance learning course before the advent of new technologies, but in the last five years the improvement in online communication has enabled the learning community to develop into a more active local and global learning community of practice.

This has been a gradual process and development has been incremental and not without

some teething problems when technical support has been found wanting. In particular, the role of the virtual learning environment (VLE) has increasingly provided a space for sharing of ideas and concerns on a more regular interactive basis. We have found that the prerequisites for this are the following elements:

- a safe space to talk and share;
- time to get to know each other;
- discussion area-lightly moderated;
- freedom to make mistakes;
- clear ethical protocols which all sign up to;
- well-structured, relevant activities (learning objects);
- applying theory to practice;
- time and space for individual reflection and feedback from tutors.

Because online technology also provides for synchronous as well as asynchronous communication, this enables students who live at very different parts of the globe with varying time zones to communicate effectively with each other and with tutors. Previously distance learning tutors had to plan carefully for telephone discussion with their students and it was not always possible. On line activities can be planned with this in mind so that responses can be made over a period of days or weeks – thus giving greater flexibility and time for reflection. However, it should be noted that many students are (understandably) still wary of committing their thoughts online and need a great deal of encouragement and incentive to do so.

The availability of Skype and other online video links has also meant that it is possible for students to have face to face conversations from time to time with their tutors and with each other. As other social media have developed, Facebook has also provided a more informal setting for students to meet and share views and, of course, the internet has provided them with the ability to set up their own private groups away from the eyes of tutors when they so wish.

New technologies do set up a range of expectations in students, however, and it is important to manage these effectively. For this reason it is important to set up clear protocols and to keep to them. For instance, there is a danger that the increased ease of access will encourage students to contact tutors at all hours of the day and this is just not manageable. In personal sustainability terms for tutors this would be quite impossible so clear parameters need to be set.

Where the use of the VLE has been most effective has been in strengthening and supporting relationships which have been made initially face to face, from actual to virtual. An example of this is with a cohort of EFS African students who first met at a residential week in Kenya. They selected a moderator for each course unit to remind them and chivvy them to input discussion and to share ideas. Taking such responsibility seemed to work well in establishing a group sensibility and dynamic and enabled some rich interaction, with limited intervention from tutors. A few months later, two of the students were involved in a very serious car crash and were in hospital for some time. In many cases they would have dropped out of the course or at the very least would have repeated the year but through the VLE the word went out to their fellow students in Kenya, Tanzania, Uganda, South Africa, Mozambique, Swaziland and Ghana. As a result of this, they received immense pastoral and moral support and encouragement and went on to complete their coursework by the end of the year! This could not have happened without the firm establishment of relationships at the residential but it was not possible without the VLE and other new technologies.

A shared professional interest

Teacher education (TE) is an example of a shared professional interest and two of the most extensive and effective teacher education ESD networks at a regional and national level are the Baltic and Black Sea TE Network and the UK TE Network for Equity and Sustainability. Both these networks are run by a steering group and are able to organise annual/biannual conferences where participants can share practice, debate and discuss new ideas. Most of the communication is conducted virtually and there is a web site where resources and conference papers are shared. Contacts between network members are via email lists and newsletters. The networks are at the same time part of the local educational arena, national arenas and international arenas. They are both also involved in the wider UNESCO ESD TE Network and so have a global reach as well, and they demonstrate key elements of communities of practice.

A review of the work of the UK network by Inman, Rogers, Mackay and Wade (2011) demonstrated that it "functions as a community of practice in a number of ways; locally (within institutions), regionally, nationally and internationally. At a regional level meetings take place between tutors from ITE providers in a particular region to share practice around integrating ESD/global citizenship (GC) into initial TE programmes; at a national level the steering group meets termly and an annual conference enables dissemination and brings members of the community together. The sharing of practice has already resulted in innovation and change in teacher education courses at some individual institutions" (p. 103), such as the Open University and University of East London. These programmes influence student teachers at these institutions, the pupils they teach while on teaching practice and, potentially, their practice throughout their teaching career. The internet has enabled "the multilayered nature of the UK Network (which) means that there is a two way flow of information between the different communities of practices (regional, national and international) of which the Network is comprised" (Inman et al., 2011, p. 104). What this network does not have yet, however, is a virtual forum for the exchange of ideas and debates between members of the network – these take place at face to face events or through journal articles, though the scope is limited by the formal setting of a conference or steering group. Although there are several NGOs involved in the UK TE Network, the focus is also (intentionally) centred on teacher education and discussions take place within these boundaries. There is limited engagement with non-formal settings and informal education at present, though there is certainly scope to do so in the future.

A global initiative

The regional centres of expertise (RCE) initiative of the UN Decade for ESD (2005–2014) aims to develop a global knowledge network for transformative education to promote sustainable communities. RCEs have largely developed organically in response to regional contexts and needs, while at the same time being part of a wider global network. All RCEs have to be accredited by the UN University at a global level, but most have started from individual universities and build on existing networks, as well as creating new ones. They are all committed to the vision and the goals of ESD and in this sense they could be said to share Wenger's key dimensions of practice which underpin the concept of the community of practice: Mutual engagement; A joint enterprise; A shared repertoire (Wenger, 2007).

In essence, an RCE is virtual by nature and "not a physical centre but an institutional mechanism to facilitate capacity development for sustainable development. An RCE is a network of existing local-regional institutions mobilised to jointly promote all types of learning for a sustainable future. RCEs, both individually and collectively, aspire to achieve the goals of the Decade for ESD" (Mochizuki & Fadeeva, 2008, p. 370). The RCE initiative offers a framework to develop actual and virtual communities of practice for sustainability because they are active at local, regional and global levels and the internet has enabled inter-communication across all these levels.

RCE have four elements: governance; collaboration; research and development; transformative education ("contributing to the transformation of the current education and training systems to satisfy ambitions of the region regarding sustainable living and livelihood" (Institute of Advanced Studies of the United Nations University [UNU IAS], 2012). Their goals are to:

- re-orient education towards sustainable development tailored to address issues and local context of the community in which they operate;
- increase access to quality education that is most needed in the regional context;
- deliver trainers' training programmes;
- lead advocacy and awareness raising efforts to raise public awareness about the importance of educators and the essential role of ESD in achieving a sustainable future (UNU IAS, 2012).

In addition, RCEs are cross-sectoral and involve educators at all levels of formal and nonformal learning, and are therefore able to draw on scientific, local and indigenous knowledge. They are based on the UNESCO principles (see above) and in the framework for ESD with its emphasis on interdisciplinarity, lifelong learning, participation, formal, non-formal and informal education (UNESCO, 2007). As Wenger (1998) points out, "practice does not exist in the abstract. It exists because people are engaged in actions whose meanings they negotiate with each other" (p. 74). This ongoing negotiation of meaning is integral to the success of all RCE projects and is a consistent part of mutual engagement. The internet can provide a valuable tool for negotiation and discussion across regions and countries and the speed of response can enable misunderstandings to be sorted out more quickly. Nonetheless, this same ability for instant response can lead to unrealistic expectations, for instance, in seeking partners for a new project. And as most discussions are conducted through the medium of the English language, this may give rise to some confusion and misunderstanding. It also raises many questions in relation to the development of knowledge and understanding more generally – which is something ESD needs to pay attention to but which is beyond the scope of this paper.

Wenger's analysis mainly concerned the work of apprentices in formal work settings but in the case of ESD and the work of RCEs, this engagement certainly is not necessarily a statutory part of each person's job description. In fact, many members of RCEs are volunteers and contribute to the RCE outside their contracted work. However, as Wenger (1998) points out, "homogeneity is neither a requirement for, nor the result of, a community of practice" (p. 76). In effect, the mutual engagement towards the goals of ESD enables mutual support on a learning journey that participants volunteer to take. Obviously, within the RCE Community there will be different levels of involvement, some members will take more peripheral roles and some more integral and dynamic, and these are likely to change over time. And there is no need for all members to be in constant agreement with each other. On the contrary, "disagreement, challenge and competition can all be forms of participation" (Wenger, 1998, p. 77).

However, the development of each RCE project's "joint enterprise is the result of a collective process of discussion and negotiation and is defined by the participants in the very process of pursuing it" (Wenger, 1998, p. 77). The action research approach that underpins much of ESD and the work of RCEs has meant that the overall parameters are constantly evaluated and reshaped and then the learning from this is used as a basis to shape the next project in a rolling cycle of research and development. The 'shared repertoire' where participants develop shared language and histories has developed over time and is demonstrated in a number of RCE publications that have emerged from the collaborations.

Most (though not all) RCEs are coordinated by universities, such as RCE Crete which is coordinated by the UNESCO Chair ICT in Education for Sustainable Development at the University of Crete – these maintain an important position in their local and regional communities: they offer a wide range of employment to local people and they also impact on the natural and built environment. Universities are, of course, not only part of the local community but are also part of the national and global communities through their wider networks and responsibilities. The concept of the RCE recognised this fact and aimed to promote transformative education for sustainability by developing a global learning space for exchange of ideas and knowledge. They would do this by creating a network of networks. This would need to be largely virtual in order to encompass all the key players and organisations though it would be supplemented and supported by periodic face to face contacts as appropriate. However, this is not to downgrade the personal contact relational elements which are always key to the success of such communities of practice. Without mutual trust, understanding and shared goals, RCEs would be very ineffective.

In January 2012, there were 100 RCEs across the globe, supported by a secretariat at the UNU IAS, with a biannual conference where delegates come together to share ideas and de-

velop collaborative synergy. The RCE initiative is also linked in with the global UN milestones and events towards sustainable development which has given it potential to be a mobilising mechanism at a global as well as a local level. Of all the three types of ESD communities of practice, it is the RCE which to me best addresses the criteria put forward by Wenger for effective learning and action and which offers the greatest potential for development and creativity. This is not to say that the others are ineffective, on the contrary, but they are working within the parameters of a formal setting with academic boundaries – which undoubtedly affect their ability to develop and negotiate shared meaning and activity.

The role of virtual learning communities of practice in ESD

Strengthening local and global dimensions

The shrinkage in space and time which new technologies have brought about has allowed a much greater amount of interaction and participation at local and global levels. This is a key dimension of ESD (UNESCO, 2007), and it enables learning to take place in different geographical locations, each possibly drawing from the other as practitioners interact across time and space. At the same time, access to internet information sources allows participants to refer to both national and global policy and practice and contextualise their work more coherently.

RCEs are both a local/regional network and a global network; they are also often members of national and wider international (for instance, European) networks. As such, individuals and organisations can share ideas and knowledge by interacting at a range of levels. While it is the quality of relationships that matter, there is no doubt that the internet has brought in opportunities for supporting and strengthening these relationships in a way that would not have been possible without it.

RCEs have a structure (albeit loose and flexible) and accountability to United Nations University and to other RCEs within the networks. This offers a strong sense of solidarity and mutual support in developing learning communities and networks for sustainability which have the power to play an active role in creating and promoting the learning that is needed for local and global communities to live sustainably. In taking on a lead role in RCEs, universities have the potential to stop being part of the problem and to become part of the solution to the urgent challenges facing people, place and planet by actively mobilising sustainable communities locally and globally.

Creating new knowledge

Wenger (2006) notes that the very characteristics that make communities of practice a good fit for stewarding knowledge – autonomy, practitioner-orientation, informality, crossing boundaries – are also characteristics that make them a challenge for traditional hierarchical organisations. Many organisations in the business sector have taken up this idea in order to

innovate and improve performance, but these characteristics can run counter to the organisational management style. This means that they do not make the most of the COP model nor do they necessarily allow the full potential of COPs to develop. On the other hand, these characteristics are a core part of ESD and therefore a good fit for ESD practitioners in promoting complex learning across sectors and disciplines.

The EFS programme at LSBU provides an early example of cross-sectoral, transdisciplinary education, where academics engaged with experienced practitioners to share learning and develop new knowledge. ESD lends itself to this kind of engagement as it requires the involvement of all sectors and all areas of learning and understanding, formal, non-formal and informal. This three-sector engagement is illustrated in the diagram below.



Figure 1. Dependent Three Sector Model (Parker, 2008)

ESD is still an emerging transdisciplinary concept, growing up and being constructed in an internet age. The virtual world provides immediate access to differing interpretations and new ideas which are essential to its development. Students along with tutors are knowledge creators and practitioners and are learning, reflecting and applying their ideas to a wide range

of situations and contexts across the globe. The internet gives them the opportunity to share and confer about their experiences, no matter where they are based. For nearly two decades the LSBU EFS community has been involved in changing the ESD landscape, both through professional practice and also through involvement with NGOs and other networks. This work has included curriculum development in Fiji, Tanzania, South Africa, Canada and Hong Kong (Wade & Parker, 2008). Other graduates have been involved in national and international policy making, such as the Ramsar Convention on Wetlands and the World Summit on Sustainable Development (WSSD). (For some illustrations of this learning and practice see http://www.efscommunity.t83.net/ and also "Journeys around Education for Sustainability" edited by Parker and Wade, 2008).

The RCE concept was actually first conceived as a way of enabling the latest scientific and technical knowledge to be reflected more in what is taught in schools by breaking down barriers between scientists and educators. As such, RCEs were first perceived as knowledge hubs, which brought together a range of discipline and sectors, to provide responses to ESD challenges in the region. This model of RCEs did enable universities to build on their strengths as knowledge hubs as well as to build new knowledge through social and organisational learning. In principle, this model enables the sharing of scientific and technical information for the benefit of local communities and has enabled, for instance, schools in one of Nairobi's largest informal settlements, Kibera, to develop successful water harvesting projects and school gardens. RCE Greater Nairobi presents an example of an RCE which was very strongly founded on the principles of community development for sustainability, and, indeed, it was first developed through an NGO, Kenya Organisation for Environmental Education and only in 2010 was fully adopted by Kenyatta University.

ESD has recognised the importance of making links between formal and non-formal educators and the need to breakdown some of the hierarchies of knowledge which transcribe this. Educational expertise in responding to community needs has generally resided with community and adult educators rather than with educators from the formal sector. Although this area has lacked government support and validation, the formal sector has much to learn from its experience and expertise. RCEs can provide the mobilising mechanisms for this to happen, as in RCE Greater Nairobi which was originally set up by the NGO, Kenya Organisation for Environmental Education. This has of necessity developed largely through face to face interaction, but in other parts of the world where web access is more reliable the internet has enabled communication and interaction across the sectors. Many RCEs have set up web sites to provide an external face and to encourage wider participation. RCE Rhine Meuse, for instance, is building a web space for all European RCEs to participate and share joint enterprises where appropriate.

The RCE community of practice also offers opportunities to apply expert knowledge as well as to develop new knowledge in response to local and regional problems and concerns. RCE Greater Nairobi, together with UNU and a number of other African universities, has been very involved in developing a new Masters programme for the African region on Community Development. In this instance, the RCE identified a regional need which was shared with several other African countries and UNU provided the global knowledge networks to enable the course to be developed.

In Malaysia, a worm composting project at RCE Penang brought together scientists and members of the local community to use technology from University of Sains Malaysia which enabled the local community to use waste from paddy, cow dung and general village waste to increase their income by 100 per cent (Sanusi and Khelgat-Doost, 2008). In this case, RCE Penang was able to combine expert (global) scientific knowledge with local community knowledge to provide solutions to issues of sustainable livelihoods.

Transparency, accountability and democracy

New technologies can provide a tool for ensuring transparency and accountability which in turn can support democratic, participatory processes which underpin ESD.

UNESCO's International Teacher Education ESD network, which was originally set up by a group of university rectors, is now recognised as one of UNESCO's flagship projects which is contributing to the UN Decade of ESD. The global network aims to support the development of local/regional networks, and there is a considerable amount of synergy between the two. Without the internet it is unlikely whether this initiative would have taken off, and certainly without the internet it would have been impossible to disseminate shared resources in an open and accessible manner (www.UNESCO/esd).

In the case of the UK ESD/GC Teacher Education Network, research undertaken by the network 2011–2012 (unpublished) indicates further that the network is seen as supporting the dissemination of ESD ideas and resources and is largely perceived as non-hierarchical, democratic and accountable, despite being coordinated by one particular research centre at LSBU. However, it is important not to exaggerate the effects of new technology here. Undoubtedly, ICT has enabled and supported this sense of participation, but this has gone hand in hand with strong face to face relationships built up over time and a strong participatory and democratic ethos within the LSBU Education Research Centre (www.lsbu.ac.uk/ccci).

Engagement and action

Educators who seek to effect radical social change obviously need to be active both within the mainstream and outside the mainstream. Communities of practice, such as the one at London South Bank University(above), provide opportunities to do just this as they "build and strengthen alliances – locally, nationally, and globally – with other groups and social movements in order to intervene successfully in educational reform movements (Ginsburg et al., 1991, p. 29). In the case of the UK Teacher Education Network, recent research highlighted the importance attached by members to feeling part of a movement for change, and a considerable majority felt that the network itself had been successful in achieving this. One of the aims of the network is to influence policy and practice, and many participants were clear that

this had been achieved, at least partially, within their departments and institutions.

The EFS Programme at LSBU has retained its active engagement with NGO networks and, for instance, in 2002 the team co-coordinated an intervention at the WSSD in partnership with WWF-UK and Oxfam. Graduates of this programme have gone on to become champions of ESD in many different countries and to form influential networks for change. Organisations they are involved in include the London Sustainable Schools network, RCE Wales, RCE Ireland, Kenya National Environmental Management Agency, United Nations Environment Programme in mainstreaming environmental sustainability across African universities (MESA), Botanic Gardens Conservation International.

RCEs as a mobilising mechanism for ESD

To quote Ginkel (Sterling, Maxey, & Luna, in press), who was instrumental in setting up the RCE initiative, "this approach also has a tremendous mobilising potential. Characteristically the successful RCEs would run a large number (a 'portfolio') of highly attractive and effective EfSD projects, each of these run by two or more member institutions coming from different sectors of society".

At the heart of ESD and RCEs is the commitment to the transformation of society and the reorienting of education systems towards sustainability. Through their networks the RCEs bring together a wide range of organisations and key people to develop a more holistic, joined up approach to solving some of the problems of the region. They are not constrained by the barriers of the formal sector frameworks as their remit is to work beyond and across these. For instance, members of RCE Greater Nairobi include various ministries (such as Education, Environment and Natural Resources, Planning), public schools, the National Museum of Kenya, University of Nairobi and Kenyatta, National Chamber of Commerce, Nature Kenya. London RCE also includes a wide range of stakeholders from civil society, business and local government organisations. Among the partners of the London RCE are WWF-UK, Government Office for London, Development Education Association, Botanic Gardens Conservation International, London Remade, London Sustainable Schools Forum, Oxfam Education, Humanities Education Centre, London 21, Bromley Sustainable Schools, London Environmental Education Forum, Sustainability and Environmental Education, Academy of Sustainable Communities, People and Planet student network and Conserve Africa.

In the UK, one of London RCE's initiatives was developed in response to the needs of local communities around the Olympic Park. This enabled a number of local groups to come together, to make links with local universities of East London and Greenwich to consider how to ensure a positive sustainability legacy from the Olympic development. In a sense, the RCE performed the role of broker in bringing these groups together to make common purpose while leaving them the autonomy to decide on future plans. This enabled several different groups to join together, for instance, from the formal sector (school, universities) and non-formal (youth groups, NGOs). RCE/EAST (Toronto) was originally an initiative of the City Council, led by Toronto Zoo. However, when Toronto University became part of the RCE, this helped to promote "the university's objective of engaging in outreach and helping to impact upon the development of public policy, through interdisciplinary engagement in environmental concerns" (Stefanovic, 2008, p. 423).

RCE Penang co-ordinated by Universiti Sains Malaysia is also closely involved with local communities and sees its role as threefold:

- helping students be aware of the world in which they live and gain an understanding of "the interactions between multifaceted economic, social and environmental problems (including the contribution of individuals to these processes) and a familiarity with perspectives on these issues from other societies and cultures" (Sanusi & Khelgat-Doost, 2008, p. 493);
- helping societies to find solutions to sustainable development challenges through its network, social and technical solutions and through academic research and professional experience;
- "developing partnerships between policy makers, decision makers, NGOs and key individuals who are involved in SD related activities at local, regional and international levels" (Sanusi & Khelgat-Doost, 2008, p. 493).

Their citizenship programme is an example of community engagement in training high school students to identify problems and issues in their communities and to use an interdisciplinary approach to try to solve them (Sanusi & Khelgat-Doost, 2008).

RCEs are in their early development and there is still much need and potential for development if they are to become really effective. Their structure and framework allows for this, and as through their mobilising mechanism they have the ability to develop strong ESD learning communities of practice – and to address the urgent tasks that we all face in learning and living sustainably within the shared resources of our planet.

Conclusion

In this paper, I have tried to show how learning communities of practice are integral to ESD and I have explored some of the potential of new technologies in developing and supporting local and global communities of practice for ESD. The opportunities and challenges of the fast paced changing technological scene are immense: innovations continue apace, and it is important to try to keep abreast of them and of their implications for the way our world is shaped. It is, of course, unlikely (and not to be desired) that virtual communities of practice are ever going to supersede actual face to face involvement, and it is important to see the two as going hand in hand. ESD principles and practice also have a great deal to offer to the online world generally in addressing some of the dangers identified earlier.

However, as tools for learning, communication and information sharing, new technologies have great potential despite some of their drawbacks. And it is clear that the virtual world can provide an important creative and enabling space for ESD learning communities of practice. As stated at the start of this paper, the case for change has never been more urgent for our planet and for humankind. As members of ESD learning communities of practice, we need to harness all the advantages provided by the new technologies in learning to live more sustainably. Time and space are shrinking in more ways than one, and we need to change our unsustainable ways as a matter of urgency – or time and space for a sustainable planet may soon be running out!

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References:

- ACCU (Asia Pacific Cultural Centre for UNESCO). (2009). Tales of Hope II: Innovative Grassroots Approaches to ESD in Asia and the Pacific. Tokyo: ACCU.
- Atkinson, H. (2012). Local democracy, civic engagement and community: From new labour to *the big society*. Manchester: Manchester University Press.
- Bowers, C. A. (2000). Let them eat data: How computers affect education, cultural diversity and the prospect of ecological sustainability. Athens: University of Georgia Press.
- Castells, M. (1996). The network society. Oxford: Blackwell.
- Castells, M. (2000). Materials for an exploratory theory of the network society. *British Journal of Sociology*, *51*(1), 5–24 DOI: 10.1111/j.1468-4446.2000.00005.x.
- Daniel, B. K. (2009). Social capital modeling in virtual communities information science reference: Bayesain. Belief network approaches. Hershey, PA: Information Science Reference.
- Department for Culture, Media and Sport. (2009). Digital Britain, final report. London: DCMS.
- Dolan, P., Layard, R., & Metcalfe, R. (2011). Measuring subjective well-being for public policy: Recommendations on measures. Special paper No. 23. Retrieved October 29, 2012, from http://cep.lse.ac.uk/pubs/download/special/cepsp23.pdf
- Ginsburg, M., Cooper, S., Raghu, R., & Zegarra, H. (1991). Educational reform: Social struggle, the state and the world economic system. In M. Ginsburg (Ed.), *Understanding educational reform in a global context: Economy, ideology and the state* (pp. 3–24). New York and London: Garland Publishing.
- Inman, S., Mackay, S., Rogers, M., & Wade, R. (2011). Effecting change through learning networks: The experience of the UK Teacher Education Network for ESD and global citizenship. *Journal of Teacher Education for Sustainability*, 12(2), 97–109.
- Lave, J., & Wenger, E. (1991). Situated learning: Legitimate peripheral participation. New York:

Cambridge University Press.

- Mochizuki, Y., & Fadeeva, Z. (2008). Regional centre of expertise on education for sustainable development (RCEs): An overview. *International Journal of Sustainability in Higher Education*, 9(4), 369–381.
- New Economics Foundations. (2012). *Happy planet index*. Retrieved October 29, 2012, from http://www.happyplanetindex.org/
- Parker, J. (2008). Unit 1 study guide introduction to education for sustainability. London: Distance Learning Centre, London South Bank University.
- Pigozzi, M. J. (2003). Reorienting education in support of sustainable development through a focus on quality education for all. Paper presented at the GEA Conference, Tokyo, Japan, 25 October, UNESCO.
- Quality Assurance Agency. (2011). Report on the education masters provision at London South Bank University. Retrieved October 29, 2012, from http://www.qaa.ac.uk/Pages/default. aspx
- Quinn, J. (2010). *Learning communities and imagined social capital; learning to belong.* New York: Continuum.
- Sachs, J. (2012). Rio+20: Jeffrey Sachs on how business destroyed democracy and virtuous life. Retrieved December 12, 2012, from http://www.guardian.co.uk/sustainable-business/rio-20-jeffrey-sachs-business-democracy
- Sanusi, Z. A., & Khelgat-Doost, H. (2008). RCE as transformational platform for sustainability: A case study of University Sains Malaysia Penang. *International Journal of Sustainability in Higher Education*, 9(4), 487–497. DOI: 10.1108/14676370810905580.
- Stefanovic, I. (2008). Educational alliance for a sustainable Toronto: The University of Toronto and the City's United Nations University (UNU) Regional Centre of Expertise. *International Journal of Sustainability in Higher Education*, 9(4), 416–427. DOI: 10.1108/14676370810905526.
- Sterling, S., Maxey, L., & Luna, H. (Eds.). (in press). *The sustainable university: Progress and prospects*. Abingdon: Routledge.
- Stiglitz, J., Sen, A., & Fitoussis, J. P. (2009). Report by the Commission on Measurement of Economic Performance and Social Progress. Retrieved October 29, 2012, from http://www. stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf
- UNESCO (United Nations Educational, Scientific and Cultural Organisation). (2005). UN Decade for sustainable development 2005–2014. Retrieved December 10, 2010, from http:// unesdoc.UNESCO.org/images/0014/001403/140372e.pdf
- UNESCO (United Nations Educational, Scientific and Cultural Organisation). (2007). Introductory Note on ESD – DESD monitoring and evaluation framework. Paris: UNESCO.
- UNESCO (United Nations Educational, Scientific and Cultural Organisation). (2012). Rio+20.

Retrieved October 29, 2012, from http://www.UNESCO.org/new/en/rioplus20/

- UNU (United Nations University). (2011). *RCE (Regional Centre for Expertise) Bulletin, 15.* Retrieved December 9, 2012, from http://www.ias.unu.edu/resource_centre/RCE%20 Bulletin%2015%20FINAL.pdf
- UNU IAS (United Nations University Institute of Advanced Studies). (2012). *RCEs worldwide*. Retrieved December 21, 2012, from http://www.ias.unu.edu/sub_page. aspx?catID=108&ddIID=661
- Wade, R., & Parker, J. (2008). *EFA-ESD Dialogue: Educating for a sustainable world*. Paris: UNESCO.
- Wellman, B., & Berkowitz, S. D. (1988). *Social structure: A network approach*. New York: Cambridge University Press.
- Wellman, B., Quan-Haase, A., Witte, J., & Hamtpon, K. (2001). Does the internet increase, decrease, or supplement social capital? Social networks, participation, and community commitment. *American Behavioural Scientist*, 45(3), 436–455. DOI: 10.1177/00027640121957286.
- Wenger, E. (1998). *Communities of practice: Learning, meaning and identity*. New York: Cambridge University Press.
- Wenger, E. (2006). Communities of practice in and across 21st century organizations. Retrieved February 10, 2012, from http://www.ewenger.com/theory/

Correspondence:

Ros Wade is Director of the Education for Sustainability programme at London South Bank University. Email: wader@lsbu.ac.uk