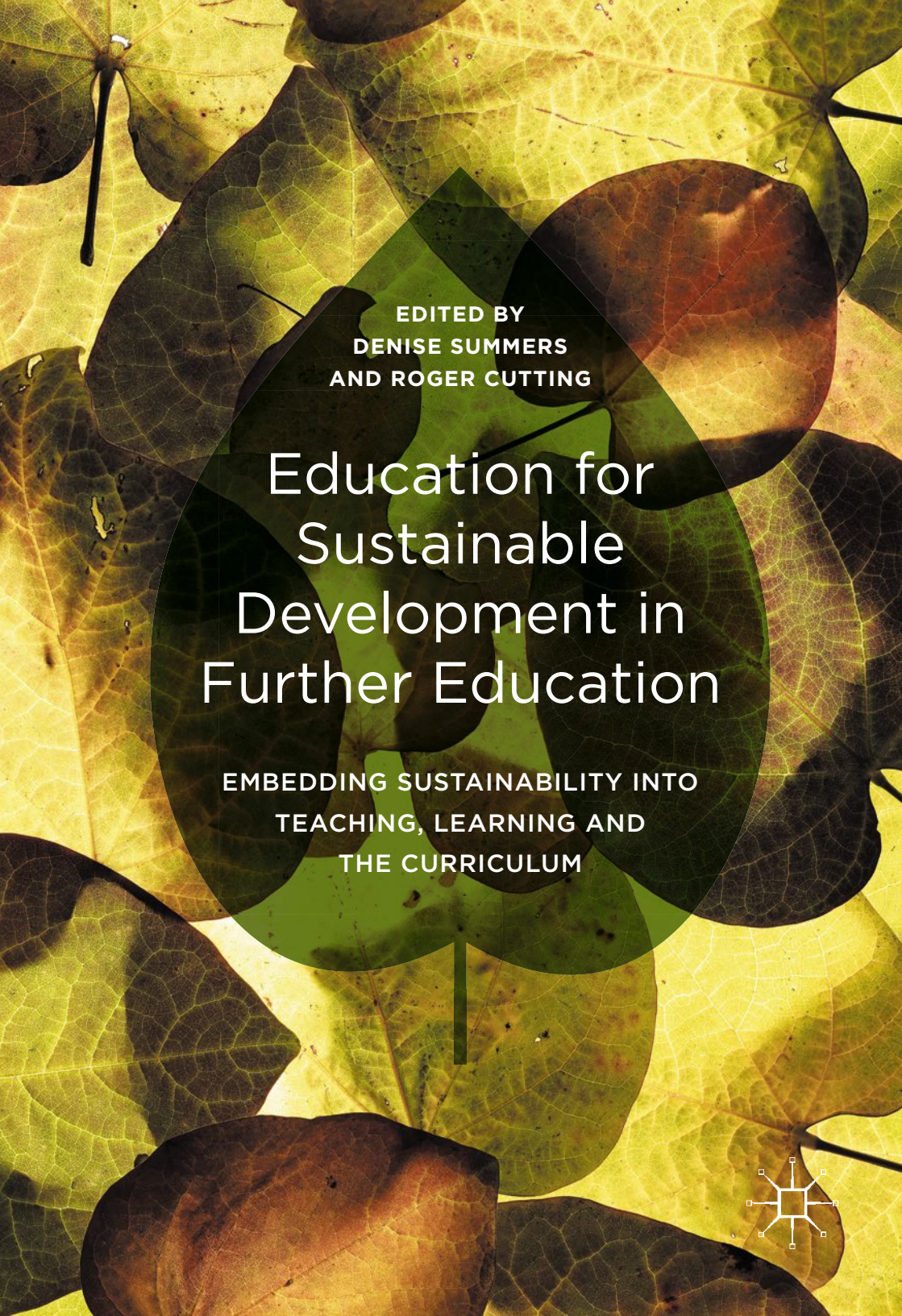
EDITED BY
DENISE SUMMERS
AND ROGER CUTTING
Education for Sustainable Development in Further Education
EMBEDDING SUSTAINABILITY INTO TEACHING, LEARNING AND THE CURRICULUM

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Denise Summers • Roger Cutting
Editors

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Editors
Denise Summers
Institute of Education
Plymouth University
Plymouth, United Kingdom

Roger Cutting
Institute of Education
Plymouth University
Plymouth, United Kingdom

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Notes on Contributors

Sarah Chave has been teaching for over 20 years in the further and higher education sectors in UK, including at City College, Plymouth, and Plymouth University. Her particular interests are business education, equality and diversity, education for sustainable futures (EfSF) and teacher education. She is currently working on a PhD at Exeter University to bring insights from philosophy, especially complexity theory, to EfSF and explored these ideas with students whilst teaching on the Plymouth University PGCE/Cert Ed programme. She is a director of the South West Learning for Sustainability Coalition and editor of its Update.

Roger Cutting taught in adult education for over 18 years, primarily in Further Education Colleges. He went on to design, implement and manage one of the biggest 'Access to Higher Education' programmes in the UK and has also set up and run community education programmes aimed at underrepresented groups. His commitment to environmentalism led to research into sustainability and approaches relating to educating for a sustainable world. At Plymouth University he has been a fellow of the Centre for Sustainable Futures and has been involved in research initiatives focusing on Global Citizenship and Educating for Peace.

Mark Delf has been teaching for 16 years in the Further Education sector in Cornwall, UK. He began his career lecturing and managing Health and Social Care programmes including BTec Levels 1–3, Access, HND, specialist Mental Health and Counselling courses. Since 2007, he has been managing and teaching initial teacher education programmes at Cornwall College including the Plymouth University PGCE/Cert Ed programmes for lecturers in the Further Education and Skills sector.

As part of the PU and the Cornwall College Group Innovation, Creativity and Enterprise research team he explored the embedding of problem solving, mindset and attitudinal change into ITE courses.

Dianne Dowling taught in Adult, Further and Higher Education Colleges in Devon and Somerset, UK, for 20 years, initially teaching sociology to 16 to 19 year olds. From 2000 to 2011 she taught on the PGCE/Cert Ed programmes at Somerset College then left to become a full-time researcher. Dianne has participated in a number of postgraduate research projects: Gendered health (Goldsmiths, UK), Education for Sustainable Development (Somerset College) and Health and Migration (University of Bologna, Italy). She is currently undertaking a professional doctorate in Researching Work at London Metropolitan University, UK. Dowling's postdoctoral work will focus on women, environmental health and sustainable development.

Laura Ginesi is a physiologist whose research in blood pressure regulation led her into the field of well-being. She taught health sciences in the Further Education sector for nearly 20 years and was an active birth teacher before becoming a life coach. Ginesi has been responsible for developing and delivering a wide range of health-related courses. She currently works at the University of East Anglia and is a Fellow of the International Association of Stress Management. Laura is particularly keen to challenge myths and misconceptions about well-being and long-term health.

Paul Matthews has been teaching in the further education and skills sector for 12 years. His areas of specialisation include teacher education and training, philosophy, business studies and quality assurance in FE. His PhD research sparked a continuing philosophical and political inquiry into the nature of human existence in the context of environmental concerns. His current paths of thought include social enterprise in the UK and wider European Union and teacher professionalism in FE.

Pauline Osborne is the HE Quality and Development Manager at Somerset College, which she joined in 2007 when she became involved in ESD. Pauline has worked in Further Education for 18 years, teaching business and management and conducting teacher training programmes. Her degree in French and Education from Surrey University (Roehampton) was followed by a PGCE from Oxford University. More recently she has been exploring ESD through a Masters in Education at Plymouth University. She completed a project funded by Plymouth University and supported by Somerset College ten years after the college started its ESD journey. Her chapter records the key findings.

Tanya Ovenden-Hope is a senior academic leader with innovative, enterprising and scholarly engagement in teaching and learning at the national and international level. She was awarded Principal Fellow of the Higher Education Academy and Enterprise Educator of the Year in 2014. She has 25 years of cross-sector education experience as a teacher, teacher educator and senior leader, and is director for two multi academy trusts and sits on several national steering groups in education. An active researcher throughout her career, She focuses on issues that improve teaching and learning, which is what led to the creation of the ICE House Project.

Sasha Pleasance has worked in Further Education for 20 years teaching Adult Literacy and English to Speakers of Other Languages (ESOL), working in prisons as part of a pilot project called 'Storybook Dads', family learning, refugee centres and on community projects for people with disabilities. Since 2005, she has been a teacher educator in Further Education. She is studying for her doctorate in Education, researching lesson observation and its effects on the work of teaching and conceptualisations of learning. She has written a textbook to support initial teacher education titled *Wider Professional Practice in Further Education*, which is due for publication in 2016.

Chris Savory has taught in the postcompulsory sector for over 20 years: in a sixth form college, school, FE colleges and University. He has been a senior researcher at the Institute of Education (London University) and the National Foundation for Educational Research. His last post was as lecturer in Initial Teacher Education at Somerset College. He has also been a 'Green' activist for 35 years, and recently had to withdraw from doctoral studies in Green Politics due to ill health. He currently volunteers, and is a trustee, for Dorset Reclaim, a charity that recycles unwanted household goods.

Russell Shobrook has been teaching since 1996 within higher education, vocational and work-based learning in the UK. His background is in engineering; and he served in the Royal Air Force for 14 years and subsequently worked with the Royal Navy and Royal Marines in training and development. Since 2008 he has worked at Plymouth University teaching on PGCE/Cert Ed initial teacher education programmes. He is currently undertaking a PhD that examines transitions and how the work of Bourdieu can be used as a tool for analysis. His research interests include the relationship between mentoring and coaching, and transitions within military environments.

Denise Summers has been teaching for 30 years in the Further and Higher Education sectors in the UK, ranging from teaching 16 to 19 year olds, students with learning difficulties and disabilities, adults and student teachers. Since

2000, she has been teaching in the Postgraduate Certificate in Education and Certificate in Education (PGCE/Cert Ed) programmes for lecturers in the Further Education and Skills sector, first at Somerset College and then Plymouth University. Her postdoctoral research has focused on Education for Sustainable Development, starting with the cooperative inquiry research approach used to support professional and curriculum development required to embed Education for Sustainable Development (ESD) in the PGCE/Cert Ed programmes, resulting in this book.

Simon Webster has been teaching at Plymouth College of Art and Plymouth University for 15 years. Starting out as a Ceramics and Glass lecturer on an Applied Arts course, he went on to teach on a variety of courses including Film and Graphic Design. He teaches in the Plymouth University PGCE/Cert Ed programmes and is also involved in curriculum development, exploring blended learning as a way to support trainee teachers whilst they are developing their practices. He has recently started his doctoral studies, exploring the effects of new technologies on sketchbook work carried out in postcompulsory Art & Design education.

Sue Webster has taught in the further and higher education sectors in UK since 2000, joining the Plymouth University teacher education and training team in 2001. Her background is eclectic. She trained as a registered general nurse but returned to study in 1995 gaining a BA Fine Art and being awarded Plymouth University's *Natalie Sitar Fine Art Prize* for outstanding achievement. Her Master's degree focused on the practices and identities of teacher educators, for which she received the *Nico de Bruin Award* 2009. Her postgraduate research continues to investigate personal and professional learning for teacher educators in Further Education and Skills.

Johanna Witts has been teaching for 25 years in both secondary and further education sectors. She has been a head of department and an external examiner. Witts began teaching in PGCE programmes in 2005 at the University of the West of England whilst studying for her Masters in Lifelong Learning. Her dissertation focused on PGCE students' experiences of assessment. She became interested in ESD as a result of a cooperative enquiry whilst working on Plymouth University's PGCE/Cert Ed at Somerset College, resulting in her contribution to this book. She currently manages the PGCE programme at Yeovil College University Centre.

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CHAPTER 1

Introducing Education for Sustainable Development

Roger Cutting and Denise Summers

We live in a time of rapid change. In the last 20 years, the advances in science and technology and the impact on how we live have been profound. The pace of developments particularly in areas such as biomedicine, electronic communications and data storage have been little less than spectacular. The technological tools that we have developed now allow us to not only explore adjacent planets but also view horizons that span from the edge of the known universe to subatomic space. Never before in our history have we understood so much about ourselves, or the physical world around us, and never before have we had the means of communicating this understanding, as well as asking intriguing questions concerning that which we still do not understand, to such a wide and literate audience. Progress in health technologies has presented us with such longevity that it is easy to forget that average life expectancy in the UK is 30 years longer than it was merely a 100 years ago (Kirby 2015). As a global population we have never been healthier or better educated and in the so-called high-income countries, we have never before enjoyed higher living standards than now. It would not perhaps be presumptuous to suggest that the late twentieth and early twenty-first centuries will most likely be recorded in history as the period of 'Technological Revolution'.

However, of course this rapid change has come at a considerable cost expressed through the hugely negative impacts on both the physical and the living environments. The relentless and rapid decline in

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the health of the Planet is plotted each year by the World Wide Fund for Nature's (WWF) State of the Planet Report and it is this deterioration in the physical environment, compounded by increasing social and economic disparities within populations that makes the future look increasingly bleak. It seems strangely ironic that at a time when we can look to the distant edge of the universe, that our own future horizons have become so reduced. We simply cannot predict beyond the short term. So rapid and uncertain is the direction of change that we struggle to think of what the world may look like in 20 years, let alone a hundred. Optimists see the dynamic and responsive technological vitality of the free market to be the best promise of an effective remedy to the problems that it has created, through the mitigation of our impact on the environment through the adoption of more benign technologies and efficient end use. Others see the very dynamism of the modern economy as representing a dangerous underlying conceit in that we can infinitely manipulate our environment.

This uncertainty concerning the future, combined with equivocal views on the future paths we may take, has deep implications in education, for the simple reason that we are teaching the people who will be living in it. However, an undoubted truism is that current social, economic and environmental trends are not sustainable. Therefore, education has a key role in promoting an understanding of issues relating sustainability and resilience.

Box 1.1: Pause for Reflection.

It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair.

In this quote from a Tale of Two Cities, Charles Dickens famously addressed the paradoxical characteristics of periods of revolution. Although addressing the political and social upheavals of the French Revolution, how far can we apply these sentiments the present? To what degree do these words apply to education settings today?

Sustainability and Education

A cursory glance through the literature relating to sustainability and education will quickly produce a range of seemingly interchangeable phrases such as Education for Sustainable Development (ESD), Education for Sustainability (EfS) Sustainability Education (SE) and even Sustainable Education. In this book, we have chosen to use the most widely used and probably best-recognised term, namely ESD.

The concept of ESD is an intriguing one, for while there is a general consensus of its importance as a guiding principle, there seems little agreement on a precise definition of the term (Holmberg and Sandbrook 1992; Trzyna 1995; Scott 2009). However, there is of course a significant difference between education *about* sustainability and education *for* sustainability. The first concerns the development of awareness and may be essentially theoretical in nature. The second implies the use of education to achieve and enact applied outcomes in both behaviour and practice.

The contentious nature of the precise meaning of ESD and the recognised contradiction of development (implying growth) and sustainability (implying stability) has meant that it has become expedient to replace precise definition with broader characterisations and this has resulted in its application to a wide range of initiatives and contexts, including economic and environmental. It is unlikely that there will be any clear consensus as to what constitutes ESD in the near future, although there might be greater agreement about the general characteristics. Sustainable development is generally thought to have three components: environment, society and economy and these are all seen as intrinsically linked. Therefore, the concept of sustainability rejects the idea that economic well-being needs to be necessarily injurious to both the social and natural environment. Indeed, sustainability promotes a future in which environmental, societal and economic considerations are equally considered.

If this is the case, it is increasingly apparent that mere knowledge and conceptual understanding of the environment and its problems will not necessarily effect the required behavioural change (Sterling 2001). Therefore, ESD is increasingly seen as a transformative learning approach, an adaptive process that not only equips students with new knowledge but also promotes new ways of thinking. It also places onus on the need to promote learning skills that are resilient in the sense that they are future

proofed endorsing Alvin Toffler's famous quote 'The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn' (Toffler 1970, p.376).

Education for Sustainable Development and Further Education in Context

In 2002, the UN General Assembly famously adopted a resolution that called for a Decade of Education for Sustainable Development (DESD) (2005–2014). The often referred to aims of the DESD was 'to integrate the values inherent in sustainable development into all aspects of learning to encourage changes in behaviour that allow for a more sustainable and just society for all' (UNESCO 2005a). It suggested that ESD should be a key instrument of learning in all forms of education and, importantly in the context of this book, that it should be applied to all stages of education and to all ages. There is significant emphasis in the original documentation on different geographical scales of involvement and the finest definition of these is that of community. Schools undoubtedly serve their communities relative to the provision for children and young people up to 16 years, but it is arguably the FE colleges that have a wider, more inclusive, community approach. The central position of colleges relative to the DESD was also emphasised by the identified importance of vocational training as well as building capacity for the development of skills and training (UNESCO 2005a) all of which suggest that the FE sector was ideally positioned to deliver many of these goals.

How the DESD was to be implemented is also of interest for the focus was on:

- promoting and improving quality education;
- reorienting educational programmes to include a clear focus on the development of knowledge, skills, perspectives and values;
- building public understanding and awareness for the achievement of the goals of sustainable development requires widespread community education;
- providing practical training. All sectors of the workforce can contribute to local, regional and national sustainability. Business and industry are, thus, key sites for ongoing vocational and professional training, so that all sectors of the workforce can have the knowledge and skills necessary to make decisions and perform their work in a sustainable manner (UNESCO 2005b).

The emphases on community education, skills, knowledge and training would appear to readily place the further education (FE) in a position to make a significant contribution.

Over the same period at the national level there were significant policy developments that also encouraged colleges to promote ESD. The Learning and Skills Council (LSC), the UK Government agency responsible for planning and funding post-compulsory education (excepting higher education) in England, published in 2005 their 'Strategy for Sustainable Development' within which a key milestone was that by 2010 FE colleges 'will embed SD skills in education and training programmes so that all learners are able to acquire these skills' and furthermore argued that 'today's problems cannot be solved if we still think the way we thought when we created them'. This positioned the FE sector at the forefront of developments in ESD and set challenging and highly progressive sets of targets and ideals (LSC 2005).

Of course, both the DESD and the LSC have come and gone. Many of the early UNESCO statements are in hindsight, progressive and transformative and yet recent reviews of its relative worth have been critical in that the DESD has attracted criticism for not sufficiently challenging neo-liberalism and lacking a more political and radical dimension (Huckle and Wals 2015). It would be tempting to level similar criticism at the realisation of the LSC Strategy in relation to many of its more progressive components; however, that would be to underestimate the significant and easily overlooked progress that has been made. From a standing start, the experience of many in the FE sector was that the sustainability agenda was and remains significant and that it not only changed the curriculum but also facilitated adoption of progressive and in some cases genuinely transforming educational approaches.

Why We Wrote This Book

Perhaps the best way to explain why we thought this book would be an important addition to the extant literature in ESD is by telling a simple, but true, anecdote.

Several years ago, we were both involved with a regional FE college; one of us started the co-operative inquiry research project which led to many of the chapters in the book and the other led a Master's level module in ESD for a number of the college staff.

On the first evening a group of about five participants came up and one said, 'You're not going to like us, we're all from the Motor Engineering Department, so we'll be giving you a hard time.' They were only half right. Each week they did provide a counterpoint to the ideas we were putting forward, they would challenge some of the central concepts of sustainability and they were throughout the module a source of powerful yet engaged criticism. Far from dislike, their humour, blunt cynicism but willingness to discuss, actually made the module genuinely far more stimulating and exciting.

In a sense, this Master's Module was analogous to the sector as a whole as it demonstrated the distinctive and powerful role that FE colleges have in the advancement of ESD through their unique position relative to local business, industrial and service sectors and equally importantly, the wider social community. As a result, colleges act as genuine interfaces between the theoretical and academic and the practical and applied, both within and beyond the institution.

They are best placed to influence and to enact sustainability initiatives within the wider community and to evaluate their effectiveness and value. Their close working proximity to local industry and social services may allow a far more critical, challenging yet practically productive contribution to the sustainability agenda.

One evening towards the end of the module, the group was asked to review how far issues of sustainability had been embedded into their own areas of work. For those teaching in the Arts and Humanities and for those involved in more service industry training, the responses were a little underwhelming. However, the motor engineers talked lucidly about how their industry had been through nothing short of a revolution and that as a result they were required to teach about reducing emissions, clean burn technologies, hybrid engines and so on. Of course, given the diverse discourse and interpretations around the concepts of sustainability, some may regard these developments in the training of those entering an industry that has such a profoundly destructive impact on the environment as little more than, at best, a reluctant response to government regulation and, at worse, little more than a marketing deception. However, the point here is that it engaged those lecturers in thinking differently, in developing new teaching resources and as such gave the topic legitimacy.

This story illustrates that so much has been done in the sector that perhaps has gone unreported and therefore unrecognised. Certainly, any search through publications on ESD in mainstream education settings almost inevitably provides a review of initiatives and research in schools and universities and yet initiatives in FE seem to be significantly less well represented. It is difficult to understand why this is the case given past and present contexts.

In 2002, the UK Government famously described FE as 'the forgotten sector in education' (DfES 2002, p.10). It seems that in the intervening years little has changed. Throughout the DESD much went on in the sector and there have been genuinely effective projects and strategies, yet curiously much of this excellent work and the insights that it has provided have gone unreported. This book will at least review and report the nature of some of these developments, as well as the experiences, difficulties and wider issues that practitioners have experienced. It is an attempt to emphasise some of the excellent work carried out and how this 'forgotten sector' has made a significant contribution not only to the debate but also to the implementation of ESD in a diverse range of settings.

The Structure of the Book

We have divided the book into sections, each with a distinct theme and we have used the metaphor of growth to hopefully illustrate distinct nature of concepts and practical developments. We begin by providing a specific and detailed example of institutional change, including infrastructural, staff development and the embedding of ESD in the taught curriculum. Section 2, Developing Our Practice, explores ideas around resources and assessment. Section 3, Sowing Seeds and Nurturing Growth, provides examples of different teaching approaches that provide alternatives to transmissive models to wider and more inclusive action learning approaches. This section also considers transformative learning and the challenge and contribution of complexity theory to and in FE settings. Section 4, Respecting Our Roots whilst Developing New Branches, considers the challenges faced in the rapidly changing nature of FE, providing a mix of chapters both practical and theoretical. The final section, Section 5, Moving On and Finding New Pastures, looks to the future in terms of widening the role of the FE sector still further by looking at its role in social inclusion and its potential contribution to the Sustainable Development Goals (SDGs).

Teaching Education for Sustainable Development in Further Education Settings

Throughout the UN DESD, there have been a great number of pronouncements and publications that have tried to identify ways to educate for a sustainable future. Many of these have dealt with the problems of definitions and issues such as how to promote sustainable development and the increasingly urgent reasons as to why we should do so. Yet given the imperative nature of the subject material rarely have such publications

had much of an impact. One could liken it to being on board a sinking ship and being given an emergency literature pack including excellent works on the definition of the term 'sinking' and others on why the ship is going down (including some that deny it), whose fault it is, the predicted timings for the bulkheads collapsing and some summative documentation on 'lessons learnt'. Nowhere is there any advice on the actual actions that you need to take to stop the ship sinking! Hopefully, this book will provide you with some stimulating examples of developments, achievements and practice that will in turn inspire you to take action.

We hope that through the case examples and the theory pieces, we have provided a useful blueprint to help you reflect on and develop your own teaching practice. We also hope that this book will demonstrate and reinforce that teaching in the FE sector does present exciting and significant opportunities to develop innovative and progressive pedagogical approaches and this helps you enact and implement ESD in your own area of expertise.

The FE sector is extremely well placed for this task and we as practitioners have a significant responsibility to our students and to the wider community to provide the knowledge, skills and mindset to meet and to overcome the significant social, economic and environmental future problems that they will undoubtedly face.

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PART I

Inspiring Change in the Beginning

CHAPTER 2

Becoming Sustainability Champions: How Embracing Education for Sustainable Development Can Help Organisations to Change

Pauline Osborne

Ten years after Jo Matthews, Somerset College's former Deputy Principal and Dean of Higher Education (HE), undertook a Master's qualification with a focus on leading Education for Sustainable Development (ESD), Somerset College had developed a culture in which many staff embraced and developed ESD in their curriculum. Inspired by the Master's, Jo undertook a major project within the College to introduce ESD, establish sustainability champions groups and co-operative inquiries (Heron and Reason 2001; Summers and Turner 2011). Her project followed on from a successful bid to build the Genesis Centre on campus, the result of an idea developed by construction students to provide a resource for the construction industry to promote new ways of thinking and building sustainably. Having joined the College in the latter stages of this development, I was interested to understand how an ESD culture had been established and to what extent ESD had been embedded in the curriculum. Also, once our charismatic ESD leader and key champions moved away from the College, how this would impact on the developments. I therefore undertook a research project funded by Plymouth University and supported by Somerset College to find out. This chapter takes you through the key findings, identifying successes and challenges, so you can learn from our experience.

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Background and Context

Jones, Selby and Sterling (2010, p.41) explain the difference between education *about*, *in* and *for* the environment from which different pedagogic approaches have emerged. Stibbe (2009, p.10) talks of 'sustainability literacy' which fits within the 'education for the environment' approach and explains this as a way:

> to indicate the skills, attitudes, competencies, dispositions and values that are necessary for surviving and thriving in the declining conditions of the world in ways which slow down that decline as far as possible.

It is not a 'tick box' approach to skills development, but the use of active learning including 'self-reflection, self-directed enquiry, learning by doing, engagement with real life issues, and learning within communities of practice' (Stibbe 2009, p.11). As Stibbe argues, there is no single way to tackle the agenda and no way of knowing exactly which skill will help learners thrive in the future, but exploring 'systems thinking', 'values reflection and the Earth Charter' and 'social conscience' helped develop the agenda at Somerset College.

Box 2.1:

Do you have an overview of all the ESD activities happening in your organisation? If not, consider carrying out an audit to establish exactly where your organisation is and the key people involved in this agenda.

Explore the curriculum and establish which programmes are involved and how they are doing it. Consider how you can facilitate the sharing of this good practice and create a community of practice where the implications of the different approaches can be discussed?

Although my research focused on the working practices associated with 34 HE programmes at the College and the support and direction given to staff and students on those programmes in relation to ESD, similar practices were also noted in further education (FE) programmes. Indeed, specific ESD inductions were carried out for FE programmes, exploring how and why ESD was relevant to learners in their chosen fields. I decided to use action research, incorporating traditional research methods and critical reflection on practice in the cycle of action and reflection inherent in this

method of working, to help understand, evaluate and be more effective both in my own actions as the HE Quality and Development Manager and in the way in which the College supports staff to address ESD with their students. I recognised that in working within the organisation it would be impossible to be an objective observer. I triangulated responses from different sources in order to gain as authentic an insight as possible.

Box 2.2:

Reflect on the following research methods I used and consider whether they are appropriate to evaluate activities in your college:

- A review of the ESD literature
- Questionnaires for previous sustainability champions and former leaders of sustainability at the College
- Questionnaires for academic staff
- Base-line survey of all 34 HE programmes at the College to identify where and how sustainability is addressed; whether it is embedded or bolt-on; contained within the learning outcomes and assessed or not
- Co-operative Inquiry to engage a group of individuals to explore and evaluate current practice together
- Critical reflection through the use of a personal reflective log to record the action research cycle of action and reflection

List what you could incorporate in your project and who else you could draw into it.

Findings

Awareness of Context

As part of my project, two workshops were held to explore the concept of ESD and the co-operative inquiry approach. This activity was carried out in the context of significant redundancies at the College and produced quite a negative response with staff expressing considerable resistance and frustration. However, despite nearly running out of nerve to distribute the questionnaires to record their engagement with ESD in their practice, I did and the results gave a completely different picture to the sentiments expressed verbally.

Following discussion with some of those present after the meeting, there was considerable frustration at that time. The recent round of redundancies

and changes in employment contracts were an unfortunate context. Bringing staff together for the first time since these events provided an opportunity for frustrations to be expressed which were not in fact to do with the ESD agenda. However, the nature of tackling such an agenda over a prolonged period of time means that it is not happening in isolation or in perfect circumstances and such situations have to be managed. Had colleagues not completed the questionnaires before leaving the session, it would have seemed that very few were addressing ESD in their curriculum. The lesson to be learnt is that what is said in such circumstances is not necessarily reflective of the reality and the questionnaires provided an alternative means of reflecting this. The questionnaires and the baseline survey clearly show significant action is being taken and more are engaged than was otherwise apparent, demonstrating the importance of a range of approaches to confirm initial perceptions.

Using a Consultant

A pilot consultation was carried out extremely successfully with a member of the BA (Hons) Media Make-up team. The original list of ESD activities, identified in the baseline survey, was replaced with a much longer list of activities they were already doing without realising the links to the ESD agenda. As part of this consultation, they received assistance in making the links to explore the different pedagogic approaches highlighted by Jones, Selby and Sterling (2010). This intervention demonstrates the engagement with ESD identified in the baseline survey is probably a conservative statement of what is currently being covered in the curriculum. It also demonstrates the benefit of supporting colleagues in developing their understanding of the full extent of the sustainability agenda to assist them in developing their curriculum.

Positive Effects can be Achieved Even Though Not in Line With Your Original Plan

I never managed to facilitate a co-operative inquiry as some of those who had agreed to participate had been made redundant and others were concerned about committing themselves. However, although the same people were not always available, I was able to establish monthly meetings and there were useful outcomes. One suggestion was to use the Personal Development Planning process to challenge students to explore the ESD skills they need to develop in the sector they were studying to enter. Also,

constructive discussions were held between lecturers in Early Childhood Studies and Fashion and Textiles, as they realised they were exploring different positions in relation to child labour and working practices in sweatshops with their students. Possibilities of future collaborations to bring students together to challenge perceptions were discussed. Giving colleagues the opportunity to come together to compare, discuss and challenge their working practices was very beneficial, stimulating and enjoyable. The difficulty is in managing to bring them together to achieve this.

Box 2.3:

Consider how you could stimulate discussion and mutual support and development by the use of action research/co-operative inquiry techniques.

What wider context do you need to be aware of in your institution that could derail your efforts to engage staff? How might you overcome this?

Who are the key staff you could start working with in order to grow the initiative?

As a result of the development of my thinking, through the reflective process of this research, I have concluded that it is not advisable to insist on a specific approach in order to achieve consistency. Instead, it seems better to facilitate a professional debate via the sharing of good practice to demonstrate what can be achieved and the different approaches possible. Discussions about the definition and impact of different approaches can then be explored.

Carrying Out a Baseline Survey

In order to understand the perspectives of different groups of staff, I produced and circulated questionnaires to three groups: the first was academic staff teaching on HE programmes, the second was former sustainability champions and the third was former leaders of sustainability at the College.

Forty-two questionnaires were circulated to the HE academic staff, the majority of whom also teach on FE programmes, and 20 were completed. The most successful response rate was achieved by distributing them at the end of a staff development session and asking for them to be returned before they left. Responses were very difficult to obtain thereafter from those who had not been present, despite chasing.

Eight responses were received from the 15 former champions. All of the five former leaders of sustainability responded. The results are summarised below.

Views of Sustainable Development and Education for Sustainable Development

Although the majority of staff take a broad view of sustainable development (SD), some responses indicate a particular focus. There is a range in the depth of understanding shown in the responses. There may have been different results if I had provided a list of elements to tick; however, I decided to ask colleagues to comment in their own words to see what was foremost in their minds, without prompts. Of the 33 respondents:

- 25 included a specific reference to resources or the natural environment
- 15 included a specific reference to social implications
- 16 referred to impact on future generations
- 3 made reference to economic factors
- 25 made reference to action and change.

Of the 20 responses from the HE lecturers, 5 indicated that ESD is about raising student awareness. However, if the objective is for students to acquire the necessary knowledge, skills and attitudes to achieve SD then it would follow that focused learning outcomes need to be set and completed in order to achieve this. A question that emerges is whether the College's aims and strategy in relation to sustainability are fully known and understood and it appears there is no shared understanding of the definitions, purpose and approach to tackling the subject within the curriculum. The results of my baseline survey reveal different pedagogic approaches are being used.

Some would argue whether it is a realistic aim for educational establishments to bring about wholescale change in society's behaviour, which is one of the aims of sustainability literacy. Ultimately, it is up to the individual institution to decide its own objectives linked to its mission statement and strategic objectives and Somerset College's objectives include ESD. However, a clear and ideally, generally agreed notion of what that means in practice would be helpful.

Box 2.4:

Does your college have a sustainability strategy or generally agreed statement of what you are trying to achieve and by what methods?

Does this allow for a variety of approaches as well as making it clear whether you are simply raising awareness or are challenging staff and student values, skills, knowledge and attitudes?

How do you know if everyone knows and understands your college's approach?

How do you know what is happening in practice? It is really helpful to find out to enable staff to share good practice, mutual support and act as 'critical friends', to each other.

Are you aiming for some level of consistency in approach, so that for example, by the time they leave the college all students are able to explain what sustainable development means and how it relates to the employment sector they are aiming to enter?

If so, what are the core elements that you want all students to experience in relation to ESD?

From the 33 responses, only 2 are unsure what ESD means. However, many staff did not respond to the questionnaire, and based on conversations held with some of them, there are a greater number of staff who are unsure of the meaning. Lack of clarity over the meaning will have an impact on how or if the subject is addressed in the classroom.

The one negative response was *Another subject forced into a subject I have to teach.* However, others who declined to complete the questionnaire also questioned the necessity for including ESD within their subject matter and others expressed lack of interest in the topic and did not return their questionnaires. This response is therefore representative of an undercurrent of feeling among some teachers that is not otherwise obvious from the questionnaire responses. Given the range of understanding and interest in the topic and the broad or specific focus of the individual lecturer, student experience of ESD across the College is likely to be variable.

The responses to a question asking 'how SD is impacting the sector you are preparing students to enter' show SD is impacting on all the sectors in which the college specialises including arts and design, computing, automotive engineering, electrical engineering, civil engineering, construction, business studies, early childhood studies and health and social care. However, the degree of impact acknowledged within particular sectors varies

between lecturers who teach within the same subject area. For example, within Computing opinion ranges from: 'The computing sector is already one of the greenest ones around' to 'Very little as computer components are rarely re-used'. There was a similar divergence of opinion in the Arts. This demonstrates the acknowledgement of the impact of SD within a sector is likely to be linked to the individual lecturer's understanding and interpretation of the different elements that form part of the agenda. However, generally clear links are seen within each sector, enabling staff to highlight these to students and so integrate ESD into the curriculum.

Of the 20 lecturers who completed the questionnaire, 18 are addressing aspects of ESD in their teaching which is a higher number than expected and is encouraging. Cotton and Winter (2010, p.43) argue 'there is potential for its [ESD] inclusion in all curriculum areas—but only if lecturers can be persuaded that it is important to do so!' This comment rings true.

The list in Box 2.5, generated from the research, revealed there is much good practice to share and more than was anticipated.

Box 2.5:

The following list of topics identified may help you consider where there is potential to address ESD in your curriculum. How might you develop discussion on some of these topics?

- Challenging values and attitude
- Exploration of theories, research and current thinking in relation to ESD
- Local and global context
- Sector specific contexts
- Ethical considerations
- Animal welfare
- Transport
- Energy and low energy solutions
- Recycling
- Waste
- Use of resources (materials, equipment and natural resources)
- Life cycle analysis
- Regulations and legal aspects
- Rainwater recycling plant

(*continued*)

Box 2.5: (continued)

- Straw bale walled structure
- Renewables costs in cost planning
- Corporate social responsibility
- Sustainable construction techniques
- Environmental impact assessments
- Sustainable procurement (sourcing sustainable products)

The responses to the question about the available support show it is better not to have ESD imposed. There was frustration evident in some of the comments, such as 'Not much really just constantly told to do it'. This contrasted with lists of sources and internally run workshops. This highlights the significant difference in experience between staff. Former sustainability leaders have been predominantly inspired by courses they have undertaken which have given them an understanding of the topic. It is this more detailed understanding that seems to be missing from the responses of the academic staff suggesting that gaining a better understanding is likely to inspire and enable others to address the topic more willingly.

Out of the 20 academic staff responses, 11 reveal it is the lack of commitment and scepticism of others that is the main challenge they face. This scepticism is from students, industry or colleagues within the College; 7 confirm they need more information; 5 consider the challenge to them in addressing ESD is that change is needed within the College; 4 state that time is the issue; 2 feel that the industry they are teaching about is resistant to the concept. So the most frequently stated challenge is scepticism and lack of commitment of others and not the issue of time which is surprising. The second key challenge is lack of knowledge or a desire for more information or expertise. It is therefore important these issues are addressed in planning the next steps within the College. Involvement of people from different industry sectors that can explore the agenda from their perspective with both staff and students could be very helpful here.

I was keen to know what would help teaching staff to develop their professional approach to ESD. Of the 20 responses, 9 state they would like help to carry out more personal research and continuing professional development activity focused on this topic; 7 feel that input from external sources would help; and 5 consider time would help. This response links to the desire to have some autonomy and professional trust to explore the topic and handle it in an appropriate manner for the students concerned.

The survey makes it clear that contrary to common opinion within the College, all but one of the HE programmes at the College are addressing aspects of ESD. Thirty of the 34 programmes have embedded ESD and a vast array of modules is being used to convey the subject matter. Many have found it can be addressed in the professional practice module, but it is certainly not exclusive to this central module. Although the majority of programmes (18 out of 34) do not have SD within their learning outcomes, the vast majority (28 out of 34) are nonetheless formally assessing it, which is very encouraging. This demonstrates it is not necessary to amend the formal programme and module learning outcomes for ESD to be addressed within the curriculum.

Picking up on the point made earlier about the need to have specific learning outcomes in order to focus on what you wish students to achieve, be it general awareness, or skills, knowledge, attitude and challenging of values. It makes sense that these are explicit learning outcomes on lesson plans so it is clear what is intended and also what is then achieved. However, my research shows that in order to achieve this, you do not have to have ESD learning outcomes at programme or module/unit level. It can be included at lesson plan level where the topic naturally fits with the existing syllabus/learning outcomes. This is quite a revelation as I have had a number of discussions with teachers who felt they would need to rewrite and revalidate their programmes before they could address this topic. As this is a time-consuming option, we explored how they might simply adjust existing assignments to reflect the ESD theme, which they did with great success. For those teaching on FE programmes where they have no possibility of rewriting the syllabus, there is therefore hope and not the barrier which might have been expected.

Box 2.6:

Review the sample of activities below that we have tried under each of these headings to see if it gives you any new ideas, or reminds you of just how much you have also done!

Culture

- Appointment of curriculum and estates ESD officers for a year to focus on curriculum development and to establish the College's carbon footprint
- Establishment of Sustainability Strategy and Champions Groups
- Enabling a group of staff to attend a Master's module on ESD, resulting in a number of additional ESD projects and cross-college discussion and debate

(*continued*)

Box 2.6: (continued)

Curriculum

- Audits of ESD across the college to showcase the activities already happening
- CPD activities, workshops, conferences and sharing good practice sessions
- Research funding obtained to facilitate projects and co-operative inquiries
- Initial teacher education team carried out a co-operative inquiry (Summers and Turner 2011) over the course of two years in order to embed ESD (see Chap. 3).

Campus

- Analysing the carbon footprint of the College, resulting in the achievement of the sustainability kite mark ISO14001 (see http://www.iso.org/iso/home/standards/management-standards/iso14000.htm)
- Setting up processes for monitoring and making savings in relation to energy consumption, water, waste and recycling
- Implementation of new waste management system (no desk bins, replaced with recycling facilities)
- Securing funding for energy efficiency improvements

Community

- Running cross-college 'World Café' sessions to engage everyone
- Establishing co-operative inquiry groups
- Setting up and developing the college sustainability champions groups (on campus, curriculum and community focused themes)
- Starting sustainability intranet space on our virtual learning environment—The Greenhouse
- Themed weeks for students, involving the whole college
- 'Say no to plastic bags' campaign
- Providing a 'free stuff' board in the staff room
- Establishing a 'don't bin it' thought process in relation to stationery
- Establishing polytunnels for growing vegetables
- New 2 You and other sales events
- Provision of sustainability sessions to schools
- Learning Resources activities: recycling old books and sending them to BetterWorld Books (http://www.betterworldbooks.co.uk/)

(*continued*)

Box 2.6: (continued)

It is important to identify and disseminate what ESD activities are being undertaken to the whole College community to overcome the common belief that not much is being done and that a few stalwart individuals are the only ones addressing the agenda. Encouraging messages should be shared. What messages could you share about what is going on in your college?

The questionnaires I gave to the former leaders of sustainability at the College provide useful insight.

Box 2.7:

Reflect on the advice provided by the former ESD leaders and consider how this may inform your plans:

- Involve everyone, as tackling the issues together as an inclusive community is refreshingly positive and engages colleagues as well as providing the widest possible avenues to explore for effective action;
- Communicate activities and successes clearly and regularly to all;
- Find those who are keen to be active and get them involved in realistic projects with a likely positive outcome that can be accomplished within reasonable time frames to keep them motivated;
- Provide development opportunities so as many as possible understand what is planned and why and what part they can play;
- Tackle ESD from a number of angles based on colleagues' areas of interest and job roles to support this;
- Link with others involved in this agenda outside your organisation to keep you fresh and motivated;
- Projects that meet the requirements of a number of different 'boxes' are most likely to succeed. For example, estates projects that save money at the same time as saving carbon; curriculum activities that enhance student experience at the same time as involving members of the local community;
- Start with the people around you and at their level of understanding.
- Don't expect people to get it quickly, it is a personal as well as a professional challenge;

(*continued*)

Box 2.7: (continued)

- Provide space to think and discuss;
- Allow the agenda to emerge, at their pace, you'll be surprised how much happens;
- Take on board that everyone has a different starting point on the journey to sustainability, a different vision and different values. Try to find something you have in common and start a dialogue;
- Keep going, small steps, stay enthusiastic, it's worth it, engage in mild conversations, challenge mildly and imperceptibly, give good examples of everything, make it fun, create a broad but not exclusive community, listen to all;
- Avoid 'preaching' as it turns people off the agenda;
- Allow tutors time to meet and discuss their specific area and how SD fits into their own curriculum. Support them in finding ways for SD to fit sensibly into their curriculum area as part of the normal preparation of students to enter their chosen career, rather than as an add-on.

The former ESD leaders consider certain initiatives did not work as well as they would have liked. Some staff who were very keen at the outset, lost interest. It seems this was because some felt progress was too slow and they had hoped to see more dramatic steps taken. Surprisingly, many seemed to want the Senior Management Team to be more autocratic and tell everyone what they should do. This may link to responses about lack of confidence in their own knowledge resulting in them not feeling able to pursue the topic with their students. Time pressures are a problem for most staff but for some their lack of engagement is due to disinterest in this topic. The majority seem unclear about how to tackle the topic and prioritise other matters over exploring it further.

There were difficulties in engaging students in the agenda, but it is unclear why. It was found that some do not like to feel change is being imposed and need to feel they have a choice and the knowledge to work it out for themselves. A further observation is the need to engage the enthusiasts and build from there rather than going for all at once, otherwise the detractors can put off the undecided. This was done by involving the most interested in becoming sustainability champions. However, it was also noted as important in the feedback from champions as they engaged with others.

Part of our remit in educating students is to introduce them to a range of ideas and teach them to use evidence to challenge ideas and approaches and

Box 2.8:

Consider the following barriers faced by the sustainability champions which include:

- Time to attend meetings to discuss sustainability;
- Taking too long to put ideas into practice;
- Most staff unaware of how the College is implementing its ESD strategy;
- Despair;
- Apathy;
- Sustainability is not simply about which bin to put the waste in!
- Recession doesn't mean green principles can be abandoned.

This is an interesting list which demonstrates both the strength and contrasts of feelings in relation to this agenda. However all the barriers noted are ones that can be overcome. How do you feel you could work with others to overcome these barriers?

form their own views. Raising ESD constitutes another proposition being put to students with which they can engage and hone their critical thinking skills.

It is worth noting how the former leaders specifically recommend involving everyone in the agenda and following natural interests rather than forcing the issue. This may appear to be in conflict with the idea of setting College-wide targets or measurable outcomes. However, the original sustainability leaders at the College always had aims and outcomes in mind, reflected in the sustainability strategy.

As many of the ESD leaders and champions have left the College, it has become increasingly clear that it is important to share knowledge amongst the College community so the loss of individual members of staff does not result in a loss of vital knowledge within the institution. Finding a way forward that does not rely on one or two individuals, but which is jointly shared across the institution is a less risky solution for the future.

Discussion and agreement with College-wide achievable minimum outcomes in relation to ESD might provide a measure for success and focus everyone's attention on what could then become a natural part of everyday life at the College. These commonly agreed outcomes would need to be both achievable and embedded, not 'bolt-on' optional additions to usual activities. They would also need to allow for flexible interpretation and

contextualisation. This would build on the activities already undertaken and could be discussed as part of the general sharing of good practice.

Recommendations resulting from my research project which may well be useful for you in developing ESD in your own institution are as follows:

1. Share and celebrate the multitude of examples of good practice to combat the belief frequently voiced that not much is happening in relation to ESD.
2. Stimulate discussion and debate concerning sustainability literacy and a joint understanding and definition of the purpose of ESD. Decide on the extent to which agreed minimum standards/consistent outcomes could be set and if so, what these should be.
3. Monitor Service Area and Curriculum Area sustainability actions through standard annual reporting documents such as development plans and Self-assessment/Evaluation Reports. This ensures activities become mainstream and embedded into the culture of the College.
4. Support staff in bidding for funding to enable them to carry out research in this area, to deepen their understanding and to impact on their approach to ESD within their curriculum. This is in line with the College's focus on effective teaching and learning, research informed teaching and in response to the academics' plea for further research opportunities.
5. Invite an external consultant to undertake a focused discussion with a Curriculum Area Team to assist in exploring the meaning of sustainability, in the context of the programme they teach and where further opportunities naturally occur for sustainability literacy to be embedded. Carry out the same exercise with Service Area Teams. To reduce costs they could work with a core team who could then disseminate to others in the college.
6. Invite speakers from industry to support discussion, debate and understanding with staff and students.
7. Induct all new staff into the College's ESD work and sustainability literacy so knowledge is maintained and developed even when key knowledge holders leave.
8. Consider following the Environment Association of Universities and College's (2015) advice by establishing a sustainability group that includes students, teaching staff and non-teaching staff, with clear lines of accountability into the management structure of the organisation. This group could promote new ideas and initiatives as well as reporting on established initiatives.

9. Review involvement in sustainability groups and whether the most is being made of these opportunities, both in disseminating good practice and in feeding back good practice into the College.
10. Disseminate challenges and activities that have been less successful to a wider audience, as well as those that are successful, to assist with the realistic development of this agenda across the sector.

Conclusion

Schön (1991, p.42) described educational professionals working in the 'swampy lowland' of everyday life rather than inhabiting the 'high ground' of professional certainty. I have found myself in these 'swampy lowland' but through the use of critical reflection on practice, exploration of current thinking and a variety of research techniques have fought to gain the 'high ground' of professional certainty in relation to ESD in the context of the HE curriculum within an FE College. I hope that by sharing the successes and pitfalls that we have experienced at Somerset College it will assist you in developing ESD successfully in your college.

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CHAPTER 3

Embracing Co-operative Inquiry to Embed Education for Sustainable Development

Denise Summers

It was an assignment by construction students, at Somerset College, Taunton, UK, which led to the creation of the 'Genesis Centre' in 2006. Its aim was to provide a resource for the construction industry to promote new ways of thinking and building, through its use of sustainable materials in its construction and renewable energy sources for its power. This inspired many within the college community to volunteer as sustainability champions to develop this agenda throughout the college. To achieve this aim, a co-operative inquiry (Heron and Reason 2001), action research approach was adopted. The context of this local initiative, at that time, was that both national (Learning and Skills Council [LSC] 2005; Higher Education Funding Council for England [HEFCE] 2005) and international (United Nations Conference on Environment and Development [UNCED] 1992) policies and strategies were encouraging teachers to take the lead in promoting Education for Sustainable Development (ESD).

As the manager of initial teacher education (ITE) provision at the college, I recognised the need to develop our Postgraduate Certificate in Education and Certificate in Education programmes (PGCE/Cert Ed) for student teachers in the further education and skills (FE&S) sector, to encourage our student teachers to engage with ESD and thereby introduce it to their own students. At that time, the emphasis of the LSC and HEFCE was on knowledge and skills rather than the fundamental shift in thinking advocated by Agenda 21 (UNCED 1992), which called for a focus on the values, attitudes and the environmental and ethical awareness

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needed for a sustainable future. For this to happen, teachers would need to take a more radical approach and move towards the transformative learning advocated by Sterling (2001), Orr (2004) and Huckle (2006).

It was Sterling's (2001) call for a transformative approach to teaching and learning that first helped me see how I could introduce ESD into the PGCE/Cert Ed we offered in partnership with Plymouth University and other FE colleges in South West England. At that time, ESD was not part of the official syllabus and so, even though there was a positive response to my introduction of ESD, it was not necessary for students to engage with it, limiting the potential for change in their teaching practice. However, as ITE programmes were due to be rewritten for 2007, following changes in Government policy (DfES 2004), the time was right to suggest that ESD should be included. It was agreed that ESD should become an underpinning theme of the PGCE/Cert Ed, with an assessed learning outcome in one of the modules.

As it is important that ESD is not seen as a 'bolt-on' extra (Dawe et al. 2005) and that it is embedded throughout the curriculum, it meant the development needs of the ITE team, Johanna, Dianne, Chris, Ros and myself, and our colleagues across the partnership had to be addressed. Recognising that teacher educators often have many years' experience and strongly held professional values underpinning their practice, it was important to explore how the team felt about engaging with ESD, as this would play a crucial part in encouraging their student teachers to do so. Although all had an interest in ESD and varying levels of knowledge and experience, there was a lack of understanding and confidence in how we might integrate it into, what had become, an increasingly prescribed curriculum. It became clear that we needed to take opportunities to share and develop our current knowledge and experience and work together to research and plan how we could thread ESD throughout our curriculum.

Box 3.1: Reflect on the opportunities for introducing ESD in your programme:

- Is ESD mentioned in the syllabus content?
- Can you identify opportunities in the syllabus in which links could be made to ESD?
- How confident do you feel in introducing ESD?

Deciding on a Co-operative Inquiry Approach

My experience of the co-operative inquiry that supported the sustainability champions in developing their practice had shown it to be an authentic approach for exploring a values-based concept such as ESD. I introduced the team to the approach and we discussed how it could help us embed ESD within our curriculum. The term 'action research' has been used to describe a range of approaches from positivist to transformative and it is the prevailing positivist western world view, which separates the knower from the known, the intellect from experience and humanity from the natural world, that Reason (1998) argues may have influenced the current ecological damage. Given this, he recommends a move towards a participatory world view, in which the political, epistemological, ecological and spiritual dimensions of participation encourage new ways of thinking and new forms of practice. Approaches such as co-operative inquiry encourage us to develop equitable and sustainable relationships as we work together and formulate practical solutions to address common concerns (Reason and Bradbury 2001). As Heron (1996, p.1) explains, co-operative inquiry:

> involves two or more people researching a topic through their own experience of it, using a series of cycles in which they move between this experience and reflecting together on it. Each person is co-subject in the experience phases and co-researcher in the reflection phases.

This demonstrates the democratic and participative nature of this approach in which practitioners co-create knowledge as they develop their practice and share their reflections on these experiences, ready to plan their next actions.

Whilst I was convinced of the value of this approach, to be democratic and participative, it was necessary for the team to feel the same. As we discussed the characteristics of co-operative inquiry, the team agreed it could help us work together to develop our knowledge and our practice. This in turn would help our student teachers to meet the new ESD outcome and could then be shared with our colleagues across the partnership.

Planning Our Co-operative Inquiry

In the first phase of a co-operative inquiry, participants decide on the areas on which to focus and identify what they wish to explore or question. They then plan the actions to be taken and the procedures for recording their

experiences. Our research focus was to consider how we could develop the knowledge, values, skills and confidence to embed ESD in our practice, in order to support our student teachers in doing the same within theirs.

Our roles, as co-researchers in designing the research and as co-subjects in reflecting on our actions in the experience phases, helped us make the links between theory and practice. We discussed this in terms of the potential influence of our co-operative inquiry on the first, second and third person (Reason and Bradbury 2001). As Reason and Marshall (1987, p.112) suggest 'good research is for me, for us, and for them: it speaks to three audiences'. Therefore, for our inquiry to be successful, it should result in the development of the team, both individually (me—the first person) and collectively (us—the second person). However, if it failed to engage our student teachers and colleagues in the partnership (them—the third person), then although we might have achieved our individual and team development, the primary aim of supporting our students to develop their practice would not have been met. Assessing the impact of our inquiry on our students and colleagues would be an important measure of its success (see Summers 2013).

During our discussions, we considered our current ESD knowledge. When I first introduced it to students, I admitted I had 'next to no knowledge' about ESD, apart from an awareness of its growing importance locally, nationally and internationally, and it was something we could explore together. Others in the team felt anxious about introducing an unfamiliar concept. However, we were reassured by the Wellbeing of Nations report:

> at present no country is sustainable or even closer … Nobody knows how to meet these new demands. There is no proven recipe for success. In fact, no one has a clear sense of what success would be. Making progress towards ways of living that are desirable, equitable and sustainable is like going to a country we have never been to before with a sense of geography and the principles of navigation but without a map or compass. (Prescott-Allen 2002, p.2)

This reassured us that it was not necessary to be an expert, and we all had knowledge and experience we could share and build on through our individual research and cycles of action and reflection. Sharing our knowledge and our individual and collective experiences would shape the inquiry, as demonstrated when we discussed the *Apollonian* and *Dionysian* inquiry

cultures identified by Heron and Reason (2001, p.148). The Apollonian approach is linear and systematic, whereas the Dionysian approach is creative and expressive. Their suggestion that an effective inquiry should have elements of both worked well for us as three of the team favoured the systematic approach which would help focus the inquiry, which would be enhanced by the creative approach favoured by the others.

We also discussed the experiential, presentational, propositional and practical ways of knowing identified by Heron and Reason (2001). If each of these is congruent with the others, the inquiry may be considered to have validity as it will be:

- grounded in our experience (experiential);
- expressed through our reflections and discussions (presentational);
- understood through our developing knowledge (propositional);
- evident in the action we are taking to develop our curriculum (practical).

As we moved through the cycles of action and reflection, we shared our research and development, set and carried out actions in our practice and then critically reflected on these to inform the next cycle, continually refining and validating the inquiry as we progressed. As co-researchers and co-subjects, each is as important to the process as others and no one should dominate or become marginalised. To encourage 'authentic collaboration' (Heron and Reason 2001, p.150), it is important to address concerns and anxieties that may surface, as well as sharing the successes. As part of this validation, inquirers may take turns in playing devil's advocate in order to challenge the consensus and avoid collusion which I discuss below.

Another aspect of co-operative inquiry is whether it is informative or transformative (Heron and Reason 2001). We hoped it would be both, in terms of developing our knowledge, skills and understanding and in encouraging change in ourselves, our practice and our curriculum. In turn, this could potentially encourage both an informative and transformative effect in our students and their curricula. Taking the time to consider the different characteristics of co-operative inquiry informed our inquiry process and therefore enhanced its validity.

We planned a series of eight three-hour meetings during the academic year when we would share our reflections on progress towards previous actions set. It was my responsibility, as project leader, to write a report on our progress. We therefore decided I would take notes at each meeting recording

our inquiry questions, propositions explored and the agreed actions to be addressed before the next meeting. These notes were circulated to encourage action, reflection and continuity between meetings. Before the next meeting, we would each reflect on the previous meeting and the actions taken and circulate these to inform the following meeting. The notes and our reflections became our research data, and I analysed this to identify themes which documented our developing knowledge and practice in embedding ESD, as well as our experience of the co-operative inquiry approach.

Alongside this, we planned to undertake a range of development opportunities in the UK and India (see Chap. 4), which included short courses on holistic and transformative learning and the values and practice of ESD. These activities would enhance our individual knowledge of sustainability and co-operative inquiry, and the subsequent sharing of our reflections on these experiences would ground our curriculum developments in real-life experiences and enable us to make links between theory and practice.

These in-depth discussions laid the foundations for the subsequent inquiry. We were encouraged by our existing knowledge, and the inquiry approach would support our transition to a 'sustainable community of practice' (Stuckey and Smith 2004), facilitating growth in our knowledge and practice.

Box 3.2:

Consider the team you work with—is co-operative inquiry an approach you could use to develop yourselves, your practice and your curriculum? How would you encourage this and what would be your first steps?

Becoming a Sustainable Community of Practice

A workshop on the co-operative inquiry process following our initial meeting helped us get started. Time is always a concern when taking on any new initiative, and Chris found the workshop:

> helped me to focus on the possibilities of our project and the worthwhile nature of keeping up with the reflections. It is very easy though to let the demands of the moment takeover and put things on the back-burner … it all seemed a bit more manageable after the last meeting.

Time was a constraint for us all for as well as ESD, there were other important aspects of the programme that could not be neglected. We

recognised early on in the project that it was important to identify where there were potential links to ESD so we could develop these and avoid undermining other essential elements.

Ros initially felt we were 'embarking on a journey' with 'no clear purpose or destination'. She found it difficult to embed ESD in a programme that was already content heavy. However, attending 'challenging and thought-provoking' talks on ESD and the inquiry meetings helped her understand the relevance and enabled her to take the first steps in introducing ESD.

Although the ESD learning outcome was attached to one module, our plan was to embed it throughout and so we started to plan how we could introduce ESD from the start of the programme. Dianne had been inspired by the 'linkingthinking' materials developed by Sterling et al. (2005) and adapted one of our early sessions on teaching and learning resources (see Chap. 5) to enable our students to investigate the sustainability of these and the dilemmas they face in their development. Jo's initial focus was on assessment (see Chap. 6), and she introduced the concept of 'sustainable assessment' (Boud 2000), and we developed an activity that assessed knowledge about sustainability.

Acting on these ideas became the focus of our reflections, which we discussed at the following meetings, sharing the joys, frustrations, anxieties and dilemmas of our first tentative steps. Working as co-researchers and co-subjects helped maintain the democratic ethos of the inquiry, as well as a sense of sharing, collaboration and mutual support, which contributed to the emerging community of practice we had hoped for (Summers and Turner 2011).

In our inquiry meetings, each of us shared our reading, resources we had found and our learning from development opportunities we attended. Learning about Gandhi and Globalisation on our trip to India had been a major influence in developing our knowledge and values (see Chap. 4). Gandhi's teachings of 'need not greed' and 'non-violence' particularly influenced us in relation to our professional and personal relationships and led to rich discussions on plans for developing our curriculum. During these discussions, the team considered the possibility of introducing the philosophy of non-violence. To do this, Chris developed a session which introduced a more humanist approach to classroom management using 'non-violent' communication (Rosenberg 2003), alongside the behaviourist approaches that were the usual focus (see Chap. 4). This encouraged a focus on values, and recognising that teachers often find it difficult to teach about values, he also developed a session to assist with this (see Chap. 7).

Our reflections and discussions helped us develop knowledge of issues, policies and understanding of other viewpoints. Dianne explored power relationships and social equity and focused on issues such as e-waste and recycling which enabled her to share the wider implications of dumping unwanted mobile phones and computers, as she noted in her reflections:

> As we consider the environmental hazards and risks to health of rubbish pickers in India, this becomes a moral dilemma and we need to develop what Sterling (2001) sees as a 'deep systemic way of understanding' … Marginalized groups of young people, women, the elderly and disabled and some ethnic groups may not be able to participate equally in community life. We need to understand this and strive to change these power relations.

Through the inquiry, Johanna felt she developed a much broader and more global perspective. She reflected on the change in her values and attitudes and felt the inquiry had 'reawakened the critical side in me again' which she had been in danger of losing through struggling to meet the new programme and inspection requirements. She was particularly influenced by the images we shared between us which 'planted the seed' for her to develop sessions which considered the power of imagery in advertising and encouraged students to develop a more critical response to consumerism. This led to her considering how she could lead a more sustainable life and balance her work with her emotional well-being. Well-being and encouraging resilience is an important topic to address in ITE programmes (see Chap. 14).

The inquiry process encouraged Di to challenge and critically question assumptions, helping her focus on and identify the causes of problems instead of simply accepting the outcomes. She felt the inquiry had collectively empowered us all to participate in change and encourage our students to make changes too.

Working Through the Challenges

Chris had initially struggled with the co-operative enquiry and in the initial stages had not managed to get from it, or give as much to it, as he would have liked. He was concerned that alongside institutional and policy frameworks it was:

> incongruous to be trying to champion the idea of an ecological approach and then in the next breath ask students to do pointless mechanistic exercises.

Equally, he was aware of the need for the curriculum developments to be about 'more than recycling' and he 'didn't want it to be a random add-on sort of subject'. The first time Johanna taught the resources session, she felt the sustainability aspect seemed 'a bit contrived'. However, her reflections and our discussions encouraged her to develop the session further, and on teaching it for the second time, she found it much more effective. Sharing our ideas and developing our plans together helped develop our confidence in embedding new ideas. Each of us was aware of the need to move beyond 'double-sided photocopying and switching off lights', in order to consider the political, social, cultural, ecological and economic influences of ESD, and we all agreed that the success of the inquiry depended on this.

Considering the links between our personal and professional lives helped us ground our developing knowledge and understanding and demonstrated that ESD was not an issue that could be tackled solely in the classroom. This echoed Gandhi's sentiments regarding the need for being the change we wanted to see in the world (Potts 2002). However, this led to a dilemma in terms of whether we were acting as 'good' role models. We had comments from one or two students about the contradiction of introducing sustainability alongside the volume of paperwork generated by the programme. We were told to 'practice what you preach', which struck at the heart of our professional values. However, in researching the experience of other co-operative inquiries, we found this dilemma is not unique. A group seeking to challenge racism found that, in becoming good role models, they were distancing themselves from the individuals who needed their support in understanding issues of social justice (European-American Collaborative Challenging Whiteness [EACCW] 2005). This reinforced the importance of us not setting ourselves up as experts or good role models, but as being on a journey, which we hoped our students would join. Through our reflections, we developed the 'critical humility' (EACCW 2005) necessary to take confident actions, whilst remembering we were not immune to being judged in light of the actions we were taking.

As the ethos of co-operative inquiry is democratic, I was concerned that regular reminders to team members to reflect on their actions and circulate their reflections may have been perceived as nagging. However, it seems to have spurred Johanna into action:

> After the first couple of meetings I felt a little frustrated that we might spend all year talking and not doing but [Denise's] guidance and leading of the group has meant I feel I've produced some worthwhile resources.

Chris also noted the positive effect of the inquiry as it had made him feel more open to co-operating in general, as well as feeling he could trust and rely on us all.

In one session, I introduced Selby's (2007) paper which suggests we should be teaching 'Education for Sustainable Contraction' as it is too late for ESD. I later reflected on a response from my student who wanted to bury her head in the sand and hope it all goes away. Her anxiety made me question what we were doing, which we discussed at a subsequent inquiry meeting. We considered Selby's (2007) view that, in encouraging the transformation required, teachers will need to support students in coming to terms with the anxiety and despair they may experience and recognised this was an important part of our role in introducing ESD. As Stevenson (2006) suggests, teachers have much to contribute with their knowledge of their subjects, their students and their localities. This enables them to make the necessary connections with their students' lives and experiences, to foster their need for hope and a sense of purpose in their learning.

Reflecting on the Benefits of Co-operative Inquiry

In meeting the ESD outcome, students were encouraged to research their individual subject specialisms and support each other in identifying opportunities to introduce ESD. Their presentations showed creative ways of introducing ESD within their subject areas which included law, painting and decorating, early childhood studies, art and design, hairdressing and animal behaviour. A student teaching jewellery-making encouraged her students to value their resources, by introducing them to the way in which these are mined, using role play to explore the environmental, social and economic effects of this. She admitted that when I had introduced ESD, she had simply considered it to be another box to tick to gain the PGCE, but once she started exploring it in more depth, she realised its importance in her subject specialism and questioned why she had not thought of it before. As Dianne reflected:

> Participation as a process in education for sustainability must be supported in an appropriate learning environment. Group participation can enable students to challenge relationships of power and hierarchies, thus putting decision making and leadership in the hands of learners. It allows learners to combine resources and talents and as other communities of practice join together in a wider sense, it brings together people and partners with different perspectives.

> The value attached to sharing initiatives such as this has a ripple effect and helps motivate people to work towards institutional change, reconcile interests and challenge worldviews.

We found the co-operative inquiry approach (Summers and Turner 2011) to be entirely appropriate in supporting our curriculum development (Summers 2010) as it mirrors the principles of ESD in terms of its democratic and participative approach. We were fortunate in having team members who favoured an Apollonian (linear and structured) approach, as well as others who favoured the Dionysian approach which resulted in a more creative response than we might otherwise have achieved. The inquiry was informative in terms of our development, which has ranged from increasing confidence to the development of creative session plans and resources to encourage our students' engagement. It has also been transformative in terms of the changes to our curriculum, as well as changing ourselves, both personally and professionally.

Our attempts at encouraging a 'devil's advocate' approach within the team did not work as well as we had hoped as it did not seem authentic. In view of this, we asked Professor Stephen Sterling to take this role and on discussing our progress with him, asked him to ask us the challenging questions that we felt were important. This was effective and helped us to identify further areas for development. However, with hindsight, I feel that our students were our devil's advocate as they questioned us, challenged our assumptions and, generally, ensured there was no possibility of collusion.

Developing the confidence to introduce ESD was important for us all. We came to realise it is not necessary to be an expert, as it is important to encourage the sharing of knowledge, values and experiences with our students as some may know more, or have greater experience or different opinions about aspects of the ESD agenda. Creating an environment in which we could all share this, helped us learn together. Overall, the quality of the work the students produced and the benefits of sharing this within the groups ensured we all developed our knowledge of ESD from a range of subject specialisms and perspectives. As Cook, Cutting and Summers (2010, 320) suggest:

> It is only when the teaching population is sensitized to the environmental and sustainability crisis in outlook and approach that there will be the required shift towards a core of sustainability in the taught curriculum.

Embedding ESD within ITE programmes is an important first step in moving towards this shift. Encouraging our student teachers to question the traditional transmissive styles of teaching and learning and move towards the radical and transformative approaches required by Sterling (2001), Orr (2004) and Huckle (2006) will encourage them to introduce ESD in their own practice.

Box 3.3:

The following summary will help those who may wish to use the co-operative inquiry approach to support personal and professional development—you could then write a journal article to share your experience.

Summary of Co-operative Inquiry Process

- Identify a group of individuals with similar interests in developing their practice
- Identify the focus for the co-operative inquiry—what you will explore or question
- Investigate the co-operative inquiry approach together
- Agree on a schedule of meetings
- Decide on how you meetings will be recorded
- Decide on how you will share the reflections on actions set
- Set actions to be carried out before the next meeting
- Agree a date for the next meeting
- Decide on a date for when the actions will be completed and reflections will be shared
- The reflections will inform the next meeting and you should then return to Step 7 to plan the next cycle of actions and reflections.

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Further Reading

John Heron (1996) was the first to propose Co-*operative Inquiry and he developed this with Peter Reason* (*Heron and Reason*, *2001*) in the Handbook of Action Research (Reason and Bradbury, 2001), which covers a range of action research approaches and how researchers have used these. These books will help developing understanding of this approach if you think you might like to engage in co-operative inquiry to develop your practice.

David Orr's (2004) book *Earth in Mind—On Education*, *Environment and the Human Prospect* is, probably was, the most enthusing book I read during our co-operative inquiry. It considers the problem of education and how we can encourage change in the curriculum to address the ecological issues we face.

Stephen Sterling's (2001) book *Sustainable Education*: *Re-visioning Learning and Change* is what started the whole project, as I read it one summer, and it helped me see how we could embed ESD into our PGCE/Cert Ed programmes.

The paper by myself and Rebecca Turner (2010), Outside the green box—embedding Education for Sustainable Development through the use of co-operative inquiry, analysed our co-operative inquiry process and the successes and challenges experienced as we embedded ESD into our curriculum.

CHAPTER 4

From the Local to the Global and Back Again: Reflections on Journeying to India, Learning about Gandhi's Philosophy and the Influence on the Professional and the Personal

Denise Summers and Dianne Dowling

This chapter explores what can be learnt from a journey such as the one Denise, who led the co-operative inquiry described in Chap. 3, and Dianne, one of the colleagues involved in the inquiry, along with other UK Postgraduate Certificate in Education and Certificate in Education (PGCE/Cert Ed) teachers, took to India to attend an intensive two-week course entitled Gandhi and Globalisation. A colleague had organised such trips for a number of years, and they had proved successful in helping develop Education for Sustainable Development (ESD) in professional practice. This chapter explains how such an experience can inform practice generally and, in this case, how it supported us in embedding ESD into our PGCE/Cert Ed programmes, through learning first-hand about the impact of globalisation on small rural communities in India and the relevance of Gandhi's philosophy in encouraging peaceful, equitable and sustainable ways of living. To be immersed in such a different culture provided the basis for profound reflection on how such an experience may influence our plans and encourage our student teachers to address global issues within their teaching. We kept reflective journals during and after

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the trip that we shared with the rest of our co-operative inquiry team, Chris, Johanna and Ros, on our return.

We start by drawing directly from our experiences at Navdanya's (http://www.navdanya.org/earth-university) working community and by sharing examples of how the course speakers, Dr Vandana Shiva, Dr Satish Kumar and the Venerable Samdhong Rinpoche, Prime Minister of the Tibetan Government, in exile, embrace Gandhi's philosophy of non-violence to create a more sustainable way of living. Secondly, we examine the impact of globalisation on local communities and how global decision-making processes can affect access to resources. Lastly, we consider the influence of this on the different kind of learning needed for a sustainable future.

As student teachers in further education (FE) teach a wide variety of professional and academic programmes, the exploration of the sustainability agenda and its influence within different subject specialisms encourages a focus that might not otherwise have been considered. Sharing their learning with their peers provides an opportunity for the student teachers to consider sustainability issues from a much wider perspective than their own subject specialism, increasing their knowledge of the interconnections between subjects. This inspired students to plan joint sessions that encouraged links between programmes.

Box 4.1:

Think of ways in which you could work with colleagues from across your college to develop strategies that could help encourage ESD. What obstacles might there be? How might you overcome these? What other benefits beyond the sustainability agenda might be encouraged?

From the Local to the Global

The opportunity to attend the course on Gandhi and Globalisation, which takes place each year in India, deepened our understanding of the values underpinning sustainability, as well as introducing us to some of the global issues which would enable us to develop our curriculum further. It was held at Bija Vidyapeeth, which is based at the Navdanya Biodiversity Conservation Farm in Doon Valley, Uttarakhand, between the Ganga and the Yamuna rivers and the Shivalik and Himalayan mountain ranges. Dr Vandana Shiva, a leading international environmental activist, founded

Navdanya (meaning 'nine seeds'), which has rescued and conserved more than 5000 crops, which were in danger of extinction and are now made available to small farmers across India. It started as a participatory research initiative of the Research Foundation for Science, Technology and Ecology, with the aim of promoting non-violent farming and protecting biodiversity and small farmers. Following a cyclone in 1998, Navdanya distributed saline-resistant rice varieties which Shiva (2007, p.29) *calls* 'seeds of hope', in response to climate extremes.

The course lectures inspired us to explore the environmental, social, economic, political, cultural, ethical and spiritual issues underpinning ESD. Vandana Shiva provided us with a unique insight into India's resource inequalities and how basic needs such as food, water, shelter and healthcare are being denied to poor peasant farmers in India. Navdanya promotes the importance of indigenous knowledge and culture and awareness of the hazards of genetic modification and biopiracy in the face of globalisation. However, since the 1980s, in return for loans from the World Bank, Structural Adjustment Policies have forced India to open up to global corporations imposing the use of non-renewable, patented forms of genetically modified (GM) seeds requiring fertiliser and pesticides (Shiva 2005). She has major concerns about the use of land for growing crops such as sugarcane, cotton and oilseeds, for export, as this reduces the land available for food production, and as the acreage for these cash crops grows, the supply increases and the price falls. Poor farmers, who are now unable to use their farm-saved seeds, struggle to buy new seeds each year and become indebted to these corporations (Shiva 2005). As Sen and Grown (1987, p.61) argue, the pressure put on developing countries is unsustainable and:

> unless adjustment burdens are shared between surplus and deficit countries, and unless the most powerful countries stop living beyond their means, the crisis of the system will not be resolved.

With over 20 years of research and practical application of organic farming at Navdanya, Shiva (2007) maintains that the industrialised, globalised food system, which is based on oil, is unsustainable. She argues against monocultures and chemically fertilised soil that has little organic matter and is vulnerable to drought conditions and climate change. She promotes biodiverse organic farming systems that use less fossil fuel and helps develop water-retaining soil structures. This promotes quality soil,

less erosion and healthy food and avoids falling incomes and indebtedness for farmers, as well as rising consumer costs and the risk of polluted food. Navdanya is fossil fuel free, with solar panels producing hot water and bullocks ploughing and fertilising the land.

With hope as an imperative part of her message, Shiva continues to promote localisation of food production. In addressing issues of climate change, she calls for a reduction in 'food miles' and food sovereignty and for small farmers to be given the right to survive and operate in a vibrant local economy (Shiva 2007).

The Influence of Gandhi

Huckle (2006) suggests we need new systems of global governance that protect human and non-human nature and encourage ecological, economic, social, cultural and personal sustainability. This requires a greater emphasis on the role of community, active citizenship and democracy in developing sustainable livelihoods, with a consideration of eco-centric as well as anthropocentric values and a focus on sufficiency rather than efficiency.

As we learnt on the course, Gandhi believed in neither the power of the market nor the power of the state, but in the power of people and non-violence. Both capitalist and communist world views are based on the supremacy of human beings with natural resources and other species available for our benefit. In his lectures, Satish Kumar made the link between this 'speciesism' and other discriminatory 'isms' such as racism. Gandhi advocated respect for all beings (*sparsha bhavana*), which should be regardless of caste, colour, class, creed, sex, age, race and any other distinctions, including respect for all religions (*sarva dharma samanatva*). All should be free to practice their religion, but should also be free from any feeling of arrogance or exclusivity about that religion. The idea that one group can dominate or subjugate another group is violent and contrary to Gandhi's philosophy and practice of non-violence. However, although a focus on human rights is vital, this has to be balanced with the rights of the rest of the animate and inanimate earth:

> Basically it is a question of attitude. The attitude which allows people to kill animals and clear forests is the same attitude which allows strong nations to attack weaker nations. (Kumar 2006, p.317)

Sarvodaya, which is Sanskrit for 'all rise' and encourages taking care of each other, is Gandhi's view of how truth, love and compassion should form the basis of how we live our lives. This is an important example of how our learning in India influenced our teaching practice.

Introducing Gandhi's views provided an extension to the discussions on Equality and Diversity with our student teachers, avoiding a tick box mentality that some feel when introducing this subject and encouraged a very different perspective to the usual points raised.

Box 4.2:

Reflect on how you introduce equality and diversity in your teaching. Consider Gandhi's philosophy and his profound belief in equality, fairness and justice. Although subject to harsh treatment when imprisoned, he continued to work to create a better world with respect for all living beings and a fair division of resources. Consider how you might include a focus on Gandhi's life and philosophy and how you would make the links with the ESD agenda in terms of a respect for all living beings, as well as the Earth.

Gandhi was not against material but against materialism. As he states, 'Earth provides enough to satisfy every man's need, but not every man's greed' (cited in Schumacher 1974). As Shiva (2005, p.116) reminds us:

> whenever we engage in consumption or production patterns which take more than we need, we are engaging in violence. Non-sustainable consumption and non-sustainable production constitutes a violent economic order.

This reveals a flaw in the concept of sustainable development introduced in the Brundtland Report (WCED 1987), which called for economic development to solve problems of economic degradation and poverty in developing countries. As Harding (2006, p.232) states, if development requires the further extraction of raw materials from the Earth, then:

> sustainability and development are contradictory concepts and 'sustainable development' is just economic growth dressed up in the language of deliberate obfuscation, used knowingly or not by those who care nothing for the Earth in order to fool us into thinking that they are taking her concerns seriously.

The problem for us in the developed, or perhaps over-developed, world is that we have become used to satisfying our greed rather than our need. Although there is recognition that emotional well-being improves as income increases (Kahnemann and Deaton 2010), there is no further improvement once income has reached a certain level. In order to accept the term 'development' in ESD, perhaps we should think of it as the flourishing of individuals within their local communities which is necessary to move away from mass consumption and work towards a sustainable future.

Box 4.3:

How do you encourage your students to flourish as individuals within their local communities? Are there enrichment opportunities at your college or can such opportunities be built into their programme of study? How can you involve your students in planning such activities and can their learning contribute to their studies.

Gandhi was confident in achieving an independent India, but did not want this to involve continuing with 'modernity, industrialisation, materialism and rule from the centre' (Kumar 2006, p.296), the characteristics of British India. He wanted to create a holistic and inclusive nation and proposed the following principles.

Non-violence (*ahimsa*) is the main principle through which we have come to know Gandhi's philosophy. It goes further than physical violence and includes restraining from aggressive and offensive thoughts which might lead to a cycle of violence. As Kumar (2006, p.298) notes:

> In spite of all the wars, conquests, colonialism and imperialism, humanity has learned nothing. We still believe in violence as the ultimate sanction. From newspaper articles to nuclear weapons, we follow the path of violence. Hindus and Muslims in India, Jews and Palestinians in the Middle East, Catholics and Protestants in Northern Ireland are too ready to believe that ultimately they will find a solution through violence.

In order to create a sustainable future, he calls for personal peace, world peace and peace with nature. The discussions around non-violence had a profound effect on us both, as we considered relationships with our students and our colleagues, and how we might introduce this philosophy when exploring classroom management with our student teachers. When

we shared this with the team, Chris suggested he would plan a session based on the non-violent approaches developed by Rosenberg (2003), as well as a session on 'values' (see Chap. 7). The classroom management session compared this humanist approach with the usual behaviourist approaches introduced and included role-play activities to experience the approach. In addition to supporting the development of classroom management strategies, it also encouraged a focus on using role-play as a pedagogic strategy, as follows:

Box 4.4:

The session developed encouraged our student teachers to reflect on a range of classroom management strategies based on behaviourist psychology. They identified the strengths and weaknesses of these and when they have found them useful, as well as times when they have fallen short of supporting them with difficulties faced in their practice.

Having introduced Gandhi's philosophy of non-violent communication, Chris used Rosenberg's (2003) strategies to introduce a more humanist approach in order to improve communication within the classroom. Student teachers carried out role-play activities to explore this approach and then reflected on how this helped to address the issues involved. Often students can feel negative about exposing themselves in role-plays and so showing how this can be done in groups of three, where two take part and one observes, helped to overcome this negativity and focus on the aim of the role-play.

Consider your approach to classroom management and whether you use behaviorist and/or humanist approaches. Are the approaches you use successful, or would it be helpful to explore the use of non-violent communication approaches further.

We also discussed the benefits of this approach in working with colleagues to avoid difficult working relationships and the consequent effect this may have on relationships and well-being. Taking this one step further and reflecting on the effects of terse communication when we go home to our families after a tiring day at work, encouraged us to consider how important it is to be aware of the way in which we communicate in all contexts.

Chris also used this approach to develop a session on cultural diversity and developing awareness of government policy initiatives for schools, colleges and universities which aim to prevent extremism and terrorism (see the Prevent duty guidance at HM Government 2015, online).

Non-consumerism (*asangraha*) is another of Gandhi's principles, and Shiva (2005) points out that to be non-violent, our processes of production, trade and consumption should not take advantage of the ecological space of other species and people. We should avoid acquiring, consuming and accumulating inessential, wasteful and harmful goods and services: This encouraged Dianne to develop our usual session on teaching and learning resources to include the sustainability of those resources (see Chap. 5).

It also resulted in Johanna developing generic sessions on advertising and consumerism that our student teachers could adapt for their students. They explored the key messages given in advertisements, whether the aim was to sell or raise awareness and the way in which they attract attention. They were then challenged to design an advertising strategy to encourage sustainability. Having worked through these exercises, they could then adapt these for their own subject areas. As well as helping them to understand concepts of sustainability, it also demonstrated an alternative pedagogic strategy that they could develop for other purposes too.

In addition to the environmental concerns of consumerism, there are also concerns about well-being:

> If I were caught in the trappings of wealth and power, I would be unable to live a truly comfortable, creative, and compassionate life. Much of my time would be absorbed in taking care of houses, cars, household gadgets, furnishings, paintings, silverware and china, computers, yachts and umpteen other things. I would need to work hard to earn enough not to meet my needs but to service these possessions. (Kumar 2006, p.302)

Perhaps this is the problem for us all in terms of improving our lifestyles. Stress and anxiety may be the inevitable results of working too hard to buy possessions, with the consequent cost to our emotional well-being.

Gandhi saw manual labour as an important part of spiritual practice and always made time to incorporate this into his day. Physical work (*sharirasham*) is an important principle, but, as Kumar (2006, p.304) suggests, there are marked distinctions between physical and mental work:

> There is always a deep tension between the managers and the managed, the intellectual workers and the manual workers, between those who manipulate the market and those who are their victims. Such a divided society is unhealthy. The purpose of physical work is to heal that division … It is a healing process and an antidote to alienation and exclusion.

This principle is enshrined in the philosophy at Navdanya, as well as their sister college, the Schumacher College https://www.schumacher-college.org.uk/ in Devon, UK, where all take part in daily manual labour which includes cleaning, cooking and farming. In industrial society, Taylor made a distinction between 'labour by hand' and 'planning of the labour by thinking' (Walters 1997, p.244), and today we have the shop floor and the planning office.

In pre-industrial societies, knowledge was passed on from older to younger generations within farming communities or in the kitchen through apprenticeships.

This is still the case in 'developing' countries and is still evident in rural India. Elsewhere, patterns of knowledge have become separated from individual ways of living and attached to a pedagogy based on the classroom model instead of the workshop and so the 'world of the hand' has become 'the world of the mind' (Korsgaard in Walters 1997, p.263). This pattern of knowledge became more apparent as we worked on the land at Navdanya. The act of threshing and saving seeds, composting, preparing organic food and using only half a bucket of water to shower each day became a practical educational experience, one that situated us in meaningful learning about sustaining resources rather than learning about it in an abstract, theoretical way.

The qualitative difference between the academic learning tradition and workshop learning, which we were exposed to in India, was full of authentic primary experiences—our relationship to the land, our contact with others on the farm and in the surrounding districts and our own personal response to these differences. The palpable contacts with our surroundings replaced the secondary experiences that we had had through textbooks. John Locke in *An Essay Concerning Human Understanding* (1690) first stressed the importance of primary experiences in the learning process. He advocated the combination of physical work with teaching. However, the difference between 'hand' and 'mind' is still a problem today in balancing educational experience.

Box 4.5:

Consider how you can encourage the hand and the mind in your teaching. Are there activities such as conservation work, building something for the community or fund raising or any other possibilities that could engage your students in physically active work alongside their classroom-based learning? Consider how you can use the local environment to encourage this.

Our experiences in India focused our attention on 'everyday life' which we constantly interpret. Such reflection resonated with a quote from Tunström (1993, p.20) which reminds us of what happens if we do not get the right balance between the mind and the hand in education:

> We come into the world out of a vast nothingness. We look around, discover different rooms, reach out, touch, taste, smell. We strain body and mind to their limits. It is a full-time job, for the world is wider than our reach. And suddenly it is late.

In developing our knowledge, we should reflect on traditional knowledge and think holistically, as a solution to one problem may instigate negative effects elsewhere which may not have been considered. In order to encourage our students to be aware of the need to think holistically, we introduced the 'linkingthinking' materials developed by Sterling et al. (2005). This builds on 'systems thinking', which was identified by Senge (1990) as one of the dimensions that distinguishes learning organisations from more traditional ones. Rather than separating out elements of a problem to solve it, systems thinking encourages a consideration of the connections between elements of the problem in order to avoid a planned solution resulting in other unforeseen problems.

There are many decisions taken in education that may seem to resolve one issue but cause others. A simple example of this was a decision taken to give our student teachers a wider choice of topic areas, by changing our programme from six 20-credit modules to eight 15-credit modules. What we had not considered was the additional work caused by them having to complete eight assignments instead of six, which resulted in an over-assessed programme and a heavy workload for students, as well as tutors. There were also insufficient students to make the choices viable, leading to disappointment when options were unavailable. Reducing the programme to four 30-credit modules, including an enhancement module chosen by

each centre to reflect their own priorities, had the positive effect of reducing the pressure on students and tutors, as well as enabling students to focus on four assignments and explore these in greater depth. Student teachers were introduced to systems thinking, by problem-solving activities using case studies or real issues in their own practice. As they consider the connections between elements of their problem, they can consider possible solutions and then work through the potential impact of these, with the aim of deciding on the best course of action. Encouraging our students to work together to develop communities of practice helps them to develop relationships and strategies to meet the challenges of their roles in FE.

Reflecting on Our Learning and the Influence on Our Role as Teacher Educators

What we learned at a local level at Navdanya helped us understand some of the issues that are moving the world towards the unsustainable use of natural resources. We and our student teachers are directly implicated in the process of developing environmental awareness and finding alternative and sustainable ways of working to reverse these trends. The visit has taught us the importance of working at grass-roots level using the experiences and skills of local people in the community, rather than imposing models of development. We do not have to start at the top to effect change; we can work from the bottom up, from our own local college communities. As Stevenson (2006) recognises, teachers have much to contribute to ESD with their knowledge of their subject, their students and their local areas.

In order for education to be sustainable, we and our student teachers need to be aware of the importance of ESD and how we might introduce global issues that are relevant to our subject specialisms. This may include encouraging less damaging forms of production and consumption, healthier and more fulfilling lifestyles and promoting social justice within a more secure world. As Huckle (2006, p.9) suggests, this requires a more radical approach to education with a shift in emphasis:

> from the past, industrialism, modernity and the nation state, to the future, post-industrialism, postmodernity, and global society. It may need to embrace new forms of knowledge, new ways of organising knowledge, and new ways of teaching and learning. (Huckle 2006, p.9)

As Orr (2004, p.8) argues, our education system must be developed to include a respect for the natural world:

More of the same kind of education will only compound problems. This is not an argument for ignorance but rather a statement that the worth of education must now be measured against the standards of decency and human

Box 4.6:

Orr (2004) calls for a rethinking of education with six principles. Read through these and consider your own practice in relation to these principles:

- Firstly, that all education is environmental education, as teaching any subject without reference to the natural world suggests there is no need to consider the effects on the environment.
- Secondly, we should learn from the Greeks and their concept of 'Paideia', that education is not simply a process of filling the mind with knowledge and skills but a holistic process which encourages development of the person.
- Thirdly, alongside the development of knowledge comes the responsibility to make sure it is used in a way which does not lead to tragedies such as Chernobyl and Bhopal, for which nobody takes responsibility.
- Fourthly, in order to be able to say we know something, we should also understand the effect of that knowledge on individuals and their communities. For example, he mentions the cost of such economic ideologies as the 'bottom line' which can lead to unemployment, divorce, lost savings, alcoholism and crime.
- The fifth principle relates to the power of example over words and however much you might encourage your students to understand the need for sustainability, if you and your organisation are not positive role models, they will learn helplessness in attempting to overcome 'the frightening gap between ideals and reality.' (Orr 2004, p.14) A question to consider is what a sustainable organisation would look like. Hopefully it would encourage a democratic, non-violent, nurturing and collegiate approach throughout the organisation and all within it would play an instrumental part in this.
- His final principle relates to the way in which learning happens:

  > Courses taught as lecture courses tend to induce passivity. Indoor classes create the illusion that learning only occurs inside four walls, isolated from what students call, without apparent irony, the 'real world'. (Orr 2004, p.14)

> survival—the issues now looming so large before us in the twenty-first century. It is not education, but education of a certain kind, that will save us.

In relation to the fourth principle, one of our student teachers who taught jewellery-making developed a role-play activity for her students involving a debate between the owners of a silver mine, the employees of the mine and the local community, in order for them to explore the different perspectives of each and understand the issues involved in the mining of silver. Up until then, she had simply given students the website link to purchase the silver. An activity like this encourages students to value the resources they use, as well as have empathy for those involved in their production.

Box 4.7:

Reflect on the natural resources used in your subject specialism. How and from where are these sourced and what are the effects on local communities and their environments? Consider how you can make your students aware of this and what impact you might hope this could have.

For Huckle (2006), ESD is about helping students understand the social practices that shape and are shaped by different discourses and empowering them to make critical choices amongst them. This will require a move from transmissive learning with its focus on information, efficiency and effectiveness, towards Sterling's (2001) transformative learning which encourages a creative and deep awareness of different world views and ways of doing things which encourage systemic change. It was Sterling (2001) who first helped us see how we could integrate ESD within our curriculum and start exploring how we can influence our students, and subsequently their students. As Huckle and Sterling (1996, p.26) suggest:

> Whether the future holds breakdown or breakthrough scenarios … people will require flexibility, resilience, creativity, participative skills, competence, material restraint and a sense of responsibility and transpersonal ethics to handle transition and provide mutual support. Indeed an education oriented towards nurturing these qualities would help determine a positive and hopeful 'breakthrough' future.

Gandhi acknowledged that our minds are conditioned through our education, culture and religion and we need to develop this to foster relationships rather than separatism. Our visit to India presented a rare

insight into how sustainable development works at grass-roots level in a different culture and allowed us the opportunity to take many ideas back to our local communities, inspiring some of the activities mentioned above. Although we travelled from local to global and back again, gaining knowledge and the confidence to start the process of embedding sustainability into our curriculum, it is also possible to experience outdoor and community learning at more local venues. There are opportunities for similar residential experiences and tutors may organise visits for groups of students, or students may volunteer or take apprenticeships at such places. Our experience has renewed our faith in knowing that change is possible and although support from the top down is important, a good place to start can also be within our own communities of practice.

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Further Reading

Stephan Harding's (2006) book *Animate Earth* explores Gaian science and how this can help us understand how we as humans connect with the 'more-than-human' world. Satish Kumar's (2006) autobiography describes his pilgrimage from India to America, and another in which he visited the holy places around Britain, as well as the ecological, spiritual and educational ventures he has been engaged in since 1972, including his involvement with Navdanya in India and the Schumacher College in Devon. He discusses the way in which he has been influenced by Gandhi's philosophy and this has been of enormous benefit in understanding the ESD agenda. Shiva's (2005, 2007) books describe her campaigns for change in agricultural practices and paradigms, biodiversity, seed freedom and against genetic modification, patents on seeds, chemical farming and other practices which increase farmers' debts, as well as contributing to climate change. Each of these books is very helpful in developing understanding of some of the issues contributing to the environmental crisis.

PART II

Developing Our Practice and Preparing the Ground

CHAPTER 5

Sustaining Our Resources

Dianne Dowling

Introduction

Education for Sustainable Development (ESD) encompasses a complex and interconnected range of environmental, economic and social issues, and the concept of sustainable resources is no exception. This chapter firstly draws from a range of theoretical perspectives to frame sustainable resources. It then outlines the process of how the Postgraduate Certificate in Education and Certificate in Education (PGCE/Cert Ed) teaching team at Somerset College prepared to introduce the concept of sustainable resources to their student teachers in their first module. Finally, it guides the reader through lesson plan activities to show how this can be developed. The decision to focus on resources was taken on the team's co-operative inquiry journey to embed ESD into professional practice (see Chap. 3). Monthly reflections formed the basis of discussion points for our co-operative inquiry meetings.

Marshall, Coleman and Reason (2011) suggest that within action research we draw on many ways of knowing which involve many dimensions. We cannot simply see action research as a methodology. It is the way we think about things and our approach to research which leads us to carry out an inquiry. We should view it as:

> An attitude of inquiry [which] incorporates curiosity, a willingness to explore and articulate purposes, being willing to work with the idea that your own view may not be right or definitive, a willingness to explore oneself as a participant alongside others, and a scanning attention to potentially disconfirming evidence from a wide variety of sources. (Marshall et al. 2011, p.19)

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By disconfirming evidence, we might cite climate change sceptics for example or the denial or failure of governments to acknowledge or react to an urgent environmental or social need. It is the 'ruling relations' within the dominant ideology that Smith (1999, p.77) suggests regulate and control knowledge which becomes dominant and shapes our 'taken-for-granted' understanding about what is 'true' in society (Bourdieu 1977, p.170). This taken-for-granted understanding is not subject to reflection or reflective revision (Smith 1999, p.189). Sometimes it takes an environmental crisis such as the Exxon Valdez oil spill in Alaska in 1991, which killed 'more wildlife than any other human-engineered environmental disaster in U.S. history' (Braugart and McDonough 2009, p.36) and is still affecting the local community, to challenge these taken-for-granted 'truths'.

Smith (2006) suggests that in a global capitalist society, we are affected by the decisions made through powerful trans-local social relations that are organised and shaped elsewhere, passing through local settings, sometimes to the detriment of the local environment and its people. For example, sending e-waste away to developing countries in the South is not the end of the problem. Firstly, there is no such thing as 'away' because the life cycle of these products then becomes another community's responsibility. European Commission data shows that only 33% of e-waste is properly treated,13% is landfilled and the remaining 54% flows out of the European Union (EU) to the developing world (Laha 2015). Shipping waste southwards involves unregulated working practices with little regard to the health and safety of the labourers who dismantle the waste products, as well as risking damage to local ecosystems. Once these practices are accepted and consensus maintained, it obscures the power differences and inequalities which are at work within the hidden structures of power. Smith (2006, p.17) urges researchers to explore what lies behind local initiatives in order to understand the 'macro-institutional policies and practice that organise those local settings' within the hidden structures of power.

An example where we might accept taken-for-granted understanding is the present UK government promoting their nuclear power programme as a green and sustainable form of energy. We are told this is clean fuel but who takes responsibility for reprocessing and storing radioactive waste when there is no such thing as 'away' and we are passing the responsibility for safe storage on to future generations.

Box 5.1:

- Can you think of another example of how consensus is created and maintained?
- Can you identify in whose interest this lies?
- Would you agree or disagree and what would be your alternative?

Foucault (1980) suggests there are many forms of power but stresses the need to recognise how power is exercised rather than who holds power. He suggests power can be productive because it can be constituted through dialogue and discussion (Foucault 1980, in Ramazanoglu 1993, p.20). For example, as we bring issues linked to climate change into focus, we open it up for discussion and further examination—we have the power to bring it into 'discourse' which is productive power. However, this chapter draws on evidence to suggest how power can be both enabling and constraining.

Including myself as a participant in the inquiry meant that as a sociologist and feminist researcher with a history of campaigning for social justice and environmental health issues, I was able to bring to the group a certain 'attitude of inquiry' which would form part of the notion of many ways of knowing which 'include practical, experimental, representational, emotional, embodied and intuitive ways of discovering' (Marshall et al. 2011, p.18). Participating in this inquiry allowed me to explore what I know about myself—my values and knowledge about the world and what is known by other members of our inquiry team in relation to groups and societies, both locally and globally. We were able to gather together rich sources of knowledge which are intrinsically valuable and which can be 'deepened through attention to these additional means of coming to know our world' (Marshall et al. 2011, p.19).

Beginning the Process

Macy and Brown (1988, p.17) identify three mutually reinforcing core tasks in which many of us are engaged and which are essential to a sustainable future:

- Actions to slow the damage to earth and its beings
- Analysis of structural causes and creation of structural alterations
- A fundamental shift in world view and values.

From the start of the inquiry, we agreed that our focus on resources should be more than just a recycling exercise, for example, using double-sided handouts, ensuring our flipcharts are produced from recycled paper or providing resources through a virtual learning environment. Whilst acknowledging these things are important in sustaining resources, this is not where our responsibilities end. We also decided that like equality and diversity, sustainability should be threaded through our curriculum and not seen as a bolt-on extra. We considered how we could embed ESD in a meaningful way without causing our students additional work on top of their already stretched programmes. Sterling (2001, p.14) warns of existing difficulties in education that would add to our task:

> most mainstream education sustains unsustainability—through uncritically reproducing norms, by fragmenting understanding, by sieving winners and losers, by recognising only a narrow part of the spectrum of human ability to explore alternatives, by rewarding dependency and conformity.

Putting resources into the wider context of 'environment' raises many questions about how we extract and consume resources and therefore calls for careful scrutiny of the way we view consumerism in general. I considered it necessary to draw from a wide range of disciplines to inform our thinking in order to view resources in a holistic way. However, as Korten (1995, p.11) warns, we were not seeking simple, one-size-fits-all solutions to our problems:

> Whole-systems thinking calls for a scepticism of simplistic solutions, a willingness to seek out connections between problems and events that conventional discourses ignore, and the courage to delve into subject matter that may lay outside our direct experience and expertise.

An important factor that influenced my planning was a trip to India with Denise, another member of the team (see Chap. 4). Our experiences provided opportunities to see how other societies use resources or have limited access to resources. It was Sterling et al.'s (2005) 'linkingthinking' materials which provided the practical tools to start the process. The initial step was taken to prepare some of the activities shown in the lesson plan activities below. Starting from the micro by examining the use of classroom resources, we soon found ourselves moving like a camera lens, in and out from micro to macro and back again as the inquiry continued to raise questions and ideas. Our inquiry discussions equipped us with the

skills and knowledge to enter the global arena and explore ways of using resources sustainably, in the knowledge that we can participate in change for a healthier planet, becoming social actors in our inquiry.

The concept of sustainable resources has a wide focus in relation to climate change, encompassing air, sea and soil, not to mention the local environmental context in which they are sourced and the owners, employees and the local community involved. It was necessary to encourage our students to think holistically in order to consider the impact of extracting, producing and transporting these resources, not to mention their disposal after use. Making links between the resources we use in our teaching practice and the wider environment was a difficult first step because of the risk of minimising the importance of one over another. However, by working through the processes involved in the life cycle of teaching resources, we were able to start preparing the session that would first introduce ESD to our student teachers.

Making the Links Between Equality and Diversity and Sustainability

An important step was to recognise the new emerging global information economy does not exist in an abstract space but involves real communities linking global and local, sometimes referred to as the global–local nexus (Laha 2015). Through close scrutiny of the production, consumption and disposal of resources, we began to uncover how the organisation of economic production involves large-scale exploitation of certain markets at an international level, particularly where certain development programmes and strategies favour economic growth over people-centred development. It causes hardships for certain groups of people, particularly poor women who are underemployed, underpaid and undervalued and are mostly part of the informal economy, falling outside the regulatory realm of formal institutions. These women 'suffer from the additional burdens imposed by gender-based hierarchies and subordination' because they are dominant in 'food production and processing, in responsibility for fuel, water, health care, child-rearing, sanitation and the entire range of so-called basic needs' (Sen and Grown 1987, p.23).

Adopting Sterling's (2004) 'helicopter' view to look at the larger picture of the distribution of resources was vital as we began to realise that discourses of gender and race intersect those of the environment and social justice. The co-operative inquiry team responded to these ideas as our reflections began to take on board a more holistic approach to embedding ESD into our curriculum. As Shiva (1989, cited in Braidotti et al. 1994, p.173) states, we need

to challenge the values of Western bias embedded in notions of 'progress, prosperity and wellbeing' in development programmes, which she sees as an attack on people and their environment, especially women in the Global South who are 'ruthlessly exploited and incorporated into global markets'.

Through a process of reflections and team discussions, I started to map out how student teachers could formulate their own understanding of sustaining resources by working collaboratively to share with others and develop communities of practice across disciplines within the college. Encouraging students to think critically about resources, challenging their values and the dominant thinking influencing the global use of resources became a vital part of the process. Unless we illuminate the processes involved in the life cycle of resources, these activities will remain hidden and abstract. Taking a reflexive view of power is essential as we see how multinationals dictate the pace of how we consume resources that become an accepted part of our daily lives. We are constantly bombarded with information channelled through various electronic resources. This places demands on our time, but invariably we have little time to spend in deep reflection about the way in which we use these resources and how they are managed when we dispose of them. Becoming aware of the complexity of interconnectedness and the need for deep reflection helped us to be mindful of the challenges we face in order to make changes.

Moving from micro to macro we acknowledged reports that '12% of the people living in North America and Western Europe account for close to 60% of global consumption' (Worldwatch Institute 2013). If we compare this to the 3.2% consumed by one-third of the world's population living in South Asia and sub-Saharan Africa, then we can immediately see the unequal consumption of the world's natural resources. Taking this into account, the concept of an ecological footprint to measure whether a nation can support its resource consumption with its own available ecological capacity takes on new meaning. For example, the USA (largest user), with a footprint of 23.7 acres per capita, should have a footprint of 4.6 acres per capita in order to be sustainable. This portion of wealth is enjoyed at the expense of global natural resources and climate change (Worldwatch Institute 2004). We soon started to picture why the affluence of nations is associated with environmental harm.

The report *Our Common Future* (World Commission on Environment and Development [WCED] 1987) highlights the environmental inequality and racism which results from the export of hazardous materials to Global South communities, which is also a violation of the United Nations (UN) Stockholm Declaration, principle 21:

> States have … the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction. (UN 1972, cited in Pellow 2007, p.112)

Guinier and Torres (2002) take this one step further and refer to 'political race' to link race to ecology and social injustice. This forces us to challenge the toxicity of racism because it 'threatens us all' not only people of colour who may be directly affected by hazardous waste dumping but whole communities (Guinier and Torres 2002, in Pellow 2007, p.45). This concept provides news ways of thinking about the politics of race. An example of this is put forward by Pellow (2007, p.9) who believes:

> the global waste trade is a racist and classist culture and ideology within northern communities and institutions that view toxic dumping on poor communities of colour as perfectly acceptable.

Embedding the Concept of Sustainable Resources in Our Curriculum

The following activities were used to encourage students to explore how they could use teaching resources more sustainably. These activities can be used as a teaching tool to illicit ideas, apply practical applications, encourage critical thought and offer practical ways of managing a classroom discussion on sustainable resources.

Box 5.2: Session plan—Sustainable Resources.

Aim

- Exploring the use of teaching and learning resources and considering their sustainability

Learning outcomes

- Acknowledge the importance of sustainability in relation to teaching and learning resources
- Explore a range of resources
- Recognise the importance of resources
- Consider information and communications technology (ICT) as a resource and its contribution to sustainability.

Working in small groups the students were asked to define resource. Some students found the Webster's dictionary definition was limited or difficult to relate to 'a source of supply or support: an available means; a natural source of wealth; and a source of information or expertise; something to which one has recourse in difficulty', but as one student linked sustainability to the future generations of her family, she found more relevance in the definition set out in *Our Common Future* (WCED 1987) which calls for:

> development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

The activity began to draw on the values, priorities and changes necessary when thinking of future generations. The idea of sharing a common future meant moving towards a more ecological way of thinking as the students began to focus more critically on how resources were used in their teaching practice, in their subject specialisms and in their everyday lives and how this has changed over time and place.

In small groups, students were asked to make a list of teaching and learning resources and describe what domain they addressed, that is, cognitive, affective or psychomotor. The students were then asked to work in pairs on a communication exercise:

Box 5.3: Session Activity—Communicating meaning—words are not enough

- In pairs sit back to back, one of you will be given a picture, you have 3 minutes to describe the picture to your partner without actually saying what the picture is.
- The partner should draw what (s)he hears you describe.
- How does the drawing match the picture you described?
- What are the difficulties?

A series of visual images were used for this activity as an example of how we pass on meaning and the problems of interpreting things differently. We used a quote from Walklin (1990, p.78):

> We hear words but often have little or no understanding of meanings and concepts behind them. For words to have meaning they must be related to personal experience or to known concrete objects.

Building on Walklin's ideas to address the various domains of learning, we discussed the idea of how we come to make meaning. How do we reach a consensus of understanding and how do these ideas become part of our everyday language use?

After discussing how ICT aided the development of their teaching practice, students were asked to explore the life cycle of this resource by carrying out the following activity.

Box 5.4: Activity—Mapping out resources

- Think of a simple resource you might use in your teaching.
- Place this in the middle of your flipchart paper. On the left, draw or note all the materials you can think of that have been involved in producing this resource, e.g. fuels used to power machinery, materials that have gone into making it, buying it and selling it. Do they all come from the same place? What are the effects on land, forests, animals and plants, water, air atmosphere, etc.?
- On the right, draw or note the human activities that were involved in producing the item and getting it to you, where the workers live and what life might be like for them.

The students chose to research whether computers were a sustainable resource based on their assumption that computers were a sustainable resource. They gathered visual images and visited computer websites for their research before mapping out their findings to report back to the whole class.

As they began the mapping process, it became obvious that the production, consumption and disposal involved in the life cycle of computers involved many wider issues they had not considered at first. On the left-hand side, they mapped out all the materials mined to make computers such as tin, copper, gold and listed fuels such as oil involved in transportation, the energy consumption and labour involved. On the right-hand side, their mapping became more detailed as they discussed the wider implications of using labour for both the production and disposal of this resource. The issues involved more ethical considerations as they searched for companies that recycled their old computers. This led onto questions about where they were being recycled which led them to the Greenpeace (2009) website. Here they discovered that e-waste is routinely shipped out to the Far East, Africa and China, often illegally and often violating international laws. This

then led them to discuss how e-waste would be dismantled, what were the recycling operations and were they the same for the workers as they would be in the UK? They discovered that in developed countries, electronic recycling takes place in purpose-built recycling plants under controlled conditions. In many EU states, for example, plastics from e-waste are not recycled in order to avoid toxins and dioxins being released into the atmosphere. In developing countries, however, there are no such controls and recycling is done by hand in scrap yards, often by women and children.

This challenged students' values and taken-for-granted notions about how globalisation impacts everyday life in developing countries—particularly poignant were the video images of children amongst e-waste on the Greenpeace website and the visual images in Sophie Gerrard's (2006) MA project—invited some in-depth discussion around child labour and environmental exposure. The students used Gerrard's (2006) explicit photographic images to discover that the discarding of toxic e-waste has resulted in India becoming one of the largest dumping grounds in the world. This extremely toxic pile of waste grows each year as the lifespan of a computer has reduced from six years to just two.

By taking a helicopter view, the students have identified that race and gender intersect environmental justice as corporations shift many of the most toxic industrial hazard southwards. As Barlow (2003, in Pellow 2007, p.49) suggests, the distribution of resources is based on 'racial privilege' and unequal claims to housing, education, jobs, freedom and other limited social resources, based on an individual's 'racial designation'. The students explored how exploitation of human beings and the natural environment are linked to power and control of land, soil, seeds, metals and water which is in the hands of multinational global companies. Of course, they were aware of this from newspapers and television documentaries but they were always distanced from the events—there was no personal connection made until the in-depth exploration encouraged by this session. There was an abstraction of loss from their concrete experiences. As Harding (2006, p.51) points out:

> for most of us deep experience lies just below the surface of everyday awareness, and … a slight shift of context can easily make it visible. Deep experience is easily evoked, but its ethical implications are more difficult to assimilate.

Some students were shocked to find the environmental improvements being carried out under EU legislation, simply move the problems and responsibility of disposal to the Global South. Despite the Basel Convention agreement (2011), which set up a framework of control over the transboundary movements of hazardous wastes, this practice still continues.

Environmental protection in developing countries is usually poor and this, therefore, gives little incentive for manufacturers to prevent hazards 'downstream' during the product design stage which follows the 'cradle to grave' manufacturing model of the industrial revolution. Braugart and McDonough's (2009, p.3) suggest we need to rethink our production processes:

> cradle to cradle tries to put human beings in the same 'species' picture as other living things … a misuse of material resources is not just suicidal for future human generations but catastrophic for the future of life.

In order to support the electronic industry and, since many products are produced in Asia, Pellow (2007) suggests that e-waste dumping from consumers in the North back to Asia is viewed as a 'logical' part of the recycling process. Asian companies disassemble products after we have no further use for them. The 'take-back' scheme is considered a more efficient way of incorporating materials back into production. However, this may be due to the fact that recycling in Europe under EU regulations is more expensive than sending it back to Asia where e-waste is handled under hazardous conditions. As already discussed, those working in this industry face serious health risks, and ecosystems are damaged by the contamination of groundwater from hazardous substances, posing further environmental and public health risks (Pellow 2007).

The computer take-back campaign (GrassRoots Recyling Network [GRRN] 2008; Pellow 2007) holds that producers and brand owners should be responsible for the life cycle of their products, thus shifting the costs of managing discarded products away from taxpayers and local governments. However, the GRRN tracked a major electronics company's progress on recycling in the USA and found prison inmates were subject to chemical cocktails as they used hammers to smash computer monitors (Pellow 2007). Earning less than $2 per hour, the prisoners work outside the protection of labour regulations in the same way as workers in Asian e-waste workshops. After a public demonstration which drew attention to this practice, the company cancelled its prison contract. Now, these multinational companies are moving to support more recycling and financial responsibility which continues to be monitored by activist networks and eco teams.

Through education and campaigning, there are a number of ways in which action has been taken. For example, the 'Swadeshi' movement urged the boycott of many foreign goods (Weber 1999). The term 'Swadeshi' has been borrowed from the movement launched by Mahatma Gandhi against British-made goods during India's independence struggle. At that

time, Gandhi called upon the British to 'quit India'; now activists are calling on multinational corporations to quit India. Leonard (1994, cited in Pellow 2007, p.136) believes:

> Gaia has a vision of a just, toxic free world … we have the right to be a clean, chemical free environment; down to the level of the individual body … we want to shift the activist mindset from NIMBY (not in my backyard) to NOPE (not on planet earth).

Looking at power as productive or enabling, Marshall et al. (2011, p.95) illustrate how sustainability managers can affect change working from the 'inside' of corporations. An MSc student on a leadership for sustainability course tells how he joined a multinational company as a supply chain manager and following Macy and Brown's (1988) ideas, believed he could help create a positive effect in 'slowing down the train' in one of the world's most powerful corporations. Although these changes can be frustratingly slow, they are liberating.

During the session, the students explored a vast amount of data although some found it too much to take on board in such a short space of time. Reflective practice is not something you can switch on and off in an instant. It is a skill to be practiced and works on different levels of understanding and experience over time. With this in mind, I concluded the lesson with an activity that enabled students to practice deeper reflection. They needed time to consider how they could implement sustainable resources into their teaching practice. They were asked to reflect on their findings and apply these to their practice.

Box 5.5: Summary—key points.

Reduce, Re-use, Recycle

- These are three key words to think about in relation to resources and sustainability—take one of the resources you frequently use (these could be consumables such as timber or copper) and consider these three questions
- How can I reduce my usage of it without compromising learning?
- How can I re-use these resources?
- What happens to it after I have finished with it?

See http://www.recycling-guide.org.uk/rrr.html

There are tensions in sustainability education as there is no 'final grand narrative but an emerging nexus of thinking across a number of fields' (Sterling 2003, p.156). Importantly, this lesson has shown that with the right tools the awareness of student teachers can be gradually shifted as they take a step back and consider the bigger picture of how resources in their teaching practice can be used more sustainably. The activities created a focal point that allowed them to challenge the dominant world view and to move beyond their taken-for-granted assumptions.

The end-of-module assessments demonstrated how some students were able to make positive changes within their teaching practice. As they 'step out onto new ground' to experience 'a wider sense of self' (Macy and Johnstone 2012, p.81), only then will they begin to map out future challenges and recognise how they might continue to embed ESD into their programmes. However, this process takes time and space in any curriculum and students need to raise their own questions, and only through deep reflection will they discover new ways of seeing (Bateson 1972) how to use resources sustainably.

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Further Reading

Basel Action Network website http://www.ban.org/mission/ puts issues around e-waste in the spotlight and provides information which can be usefully developed to encourage learning about sustainable resources.
Sophie Gerrard's website https://sophiegerrard.com/work/e-wasteland/ provides useful teaching resources to encourage students to develop their understanding of e-waste and questions the sustainability of products we consume.
The Alliance for Global Sustainability website http://www.global-sustainability.org/ shows how the consumption of resources between West and East is unequal, but it also outlines possible actions to be taken to support global sustainability.
Somjita Laha's thesis at https://www.escholar.manchester.ac.uk/uk-ac-man-scw:263090 provides a comprehensive coverage of how e-waste is managed.
The following website http://www.recycling-guide.org.uk/rrr.html gives practical advice on reducing waste.

CHAPTER 6

Sustainable Assessment: Developing Lifelong Learners

Johanna Witts

Introduction

Sustainable assessment can be approached from two perspectives. Firstly, the pragmatic use of activities to allow students to measure their own knowledge and values in relation to sustainability and, secondly, the less obvious concept of 'sustainable assessment', in which we can adopt assessment practices which equip students to become effective lifelong learners. All suggested activities outlined in this chapter were devised as part of the co-operative inquiry (CI) project conducted by a team of teacher educators outlined in Chap. 3 and the results of further professional development since the project was completed.

Initial Teacher Education Context

> Sustainable assessment encompasses the knowledge, skills and predispositions required to support lifelong learning activities. (Boud 2000, p.151)

Ask student teachers what their understanding of the phrase 'sustainable assessment' is and they will probably describe processes which utilise e-portfolios, e-tracking and the use of Virtual Learning Environments to provide online feedback to students. Although the use of new technologies and blended learning is key in student teachers' development (Jisc 2010), and contributes well to our quest for a paperless system, it is important

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to challenge these preconceptions of sustainable assessment as merely a means of using less physical resources to measure and record learning.

Educating student teachers in assessment procedures should obviously include the need for summative assessment for certification purposes but should also call for a greater focus on formative assessment (Black and Wiliam 1998). Boud (2000, p.151) develops this concept one step further; asking us to encourage 'sustainable assessment' and, cleverly taking the Brundtland definition of sustainable development (WCED 1987), to define sustainable assessment as 'assessment that meets the needs of the present and prepares students to meet their own future learning needs'.

We can, as educators and teacher educators, encourage students of all levels to make the processes of formative assessment their own, rather than a process they are subjected to, and therefore in turn develop their ability to meet the future demands of lifelong learning. By giving them the tools to self-assess their progress throughout their learning lives and reflect on feedback from those other than the 'teacher-expert', we encourage their development as effective lifelong learners.

Box 6.1:

In what ways do you currently equip your students with the skills to become lifelong learners?

Part 1: Assessing Sustainability Knowledge

The CI group decided very early in the research process that the most effective way forward would be for each member of the group to develop one key session focusing on Education for Sustainable Development (ESD) in the module they were currently teaching. With very little knowledge of ESD, I tentatively chose the Postgraduate Certificate in Education and Certificate in Education (PGCE/Cert Ed) module 'Enabling Learning and Assessment' as my focus; knowing that the current work I was completing for my master's dissertation would at least give me some confidence in the assessment element!

The result was an activity based loosely on a concept developed originally for the 'Success for All' (DfES 2002) and taken further by the National Teaching and Learning programme in 2003; National Teaching and Learning Change programme in 2003; a carbon footprint board game, as shown in Fig. 6.1:

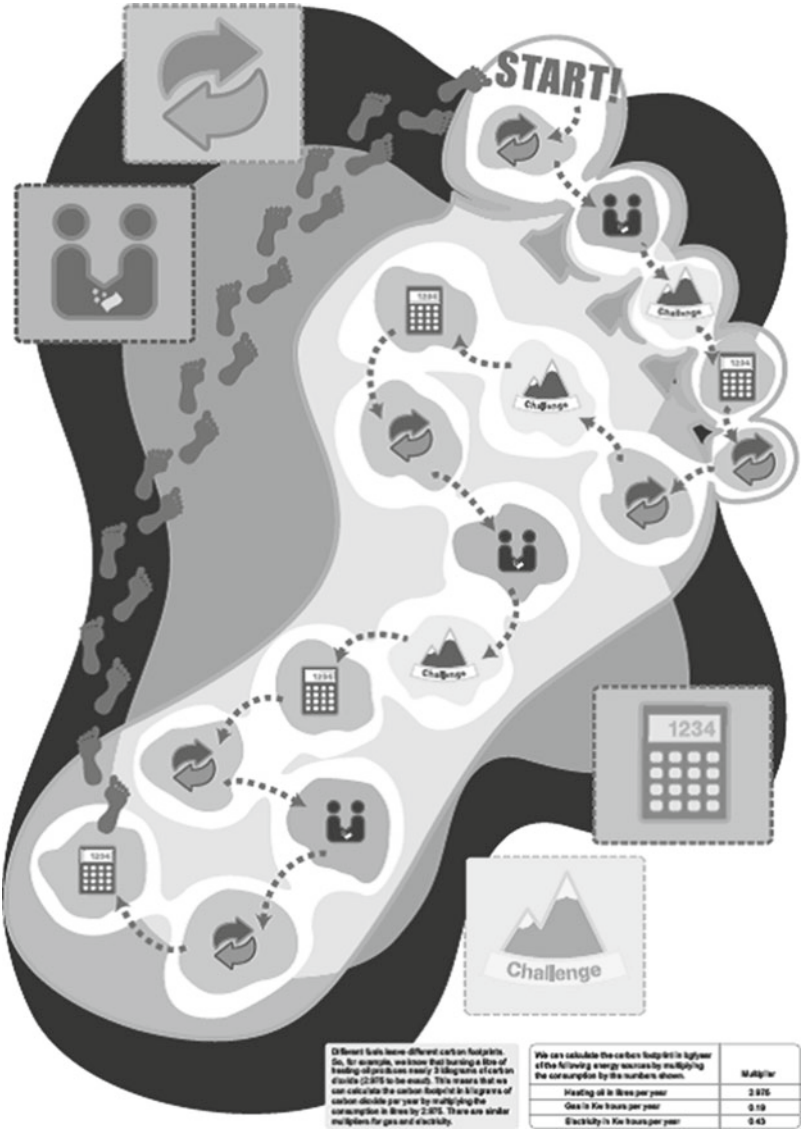

Fig. 6.1 Original NTLC carbon footprint board game (Quality Improvement Agency 2008)

This was developed into a version which fondly became known by Somerset College as 'Stomp'. My intention was to introduce it to my students to highlight how activities can be designed to measure their own students' knowledge of sustainability issues, either initially or formatively, as they introduce ESD into their practice. As the original activity had been centred around questions on Construction and the Built Environment, it was important that a more generic version was developed in order to highlight to our student teachers how resources can be adapted to suit a number of contexts. The activity morphed another twice before it became used regularly in the PGCE/Cert Ed classes. Its first transformation was to an extremely large, floor-sized version that became a permanent fixture in the college's Genesis Centre, as a result of piloting the Quality Improvement Agency (QIA) materials, as follows:

This change to a 'Twister©'-type activity was a definite catalyst in encouraging us to think of how we might generate a more portable, accessible version to use both in our classrooms and by our student teachers. Alongside the environmental, energy and waste questions, we also developed a set of ESD questions to assess our students' knowledge and suggested they should develop sustainability questions related to their own subject specialism, which they could substitute for our ESD ones when using with their own students.

Our transformation resulted in 20 rubber feet, approximately 114 cm long by 57 cm wide, that were not only portable but could be placed on the floor in any permutation to create the 'board' on which to play. The feet, or footsteps to be more precise, were colour-coded in either green, yellow, blue or orange, five of each of the four colours to correspond with the four categories of questions. A further foot was created to hold the question cards which were banded into four topics or themes by their colour; we chose green for RE-duce, yellow for RE-use, blue for RE-cycle and orange for RE-educate.

The aim of the game was for students to form teams to reduce their carbon footprint to zero by correctly answering a series of questions related to sustainability. The teams' carbon footprints were represented by a collection of tokens; each time a question was answered correctly, a token was removed, therby reducing their carbon footprint by displaying a good knowledge around sustainability knowledge. Guidance for the activity, now available through http://www.edu.plymouth.ac.uk/esd/, was provided as follows:

Box 6.2: Setting-up the game

- Place the 20 coloured rubber feet on the floor alternating left and right and randomizing the colours (16 can be used if space is limited).
- Construct the large jigsaw foot scoreboard on a table and place the four groups of questions in the appropriate coloured cut-outs on the feet. Place four blue, yellow, orange and green carbon tokens onto each of the sections of the jigsaw. Each team will be allocated a section of the foot, and will remove a carbon token of the appropriate colour on answering their question correctly.
- Divide the players into groups.
- Divide the group into teams of equal numbers with between three and five players per team, up to a maximum of four teams.
- If you feel that the players might find the questions a little hard, organise fewer but larger teams.
- If on the other hand you feel that the teams should know the answers, organise a greater number of smaller teams.
- Once you have your teams, allocate each a colour corresponding to a section of the jigsaw foot.
- Allocate jobs.
- To play the game each team will need to:
  - have one player on a foot (acting as a counter)
  - one player to roll dice
  - one to ask the questions
  - one to answer questions
  - one to remove carbon tokens from the scoreboard

Playing the Game

Team One rolls the dice and from a predetermined start position their team member moves from one coloured foot to the next (in the direction of the feet) until they have moved the number of places shown on the dice. The colour of the foot that they end on signifies the colour of the question that they are to be asked. A member of Team Two then takes a question from the top of the appropriately coloured pack of questions and reads it to Team One. If Team One answers correctly (the answer is printed upside down on the question card), a member of their team removes one carbon token of the

appropriate colour from their section of the scoreboard foot. If the answer is incorrect, the team must wait until their next go, roll the dice, move again and try to answer the new question correctly. Once a question has been answered (correctly or incorrectly), it is placed at the bottom of the pile.

Team Two then rolls the dice, moves, and the following team asks them the question and so on.

As the game continues, a team may land on a coloured foot for which they have already removed all of the carbon tokens; in this case, they must wait until their next turn to roll again. The game is won by the first team to remove all of their carbon tokens from their section of the scoreboard foot. The game can either be stopped at this point or the remaining teams can continue to play.

It was important that the activity modelled good practice in terms of differentiation and higher-order thinking skills, if it were to serve the dual purpose of demonstrating an effective assessment tool to the students. I was therefore careful the first time I used it to include a variety of easy and more complex questions as it was important the activity was neither too simple nor too challenging, to avoid loss of interest. The students provided very good examples of how their own, much younger, students might react! In addition to being a 'fun' activity, well-chosen questions prompted debate and discussion as well as some quick fire answers to knowledge questions. This demonstrated the importance of carefully choosing a range of questions to suit those involved. This was an important lesson for the student teachers when considering the development of formative assessment activities for their own students.

Box 6.3:

Example Question.

Q. The average person makes 400 car trips a year. What percentage are less than 5 miles and therefore could be made by bicycle?
A 18%
B 38%
C 58%

A. 58%

Alternatively, the questions could pose an issue for which teams have to formulate a solution to be used as a type of mind mapping. Teams could be set a time limit to write down a solution to a common sustainability problem posed on a question card with tokens being removed at the

discretion of the lecturer. Used in this way, the activity moves from a more surface approach of measuring knowledge to addressing higher levels of Bloom's Taxonomy (1956) such as problem-solving or evaluation.

Evaluation

It was an important part of the CI process not only to reflect on the development and use of the activity but to involve the students in that evaluative process. In order for the sessions in which I trialled Stomp to be more than just an enjoyable 'game', I also encouraged them to view it as a generic assessment method they could evaluate as part of their learning process. They had learnt a little about their own and others' sustainability skills and seen the potential for its use in their own curriculum areas, but I also wanted them to think critically about its pedagogical worth as an activity in its own right; that is, was it an effective assessment tool? How and why did it work? Evaluation questions in Box 6.4 were completed by students prompting them to apply knowledge gained in previous sessions on initial and formative assessment. I also wanted to facilitate the debate on how an assessment tool can also serve a dual function as a learning tool to begin to sow the seed of the concept of assessment *as* learning (Earl 2003).

Box 6.4:

- What features make it an effective assessment activity?
- How could it be used as an initial assessment tool?
- How could it be used as a formative assessment tool?
- How does it support differentiation?
- How could you adapt it to use in your own specialist area?
- What would you change?
- What features could make it an effective learning tool?

Feedback from the students was honest and positive, and, like all good students, they could identify many more improvements than I could! The majority view was that the activity could be used as both a learning and an assessment tool as students would be introduced to new information and concepts as well as being tested on their existing knowledge relating to sustainability. One commented that many of the questions encouraged a constructivist approach to thinking in which students were encouraged to relate to any existing knowledge they had of wider subject matter.

Alongside the more predictable comments on the activity being fun and engaging, the students felt that, although the four categories allowed for a diagnostic approach—what is our strongest area of sustainability knowledge—the simplistic nature of multi-choice questions could lead to students simply guessing the answers and therefore the learning being of a surface nature. The suggestion was that, for some levels of students, more open-ended questions that facilitated debate might be more appropriate. Many felt it would make an excellent icebreaker as part of a course induction with a dual function of also embedding sustainability into their programmes of learning from the very beginning. It gave a valuable insight into group interaction and emerging personalities within newly formed student groups to lead to a more ideographic profile for the student teachers to use. One commented that it was an activity that had strong and meaningful links to citizenship and the Every Child Matters (ECM) initiative (DfES 2003) feeling it addressed 'Making a Positive Contribution' in less of a 'tick box' way than many felt they were used to. I discovered a research document from the Sustainable Development Commission entitled 'Every Child's Future Matters' (SDC 2007), which I now use regularly with students, in its 2010 revised form, to emphasise how the wider concepts of sustainability are golden threads that run through our whole professional practice. The document directly enhances the five outcomes of ECM, linking sustainability issues to each of the outcomes of Be Healthy, Stay Safe, Enjoy and Achieve, Make a Positive Contribution and Achieve Economic Well-being.

There were several changes the students felt they would make to the activity to improve it. Most of these focused on the rules which they felt could be 'stricter'. By initially allocating one role to each student, it was important in terms of inclusivity to swop roles throughout the game to get a true measure of each student's knowledge and understanding. The most creative suggestion was to begin with a carbon footprint score calculated from students' own lifestyles, possibly from an activity that could be planned earlier in the scheme of work. Websites such as http://footprint.wwf.org.uk (WWF 2006, online) could provide a useful tool to calculate this initial score and as a comparison to the original footprint suggested in the QIA activity of 9400 kg per year for an average Briton. It was felt that starting with a personalised score would highlight to students that it is the changes one makes and not necessarily where one starts that is important. Many of the students were keen to use the activity in their own practice, with one Childhood Studies lecturer seeing potential for her own students to use it as part of a project to adapt for use with children.

Overall, Stomp became an activity we reflected back on in subsequent sessions when we discussed self- and peer-assessment and the importance of using student centred assessment tools; too often assessment is something student teachers feel they have to 'do' to their students rather than them taking an active part. The ultimate use of Stomp as a summative assessment tool would be for students to devise their own sets of questions for each other based on their sustainability knowledge gained over a period of learning.

Box 6.5:

- Devise a set of questions for Stomp relating to your own subject specialist area.
- What four categories would you establish?
- Would you use it as an initial, formative or summative assessment tool?

Part 2: Sustainable Assessment: Assessment as Learning

The following section will explore ideas on how assessment tasks can be modified to go beyond measurement of knowledge and the mastery of subject matter alone, to becoming part of a meaningful learning experience nurturing skills for future learning. Cook, Cutting and Summers (2010, p.314) tell us of the 'growing consensus' that we, as educators and teacher educators, need to address more than just a need to educate *about* sustainability issues. A shift of focus from knowledge acquisition with regard to environmental issues towards promoting skills and values to move towards the transformative model outlined by Sterling (2001) is at the centre of the concept of sustainable assessment. Blewitt (2008, p.218), drawing on the ideas of Orr (2004), echoes this when he suggests, 'the goal of education should be self-mastery rather than mastery of subject matter'. Sustainable assessment is best described as a holistic approach to developing long-term learning skills such as self-reflection and critical thinking through student involvement, peer- and self-assessment, developing those crucial skills for the future that Boud (2000) outlines in his paper and in Assessment 2020 (Boud and Associates 2010), a vision for implementation from the Australian Learning and Teaching Council.

The LSIS (2013) report 'Embedding Sustainability into Teaching' makes reference to UNESCO (2012) highlighting nine types of learning that lend themselves to sustainable education and confirms 'systems thinking based learning and multi-stakeholder learning as emerging pedago-

gies' (LSIS 2013, p.50). If critical thinking-based learning, problem-based learning and discovery learning are all useful in acquiring competencies for sustainable learning (UNESCO 2012, in LSIS 2013), then surely these approaches can be flipped to become sustainable assessment approaches. The challenge for student teachers and experienced practitioners alike is how we ensure those approaches also meet the demanding rigours of the present learning needs of our students, namely measurement and certification of learning.

The initial introduction to these concepts during the CI was as a subsequent session to the Stomp activity. Student teachers become familiar and comfortable with the concepts of summative assessment—assessment *of* learning—and formative assessment—assessment *for* learning (Black and Wiliam 1998)—quite early in their learning journeys. By introducing the work of Boud, I asked them to consider a 'tertium quid'—sustainable assessment that fosters lifelong learning skills. Boud and Falchikov (2006) focus their attentions on the need for such skills in the higher education context, but these approaches are just as transferrable to practices in the compulsory and further education and skills sectors. The session I provide on this concept has developed greatly in my practice since the early stages. The main focus on sustainable assessment began as an extension to discussion on the positive features of formative assessment as being a focus on learning not performance and the encouragement of reflective assessment (Black and Wiliam 1998). After discussing the main features of sustainable assessment with the students, they then explored ideas of how they might integrate peer- and self-assessment into their own schemes of work and session plans. Peer- and self-assessment are just two approaches that, when integrated into a learning programme, might help to foster those lifelong learning skills to enable students to develop the capacity to make sound judgements independently, a skill development which is key to sustainable living. Put simply, sustainable assessment methods are those which develop 'learning to learn' skills to equip students to make informed judgements, choices and think critically and reflexively. Students then develop confidence in managing their own and becoming part of others' learning.

Student teachers often find this concept easier to comprehend than might be predicted, and the next stage of development of this teaching session was to explore these concepts further. Reviews of assessment research produce very few sources using the same terminology, although mention of these skills are predominant in work surrounding sustainability skill sets (Murray 2011; Blewitt 2008). Strong parallels can be seen,

however, in the work undertaken by Learning and Teaching Scotland (2014) as part of their 'Assessment is for Learning' (AiFL) programme. A triangle is used to categorise assessment for learning (formative), assessment of learning (summative) and a third approach 'assessment as learning'. This third approach, developed by Earl in 2003, outlines that by being involved in assessing themselves and others, 'learners are more likely to develop the attributes and the skills they need to become resilient, self-motivated learners, and able to keep learning in the future'. I therefore decided to incorporate an activity for students using the image of the assessment triangle. Students drew an equilateral triangle on flip chart paper and labelled each side as either assessment of, assessment for or assessment as learning. I then gave them a series of statements on cards about learning and assessment practice adapted from some of the principles outlined in the AifL document (Learning and Teaching Scotland 2014). Through a process of considered discussion and critique the students then decided where each statement was best placed. I am still currently using this session on the PGCE/Cert Ed to explore these concepts and encourage students to link theory to practice by revisiting their Schemes of Work to incorporate specific peer- and self-assessment activities. What must always be stressed, however, is that peer- and self-assessment can often be misinterpreted by students to become a meaningless tick-box exercise where students merely swop papers or assignments with no meaningful learning arising from the assessment process. Sustainable assessment or assessment as learning is a means by which students learn through the process and nature of the assessment task itself and therefore needs to be thoughtfully planned. As Stock (2014 cited in Jones 2014, p.39) states:

> Done well it can be a powerful way for students to set their own targets and become more successful learners, who are able to reflect on their own strengths and weaknesses and make improvements accordingly.

Useful examples include group assessment of a past example from an assignment followed by discussion, students writing a reflective piece on how their assignment meets the criteria and students submitting a statement with an assignment highlighting areas they specifically wish to have feedback on (Boud 2010). Examples generated in sessions by myself and students for use within further education programmes have included asking students to write reflective logs on their own progress after assessments, asking students to

set the criteria for the formative assessment of a piece of work and students setting assessment tasks for each other. As Blewitt (2008, p.221) outlines:

> participation helps learners self-organize to develop greater self-reliance and a stronger sense of personal, cultural or community identity, which in turn can deepen a commitment to lifelong learning and long-term sustainable actions.

Box 6.6:

Extract of statements used in the Assessment Triangle activity (adapted from Learning and Teaching Scotland 2014)

- Classroom assessment involves high-quality interactions, based on thoughtful questions, careful listening and reflective responses.
- Learners, staff and parents/employers are clear about what is to be learned.
- Learners are given timely feedback about the quality of their work and how to make it better.
- Learners and staff are fully involved in deciding next steps in their learning and identifying who can help.
- Learners and staff identify and reflect on their own evidence of learning.
- Learners and staff help to set their own learning goals.
- Learners and staff practise self- and peer-assessment.
- Staff use assessment information to monitor their organisation's provision and progress, and to plan for improvement.
- Staff talk and work together to share standards in and across organisations.
- Staff use a range of evidence from day-to-day activities to check on learners' progress.

What examples do your teaching team have of assessment as learning?

To what extent do your students self-assess as preparation for future learning?

Beyond the Co-op: Further Activity Development

When the CI came to an end and we all went our separate ways, I was concerned it would be difficult to continue developing my practice in relation to ESD. It was not just that the party was over, but metaphorically someone had switched the fluorescent lights back on and I was wander-

ing around in my best party dress with a bin bag gathering up the paper plates! I now work within a team who do not necessarily share my passion for ESD and have not benefitted from the community of practice established during the CI. However, reflecting on my practice over the last few years, I can see how that experience has influenced my practice. I still adapt and deliver the core sessions that both I and the team developed, including specific sessions on ESD but, more importantly, can see how my own personal practice values address many of the student-centred approaches identified by Cotton and Winter (2010) as being central to many of the general principles of sustainability pedagogies. Higher-level cognitive thinking, systems thinking, reflection and collaborative learning seem overwhelming to a student teacher who is only just getting to grips with the basics of planning, so the following is a list of activities I have incorporated into sessions with my students to encourage them to at least start sowing the seed of sustainable assessment in their teaching.

Box 6.7: Approaches to encourage sustainable assessment skills

- Giving students problems/case studies to solve which do not necessarily have one or even a correct answer.
- Ask students to write down six keywords associated with an issue they have studied in class, students swop keywords then visually demonstrate connections between them.
- Students create a graphic organiser to present the 'big picture' of a topic they have learnt, showing connections between smaller elements.
- Students set the criteria to assess their knowledge of a particular subject.
- Students write a reflective piece based around feedback from their last assignment.
- Make your session aim a 'big What If…?' question.
- Challenge assumptions and investigate other viewpoints in the questioning you use.
- Ask questions that encourage students to think about the consequences of something.
- Ask students why they think you asked a question or why they think you have used a particular method of assessment
- Students create the assessment task—job done!

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Further Reading for 'Sustainable Assessors'

Black and Wiliam (1998) provide the seminal work on formative assessment as a good introduction to assessment for learning.
Boud (2000) is the godfather of sustainable assessment and introduces the concept well in the article referenced below. All papers from the Sydney ATN conference (2010) focus on the concept too.
Boud and Falchikov (2007) offer excellent ideas for sustainable assessment strategies for higher education students to become lifelong learners.
The downloadable Joint Information Systems Committee (JISC) guide is an excellent collection of case studies and supplementary resources on how feedback practices might be enhanced by technology with perspectives from managers, practitioners and students.

CHAPTER 7

Changing Values for a Sustainable Future: The Role of Teaching and Learning

Chris Savory

Introduction

This chapter is based on the goal of UN Decade of Education for Sustainable Development (ESD) 2005–2014:

> To integrate the values inherent in sustainable development into all aspects of learning in order to encourage changes in behaviour that allow for a more sustainable and just society for all.

Their vision is a world in which all can learn 'the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation'. This statement is very explicit about the role of values. It does not talk about teaching and learning the knowledge/facts about sustainable development (SD), nor does it mention teaching and learning the skills needed for building a sustainable future. It focuses on the values that lead to changing behaviour. The implication of this is that significant shifts in values and behaviour are needed to achieve these far-reaching goals (a more sustainable and just society for all).

This goal from the UN clearly positions ESD in the transformative model of curriculum as process. This conflicts directly with the current domination in further education (FE) in the UK of the model of curriculum as instrumental for socialisation into employment. As Stephen Sterling, who has written the foreword to this book, argues:

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> most learning promoted in formal education in schools and higher education is of the first order variety, being content-led and externally focussed, and often delivered through transmissive pedagogies within a consensually accepted framework of values and purposes. It is concerned fundamentally with 'information transfer'—learning about things—and does not normally challenge the assumptions or beliefs of the learner. (Sterling, 2011, p.22)

This approach is fine for relatively straightforward skills and knowledge learning necessary for level 1 and 2 courses. However, for developing critical learners and active citizens committed to SD, another approach is needed. This is the 'second order' which:

> is more challenging and involves the learner (or learning organisation) critically examining, and if necessary changing, his/her/its beliefs, values and assumptions. (Sterling, 2011, p.23)

Values Conflict

One of the difficult issues that teachers face as they approach the teaching of values in relation to SD is that not only are there likely to be some conflicting values amongst learners regarding the necessity of discussing the subject at all but also there is the potential for considerable conflict of values among learners who broadly accept the need for SD as described by Smith (2003, p.1):

> Different conceptions of sustainable development—whether ecological modernisation, third world development or bioregionalism—will balance and prioritise the values we associate with social justice, intergenerational equity and nonhuman nature in different ways, thus leading to conflicting and incomparable ideas about the direction of environmental policy.

This range of values has not been made explicit enough in green politics generally according to Soper (1995, p.251), who also points to the need for values to be made explicit:

> Green politics needs to recognise that it is appealing not to a single, but to a plurality of values, the mutual compatibility of which is by no means obvious and certainly needs to be displayed rather than merely assumed.

What are the Likely Conflicts Within the Discourse of SD?

There are several important dividing lines in our thinking about these issues that are based on value judgements (derived from ideological and ontological positions) rather than on facts alone. The first and most fundamental split is between those who believe in the aforementioned threat to human life and those who either do not believe the threat is serious or feel that, in any case, changes to current ways of life are inconceivable.

The next major split in thinking about SD is among those who agree the problem is serious but who believe in different approaches to address this. In green political thinking, there is a major divide between those who believe that technology can solve the problem by 'de-coupling' economic growth from ecological harm (Ecological Modernisation; weak SD) and those who believe that industrialization and technology are an intrinsic part of the problem and thus a radical change of lifestyle is needed (Deep Greens; Strong SD; Bioregionalism). This is connected to the point made by Smith (2003) in the above quote regarding differences in approach to values attached to non-human nature, which I explain briefly below.

Intrinsic and Extrinsic Value of Nature

The question here is whether the non-human natural world should be regarded by us humans as valuable for what it can provide for our well-being (extrinsic value), or whether non-human nature has value in itself, regardless of human needs or sensibilities (intrinsic value). For example, should we protect other species because they might benefit us in some way (medicinal plants) or because it is wrong *in itself* for us to destroy other species? It can be seen that value conflict will not always mean policy conflict, when the ends are desirable to both parties. However, there are likely to be significant differences around issues such as the role of religion and spirituality in SD, the role of population levels in causing and solving problems, animal rights, the protection of wilderness, the role of technology in solving problems and the scale and material wealth of human communities in a future sustainable world.

Social Justice

Within both the strands outlined above (technology and de-coupled economic growth versus radical social transformation and limits to growth), there are also major differences of opinions about the importance of global economic inequality and about the levels of equality/inequality within our own society. It is generally agreed (Dobson, 2007; Dryzek, 2005; Connelly et al. 2012) that green political theory, of which SD is a branch, does not necessarily imply a commitment to socio-economic equality. In fact, SD emerged out of concerns around global justice issues. That is to say an acknowledgement that responses to ecological crises need to be different in rich industrial and post-industrial countries as compared with poor and economically developing countries. More contentious is the issue of how equal a sustainable future Britain should be or needs to be in order to be sustainable. You are likely to have learners with quite divergent views on these issues in your classes.

Intergenerational Justice

Another way in which differences may emerge is on the questions 'To what extent are we responsible for the potential wealth of future generations? How far into the future should we be concerned about?' For some people, their main motivation to embrace SD is the desire to help create a good future for their descendents. How much are people prepared to sacrifice now in order to achieve this goal?

These differences of values are not 'right or wrong'; they are based on belief systems and views of the world rather than empirical facts, and they cannot be taught or assessed in the same way that knowledge or skills can. Instead, the aim is to help learners realise that they do have values that affect what they do and think, and that rather than stay implicit and unconsidered, these values can be made explicit, considered and possibly changed.

Approaches to Teaching Values

As discussed above, in most teaching and learning encounters that deal with SD, there will be some disagreement about the seriousness of the threat to the biosphere from human activity. This is likely to be highly charged and full of value conflict. There may well be members of the

group who do not see any need for changing the way we live now and others who are dismissive or mocking of the issues. This can be a difficult issue for teachers if there are one or more learners strongly contesting the existence of man-made climate change. There has to be a balance between allowing people to voice their views, and an explicit recognition that these are minority views. On the other hand, there may well be someone in the group who is a committed eco-activist and is extremely frightened at what they believe to be the impending collapse of human life on earth.

Box 7.1:

Can you create a safe space in your learning environment in which value differences can be expressed without escalating into damaging conflict?

In order to explore their own values critically and to encounter other people's values openly, learners and teachers need a safe space in which to genuinely consider and discuss these issues. This is not easily achieved and is rarely attempted in current practice. There are practical reasons for this, including time constraints, accommodation suitability, lack of experience and confidence in teachers. There are also ideological reasons for this which comes from neo-Marxist approaches to value differences. By this, I mean that approaches to teaching 'equality and diversity' tend to follow on from far-left responses to fascism, that is to say an approach which seeks to deny any platform for the expression of views abhorrent to the left. So in a session that is promoting anti-racism, for example, I suggest that it would be very unusual for participants to be encouraged to voice their racist views in order to better understand where they come from and how a different viewpoint can be achieved. My experience of these kind of sessions is that we are told that racism, Islamophobia, homophobia and sexism are wrong and we must learn the correct viewpoint and language. This may well change surface behaviour because people want to avoid getting into trouble, but it is debatable how much this changes deeper values and behaviour.

The project of ESD is nothing short of a transformation of society, so we must aim for deep and genuine change of values and behaviours. What appropriate techniques can we use? Drawing on practice developed for the Postgraduate Certificate in Education and Certificate in Education (PGCE/Cert Ed) programmes at Somerset College, the first section of this

chapter will give examples of how to approach changing and developing the values that underpin SD. The second part will outline the basic ideas of non-violent communication (NVC) developed by Rosenberg (2003), as a tool to use for considering beliefs and values in teaching and learning situations.

An Introductory Exercise in Teaching and Learning Values

I personally had very mixed feelings at the beginning of the co-operative inquiry that led on to the development of ESD in the PGCE/Cert Ed. I had started my eco-activism when I was 18 in 1979. Two years later, I left university after one year to be a full-time (unpaid!) peace and ecology activist. I spent the next ten years living in voluntary poverty, being fully engaged in political activism and lifestyle change in a 'green' way. This way of life came at considerable cost to my emotional health, as the rest of the world carried on regardless. I started my first teaching job in 1993, which was a way back into the 'real' world, but despite some successes, the demons from my activist days were never far from the surface and I was concerned about my own emotional reactions to the ESD project.

When the idea of the co-operative enquiry was mooted, part of me was delighted that there was the potential of a bridge between my activist life and my teaching life, and part of me dreaded another disappointment if nothing much came of the process. As you can imagine, 'Sustainability' was never going to be a trivial matter for me, and in particular, I did not want it to be just about recycling and saving paper. Luckily, this view was shared by the team and I was encouraged to develop a set of teaching sessions that connected to the profound changes required to move towards a sustainable society.

The idea for a session on values teaching as part of the Principles of Teaching and Learning module resulted from my experience at a residential course at Schumacher College in Devon with fellow 'Sustainability Champions' from the College. The idea of using Bloom's taxonomy of learning came from a handout prepared by a colleague, whilst the idea I had for exploring the process of changing values came from my reflections on a workshop during the residential course. The exercise in this workshop was based around finding non-threatening and encouraging ways of posing questions to others about their lifestyle choices in relation to climate change. There were around 40 of us on the course, and we had all put ourselves forward as 'sustainability champions', so demonstrating our commitment to the idea of making changes in behaviour for

the sake of sustainability. However, during the course of this exercise, it became starkly apparent that nearly everyone involved would not contemplate stopping air travel themselves. This was a step too far. This got me thinking about creating a teaching and learning session that would enable learners to discuss these barriers to changing values and which could at least open up the possibility of change happening.

Box 7.2:

Think about these questions and jot down some notes to come back to:

- Have you been involved in SD activities before?
- What is attracting you to getting involved in ESD now?
- What beliefs and values do you hold that are in tune with ESD?
- What beliefs and values do you hold that are challenging to ESD?
- Do you want to try and change your students' values/behaviour?

The exercise outlined below was designed in response to these thoughts, and it aims to get learners thinking and discussing their own values in relation to SD and then to discuss the possibilities of change, and barriers to change. It was introduced in the third term of our two-year part-time PGCE/Cert Ed and was designed to build on Bloom's (1956; Kratwohl et al. 1964) taxonomy of effective learning, introduced in the first term and a common part of initial teacher education (ITE) curricula.

The Exercise for Teaching Values in Relation to ESD

I started the session by reminding the group that in the first session of this module we had carried out an 'ideas-blast' on the question of 'what is learning'. This was a revisit from the first module when we identified the following categories of learning outcomes after analysing all the suggested points: skills, knowledge, qualifications and values. We then established that the first three were clear and unproblematic, but that it was not easy to see how values came into the curriculum. This in itself says something about the functionalist nature of the modern FE curriculum as it was easier to get a discussion going about school learning experiences where 'values teaching' is more explicit.

Box 7.3:

- What values do you think are taught in your college?
- In what contexts are these values taught?
- How successful do you think the teaching and learning is?
- If it is successful in your opinion, why do you think this is so?
- If it is unsuccessful, why do think this is so?

An interesting teaching point for ITE programmes is that a discussion of values taught in colleges goes very well with a discussion on the official, actual and hidden curricula. If you find it hard to get a discussion going, good questions to ask are: What kind of person do you think the college wants you to be? How is this information communicated to you? How do you respond to this communication?

The exercise I developed is designed to be used for any type of values teaching, not just sustainability, so the student teachers could see that although sustainability was the focus, they were not being forced to consider sustainability at the expense of other issues they may have wanted to cover in the limited time available. It was also an example of how their curricula could be adapted to include teaching about sustainability, even if it is not explicitly demanded by the awarding body.

As explained above, the exercise is based on Bloom's taxonomy of learning, which was already part of the syllabus. Students were reminded of how influential this taxonomy is, particularly in the knowledge field (cognitive domain), where the stages of learning are explicitly used for mark schemes and grading criteria for the General Certificate of Secondary Education (GCSE) and A-level exams, by awarding bodies in the UK. Grading in vocational qualifications are also often based on Bloom's hierarchy, with top grades being awarded for demonstrating evaluative skills.

For this exercise, a handout (reproduced in the box below) is used that creates a ladder out of Bloom's hierarchy in the affective domain (relevant for values teaching). With hindsight I think the language used on the handout could have been clearer and easier to understand what the different stages represent, as I found myself having to unpack and explain the meaning of the different stages every time I used it.

Box 7.4:

Look at the handout below and try to understand what it is trying to convey. Can you improve on the language used, considering the students you might use it with?

Handout used for teaching and learning values in sustainability

Learning the knowledge, values and skills for sustainable development
Cognitive, affective and psychomotor

- Evaluate—Internalise—demonstrate behaviour in accord with a personal value system
- Analysis and Synthesis—Organise—develop a value system
- Application—Value—attach values and express and question opinions
- Comprehension—Respond—react and participate actively
- Knowledge—Receive—open to experience, willing to hear

Where are you in the hierarchy? (Based on Bloom's taxonomy)

Advocate
Internalise
Organise
Value
Respond

From this, you will see that if Bloom's approach is used, then it would be expected that individuals should go through a series of stages when taking a new value(s) on board or changing old values. Of course, this is a representation of reality—not reality itself, and you would not expect everyone to neatly fit the pattern in real life. Some stages might take a very long time for some people, whilst others may seem to skip a stage, or, all the stages could happen very quickly, almost together. However, it is a very useful tool as it allows an analytical approach to the process of learning.

Students were asked individually to think about this 'ladder'—specifically which rung did they think they were on in relation to SD. They were then asked to draw a picture of themselves on the ladder illustrating their

relationship to the stages of learning (e.g., sitting down, looking bored and striving to go higher).

Students were then encouraged to think of different areas of activity relating to SD that could include, for example, energy use, recycling, consumption decisions, at work, voting, pressure group activity, talking to friends and family, information gathering and to see if they would put themselves in different places on the ladder for different activities.

The next stage of the activity made use of some of the principles and practice of NVC, as set out by Rosenberg (2003), to establish a non-threatening environment where students could feel comfortable to genuinely share their thoughts and feelings about SD.

Students were asked to find a partner who they knew quite well, if possible, and find a comfortable place to sit. They were then asked to establish ground rules for discussing values, based around respect and confidentiality. They were then asked to explain to each other where they thought they were on the ladder and why they thought they were at this point.

They were asked to practice NVC skills using empathetic and respectful listening, particularly important in discussions of values as they are part of us in a way that factual knowledge is not. This meant just listening, not commenting or interrupting, and using body language to convey interest and attention. When it came to discuss each other's thinking, the students were asked to refrain from using judgemental language and to focus on encouraging their partner to develop their thinking.

The first discussion point, after the exercise was completed by the students, was asking: 'How did you find trying to listen like that? What did it feel like to be heard in this way?' This was important because I wanted to reinforce the purpose of NVC by linking the emotional impact of listening and being listened to in a respectful way. Unsurprisingly, given the contrast of NVC to our habitual modes of communication, some learners found the listening difficult as they are used to interrupting, as well as being unconsciously judgemental. However, almost all participants in five sessions (around 80 people) seemed to me to be moved emotionally by being heard in this way.

I then asked the students to think about whether, after explaining their 'ladders' to each other, they wanted to alter where they had put themselves on the ladder. Some people did want to change this as they developed better understanding of their own thinking, as they talked it through with their partner.

The most significant part of the session followed when the students were asked to consider what they thought were the sticking points (bar-

riers to learning) on their progress up the ladder and what, if anything, would help them move up the ladder.

I used this exercise five times over a three-year period and the following points came out of at least one of the five groups:

1. Economic incentives—for example, money to buy sustainable products and services. More generally the issue of affordability of sustainable consumption;
2. Collective responsibility—why should I stop when everyone else is still doing it? (see Harding (1968) 'Tragedy of the Commons' in Dryzek and Schlosberg 2005);
3. External pressures—for example, requirements of job. For teachers in FE the workplace is dominated by instrumentalism—the tick-box culture, managerialism, lack of trust and harsh inspection regime, job insecurity, low pay. What are the realistic prospects of a transformative curriculum in this?
4. This value (Sustainability) being less important than others—family, prosperity now, women's rights;
5. Cultural/social resistance—values of people around us—the importance of fitting in; connection between the value and our everyday experience;
6. Hard choices/hard work—see giving things up below;
7. Lack of knowledge about value of actions—see recycling emphasis below;
8. Alienated from the political process; feeling that you cannot make a difference; first past the post voting system; not feeling change is possible.

Despite some differences in responses and type and quality of discussion, there were some recurring themes worthy of further analysis (the numbers in brackets refer to the points listed above).

- There was a consistent overemphasis on recycling as if this was the core of sustainability. (7)
- There was an emphasis on individual consumer behaviour and on 'giving things up'. (1,2,4,5,6)
- Even though the participants often voiced support of SD there was an almost universal refusal to contemplate giving up air travel. (2,4,5,6)
- When I suggested that action could involve joining, fundraising for and taking part in activities or campaigns of environmental pressure

> groups or political parties, I was met with a general sense of surprise and incomprehension. (5,7,8)

One of the shortcomings of this exercise was that it was a one-off three-hour session. The curriculum was too full and time too limited to return to the exercise in other sessions. On reflection in writing this chapter, I would like to be able to take this on to the next stage, which I think would be an attempt to tease out the important values coming out of these discussions and seeing if making them more explicit could lead to greater change.

For example, the interesting sticking point of air travel could be linked to the values discussed in the section above. First of all there is a discussion to be had about the role of air travel in contributing to climate change. Most people would, I think, acknowledge the large amount of carbon-based fuel burnt by aircraft. Questions to consider would be: What does it say about our assumptions that we go on flying anyway? Are we assuming your individual contribution to the problem is tiny? Or that we are doomed to fail to solve the problem, so we might as well continue? That technology will soon find ways of solving the conflict between mass transportation and carbon use? That it's not our responsibility? What values are we implicitly expressing? That the needs of the present generation are more important than those of the future? That nature exists to be used and exploited by humans? Making implicit values explicit is a powerful tool for change as people confront what these statements say about themselves.

Thinking of ways of moving this exercise on, it is interesting to compare Bloom's taxonomy of learning with Stephen Sterling's work on levels of learning that were introduced at the beginning of the chapter, as this is also concerned with achieving 'deep learning' and is conceptualised through a hierarchy of stages. Which are, starting from the bottom:

- Actions
- Ideas/theories
- Norms/assumptions
- Beliefs/values
- Paradigm/world view
- Metaphysics/cosmology (Sterling, 2011, p.21)

This hierarchy could be used as an alternative to Bloom's 'ladder' in a similar exercise to that described above or as a useful tool for questioning.

Any issue may be investigated either at individual or societal level, such as the debate etc over 'fracking' for shale gas. You can then work up the hierarchy questioning the ideas behind it, the assumptions that are being made and so on. Answers might include: an assumption that capitalism is the norm for solving energy problems, a belief that securing energy supplies in the near future is of high importance, a value system that sees the natural world as existing for the use of humanity, of the present generation are more important than those of future generations, and wealth are worth risking environmental damage for, a world view that is based on scientific and technological mastery of the natural world and a cosmology that puts humans at the centre.

Conclusion

Values are implicit in everything we do, and this includes teaching. Changing our beliefs and assumptions and values and even our world view is most likely to happen as we grow up and get older in response to events or emotions or intellectual realisation that shock us out of our normal way of thinking. In a classroom setting, it can work to use materials that achieve this shock, for example, a film about the reality of a physically disabled person coping with everyday life. It is also possible to explore values and possibilities of change in a more considered way through the process described in this chapter that essentially relies upon making previously implicit values explicit and open to discussion in a safe learning space.

This is challenging to us as teachers in terms of our confidence and skills and knowledge as well as our own emotional response and political beliefs. So it does need careful preparation and a supportive team around you.

As will be discussed more generally in Chap. 16, there are of course many barriers to this process in our current FE system. Institutions are riddled with managerialism and lack of respect for teachers as trusted professionals. Curricula are functionalist and focused on narrow concepts of employability. Complex skills are reduced to tick-box lists. Pay and conditions are poor and sufficient preparation and reflection time are hard to find. However, a project such as ours in which we supported each other and then shared our developments across the partnership helps to ease the time commitment in attempting to encourage such learning, and had many benefits for the staff involved in terms of team building and motivation and job satisfaction. It is probably true that any

small step is worth taking if we want to encourage students to challenge their assumptions and develop their values, so good luck with the start of your journey in ESD!

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Further Reading

Connelly et al. (2012) is a recently updated textbook widely used by first-year politics undergraduates. It is a very clear introduction to green politics with many examples and case studies.

Dobson (2007) is the most readable introduction to the political theory of green politics, and includes discussions on all the values discussed in this chapter.

Rosenberg (2003) is a highly practical guide to using NVC.

PART III

Sowing Seeds and Nurturing Growth

CHAPTER 8

Education for Sustainable Development: That's Exciting—Taking 'Exciting' Back to Its Original Meaning of Initiating Action Within the Classroom

Russell Shobrook

Introduction

Exciting is variously defined as a tendency to call or initiate into action, to rouse, to energise and to stir emotionally (Chambers 2011). It may be worth reflecting at this early stage how much of the teaching that you have experienced in your student career would elicit similar descriptions. When it comes to our own teaching, we may like to think that we stimulate and engage our students, but we are often constrained by curricula wherein the content seems to increase inversely to the time with which we have to deliver it. Designing engaging and exciting teaching packages can take both time and resources and as such may present challenges for all teachers and especially for those new to the profession. At times, it is undoubtedly tempting to fall back to simple transmissive methods of teaching just to get through the syllabus and perhaps try to ignore the students that are asleep. A further problem with Education for Sustainable Development (ESD) in some course programmes is that it may be seen as an additional, bolt-on activity in an already crowded curriculum (Summers 2013; Dawe et al. 2005) and therefore at best may be delivered as a separate unrelated topic, at worst seen as something of an inconvenient irrelevance.

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However, this chapter argues that a more central positioning of ESD and a specific focus on the interrelated issues around sustainability have the potential to provide a mechanism whereby teachers can challenge transmissive methods and are affectively liberated to innovate and develop creative new approaches in their teaching practice. It will provide an outline approach that not only emphasises the importance of sustainability but also suggests ways in which the utilisation of topics around ESD may promote engaging and effective teaching methodologies that also introduce a sense of enthusiasm and excitement to teaching that puts the emphasis on students in terms of their engagement with learning as well as facilitating ways of exploring, reviewing and challenging their own understanding of the issues around ESD.

The contested nature and perceived controversy of many of the topic areas in ESD may present problems to teachers and lecturers. The equivocal nature of many of the debates and the uncertainty of future predictions and scenarios may promote a sense that such issues are particularly challenging to teach around. Indeed, Walstead and Saunders (1998) suggest that when teaching difficult or ambiguous subjects, the teacher will often resort to a transmissive, didactic form of approach.

These highly structured methods that are generally centred on the teacher or lecturer are sometimes known as 'Apollonian'. They represent an approach that is more ordered, controlling, systematic, less creative and a more explicit in delivery. The alternative methodology is sometimes known as the 'Dionysian'. This approach is characterised by the imaginative, expressive and impromptu and places far greater emphasis on the learner. With this in mind, this chapter aims to explore these two concepts and show how a Dionysian approach to developing ESD can be used to demonstrate and realise genuine intra and inter co-learning for students and teachers alike. Taking a relatively simple statement from the media, 'Climate change seen as greatest threat by global population' (Sedghi 2015), a series of examples will be used to help guide the teacher through the various approaches that can be used. The overall aim is to provide the teacher with practical help and offer solutions to some of the dilemmas faced during teaching practice, particularly when embedding ESD in their curriculum.

Box 8.1: Why the Metaphor of Apollo and Dionysius?

Apollo and Dionysius were figures in Greek mythology who were both children of children of Zeus. While Apollo was the god of reason, order, rationality and systematic control, Dionysius was the god of the irrational, chaos, emotion and harmony. The Greeks did not see them as opposites

(*continued*)

Box 8.1: (continued)

or rivals, rather they were both seen as complimentary parts of the natural world. In more recent times these two very different characteristics inspired the German philosopher Nietzsche to suggest that the interplay and fusion of both were integral to creative and academic thinking… Subsequently, however, and perhaps particularly in approaches to teaching these physiognomies have often become viewed as dichotomous and therefore problematic. For example, when preparing to teach a lesson the 'right' thing to do would be to be fully conversant with the subject you are going to teach so you have credibility and present yourself as an authoritative teacher. Failure to do this is to invite a certain degree of chaos and disorder and consequently a potential loss of control. Lesson plans will frequently be linear and ordered, often with timings provided to show how the lesson will clearly progress through a number of planned and ordered activities. To depart from this controlled systematic approach is a bold move and yet from a more unplanned, unconstrained and unstructured approach may come insight, passion and potentially, new understanding. Teaching approaches that utilise both order and apparent disorder can be powerful and have significant impact on learners.

By seeing so-called Apollonian and Dionysian approaches as complimentary and by drawing on characteristics from both may provide an opportunity for developing teaching methods that are of general use within teaching, but may have a specific utility in supporting the delivery of ESD. In teaching 'chaos' is often perceived as a pejorative term and yet as difficult as it may be to let go of the control of a class the contested and at times controversial nature of sustainability readily lends itself to a pedagogical approach that is open and less constrained.

Some Background

The 2005 Higher Education Academy (HEA) report into sustainable development within higher education (HE) emphasises the role that education plays in raising awareness of sustainable development among young people. The report further contends that education can also equip young people with the skills to initiate action (Dawe et al. 2005, p.4). This view was framed within the wider United Nations (UN) commitment to a decade of ESD (2005–2014) and more recently in the Sustainable Development Goals (United Nations General Assembly 2015). This growing body of literature

and allied international initiatives recognise the vital importance of ESD and in particular the development of sustainable literacy in all phases of education including further education (FE). The need for sustainable literacy is not contested but how this can be realised in a consistent and meaningful way continues to remain elusive (Dawe et al. 2005).

The key findings of the report place educators at the centre of developing sustainable literacy in their learners but at the same time acknowledge that to illicit the deep transformative changes potentially required in learners, that the traditional methods of instruction may be inappropriate, even obsolete. By 'traditional', they echo Schon's (1991) technical–rational approaches of rigorous research-based theory and transmissive technique that have become so allied to professional competence.

Dawe, Jucker and Martin's (2005) report suggests that there are three prevailing orientations that teachers adopt when teaching and developing sustainability literacy. Their research suggests teachers may move through these orientations; however, most will remain at orientation 1 with only a few moving through to orientation 3. The three identified orientations are as follows:

1. Educators as role models and learners—this orientation places an emphasis on how the tutor can act as a role model for students in order to offer a credible and authoritative perspective on the realities of putting sustainability principles into action.
2. Experiential learning by reconnecting to real-life situations—this orientation focuses on real and practical life issues and actual experiences as learning situations.
3. Holistic thinking—many of the skills and knowledge for sustainable development are associated with complex, multilayered and interconnected systems. This approach encompasses a more open-ended exploration of interdependency and transdisciplinary connections between subjects as well as including approaches to developing and honing critical thinking.

Summers' (2013) research highlights that many tutors in FE feel uncomfortable teaching ESD as they feel insufficiently equipped to do so, suggesting they were at the limit of their ability to translate their knowledge into learning outcomes. Referring back to Dawe, Jucker and Martin's (2005) orientations to teaching, when teaching sustainability literacy, this would suggest most who felt this way were either in or working towards

the first of the three categories. They are reliant on in-depth specialist knowledge in an effort to present themselves as an authoritative figure, but as Dawe, Jucker and Martin (2005) suggest the need goes beyond this to a more holistic and critical approach to teaching sustainable literacy.

Box 8.2:

Once again read through each of the suggested orientations to teaching sustainable literacy (Dawe et al. 2005, p.5)

Looking at these orientations to teaching, which one fits best with your current teaching practice?

What could you do to incorporate one or more of the others?

Consider what you have read so far and identify a time where you have been teaching at the limit of your subject knowledge. How did it feel and what teaching approaches did you use; were they effective; could you have used a different teaching approach?

Often there is a tension between how a teacher would *like* to teach and the way they sometimes feel they *should* teach. The former could be conceived as less formal, perhaps more discursive and wide ranging, whereas the latter is usually seen as the more formal, almost 'proper' way to teach and thus is an indicator of good teaching and is by extension more professional.

Schon (1991) acknowledges this tension with his famous analogy of swamp and high ground. He argues that:

> technical rationality is legitimised and accorded its position by preoccupation with specialized skill premised on an underlying theory i.e. professionalism and authoritative role modelling. (Schon 1991, p.22)

This, he argues is the dominant indicator of professional competence but it does not always serve humanity well. Technical rationality can also be viewed as an Apollonian approach where the teacher strives for order and rejects anything that could be construed as disorder or chaos.

Introducing the Dionysian Approach in Teaching

What Schon (1991) proposes is a reflecting-in-action approach or what he lyrically describes as 'the swampy area of messy indeterminates'. To describe this teaching approach he uses phrases such as 'learning by

doing', 'thinking on your feet' and 'keeping your wits about you' to describe teaching in the moment (Schon 1991, p.54). Such an approach therefore, identifies a tension between how we feel we should teach (the technical–rational) and what we feel is actually needed at that particular moment in the classroom to benefit the individuals concerned (reflecting in action). The reflection-in-action approach could be viewed as Dioynisian as often it seems unplanned and potentially promotes more emotional engagement. However, these concepts should not be considered as dichotomous but rather as a complex interplay between their respective orientations. Drawing on both may provide an opportunity for developing teaching methods that can develop sustainable literacy.

How Do We as Teachers Develop Sustainable Literacy?

A meta-analysis of Stibbe (2011) suggests there are three stages to raising sustainability literacy. Whilst not explicitly stated, there is an identifiable pattern of:

1. Creating awareness through an authoritative approach of classroom or similar leadership
2. Maintaining the momentum through close, observable examples usually with some form of impact or result within the local context usually learner led
3. A reflective, theorised and wider contextual positioning of the example.

These can be roughly aligned to the HEA's three orientations and arguably all three have to be evidenced for sustainable literacy development to be effective.

Stage 1: Creating Awareness

This is probably where the Apollonian approach is most applicable; the precise application of ordered technical–rational teaching. Often this is in the form of more formal lecturing in a teacher-led series of presentations and lessons. There is a certain appeal to this approach especially if teaching sustainable literacy is positioned in an already crowded curriculum.

Using a teacher-led approach means that the teacher has control over the content and, importantly with limited time, the pace of delivery. A practitioner can, depending on their orientation towards ESD, decide whether they simply deliver the content, which is passively received, or use this as a stage towards further engaging their learners.

Brookfield (1995) critiques the notion that lecturing in its traditional sense is a passive experience for learners, which discourages critical thinking, and it is argued that in order to engage critically with a subject area, students may need a period of assimilation and grounding. Indeed, this is an opportunity for the teacher to role model critical thought and their own positioning whilst acknowledging the troublesome or interrelated nature of the subject matter. Brookfield (1995, p.5) urges the teacher to:

> [refer] to inconvenient theories, facts and philosophies that have been overlooked and demonstrates openness to alternative viewpoints and encourages students to do the same.

Here we see a good example of the interplay between an Apollonian (technical–rational) and Dionysian (reflection-in-action) approach actually serving as a catalyst for deeper insight and understanding.

By way of further illustration, teaching any new subject there is a period of time in which materials are developed and lesson plans drawn up. Brookfield's (1995) suggestion is that the teacher leads the learning in the initial stages in order to create the atmosphere of critical awareness and questioning assumptions. A simple approach to questioning topics is provided in Table 8.1.

Table 8.1 Five suggested questions that may be used to explore statements on sustainability

How do we know?	How do we know this, where has the 'knowledge' come from?
Who wants us to know?	Who is trying to influence our view point or persuade us to think this?
'Why do we know?	Why is this important now, what other events or factors have prompted this to be known now?
What do we want to know?	What other information do we need to know in order for us to further understand the area under investigation and its relation to sustainability?

Box 8.3:

Let's return to Sedghi's (2015) statement given at the beginning of this chapter:

'Climate change seen as greatest threat by global population'

Consider how you might explore this statement based on each of the questions given in Table 8.1, namely:

- How do we know?
- Who wants us to know?
- Why do we know?
- What do we want to know?

What might be missing from the picture and what else do we need to know to enable us to build up a more fulsome picture of the implications for sustainability?

What other skills would students be developing in the process of researching these questions relative to the statement?

Stage 2: Maintaining the Momentum

According to Dawe, Jucker and Martin (2005) and Stibbe (2011), raising awareness and engagement with sustainable literacy all too often ends at the initial stages and fails to go beyond the passive form of learning that involves memorising and repeating of facts. In order to move beyond this stage, Dawe, Jucker and Martin (2005, p.13) advocate a reorientation of 'teachers as learners and learners as teachers'. For some, both new and experienced teachers, this represents a dramatic departure from the norm as it requires them to relinquish their perceived control of a class. This once again demonstrates the potential tension between Apollonian and Dionysian approaches. However, the free flow of questioning in Stage 1 and the emphasis placed on student involvement and interaction should have begun to promote the changing role of the lecturer, from authoritarian control to authoritative participant.

To develop this still further, Dawe, Jucker and Martin (2005) and Stibbe (2011) suggest the most appropriate way forward at this stage is an individual or small group problem-based approach that links the students to their immediate environment. Placing the emphasis on a student problem-based learning (PBL) approach encourages a co-operative way of working, a sharing of knowledge and viewpoints and the development of much greater self-confidence.

In problem-based approaches, understanding is achieved through engagement with the problem and the learning environment; this allows the potential activation of prior knowledge and stimulates and encourages further learning. Furthermore, it can be argued that Vygotsky's theory of learning plays a part here too. Vygotsky suggests that learning happens best through social interactions (Mooney 2000). Essentially an individual can only achieve a certain amount of understanding but with others, through social interaction, they can achieve far more. The recognised gap between actual achievement and potential achievement is referred to as the 'Zone of Proximal Development' (Mooney 2000; Vygotsky 1979). These social interactions within a group take place between peers as well as with supporting adults. Not only can learners achieve greater understanding for themselves through such interactions but also learning in a problem-solving environment results in learners engaging personally with issues and therefore constructing meaning and understanding for themselves (Vygotsky 1979). Therefore, knowledge evolves through collaboration with peers, lecturers and the use of resources, with reflection on their learning being a key element in this process. The lecturers therefore take on the role of facilitators for the whole process (Tan 2004).

Collaborative group work is a significant element of the approach. Exley and Dennick (2004) describe how, during group activities, learners can be provoked into thinking deeply by questions from their peers and teachers that challenge students and encourage them to take ownership of their own learning and can support a constructivist approach to learning.

In the last decade, PBL has become 'one of the most popular curricula innovations in higher education' (Tan 2004, p.170) and may be instrumental in shifting a focus from the traditional, didactic method of teaching to a properly student-centred style where students are problem solvers, the lecturer is in a coaching or facilitating role, and the problem is the focus of the learning from which content is derived (Tan 2004). Research into the effectiveness of PBL through a number of meta-analyses suggests that PBL is, at worst, the equivalent of other more traditional methods (Albanese & Mitchell 1993; Vernon & Blake 1993; Walker & Leary 2009) and at best compares favourably across a wide range of outcomes including understanding of principles that link concepts and application of knowledge (Gijbels et al. 2005; Walker & Leary 2009) as well as student attitudes towards their subject (Vernon and Blake 1993). The precise reasons for the effectiveness of such approaches are elusive, but PBL encourages what Petty (2006) has described as 'deep learning' (p. 29); a constructivist

approach where learning is achieved by adapting and building on prior knowledge, skills, and concepts; this allows the learner to seek meaning for themselves and not the meaning as constructed by their teacher.

Certainly when designing PBL activities, it is important that they be positioned within a clearly structured and overarching narrative. This may have been through a sequence of issues and investigative practical sessions that perhaps concerned an identified global sustainability issue. Each week the students explore the issue and related topics thereby providing a coherent framing for the work.

Furthermore, when developing a good problem-based approach, it is critical that the issue or topic is clearly defined, using words situated within the lower order of Bloom's taxonomy (Petty 2009; Scales 2013). These are a series of steps that take the problem from a relatively abstract idea and start to situate it in the context of the students' lives and experiences.

For example:

Knowledge: What are the main features of climate change?

Comprehension: Can you explain the impact of this?

Application: How do these features impact upon your immediate environment?

By doing this, students are given clear direction as they start to think around the problem.

Some key aspects to consider when developing the problem or questions are as follows:

1. the relevance of the problem to the discipline area;
2. the proximity of the problem to the students' reality;
3. the time and resources available in the curriculum;
4. differentiating the problem for different levels and abilities;
5. how the work is going to be presented and assessed (if applicable).

PBL approaches are very well suited to developing appropriate teaching methodologies in ESD. The open-ended and issues-based nature of ESD makes for highly effective PBL packages, and although there are identified issues around initial staff and student confidence, there are significant advantages (Cutting and Kelly 2014).

Stage 3: The Wider Perspective and Systems Thinking

In this stage, students are encouraged to situate their new insights in the wider context and across disciplines. The aim is to identify the related interconnections that surround the problem to be explored and to consider

the nature of complex interrelated issues through emphasising the impact that one issue may have on another. Here the teacher retains oversight but the learning is now led by the students providing a different dynamic to that found in stages 1 and 2. Strachan (2011, p.84) defines this 'ability to recognise and analyse the interconnections within and between systems' as 'Systems Thinking' and considers it essential for finding solutions to the environmental crises we face. It is a particularly useful tool for conceptualising sustainability from a systematic and hierarchical perspective, as the idea that one system is more important than another, that is, a hierarchy, can create dialogue and critical engagement, as each student discusses and argues their particular position. Strachan (2011) advocates an approach to the development of systems thinking that starts by examining things that do not work or are unsustainable and by using systems thinking to highlight the dysfunctional nature of the issues, new insights can be applied to problems that the students have explored.

This approach to highlighting or developing awareness of unsustainable practices requires careful and thorough preparation. It means that on occasion the student and lecturer may have to cross disciplines in order to understand some of the more subtle links and tools or devices used to mask unsustainable practices. However, once identified, other connections begin to emerge (Ison 2008, in Strachan 2011).

By way of an example, Strachan (2011, p.85) uses an advertisement to highlight the unsustainability of the message given:

> Advertisements can be a rich source of examples … for instance, in a recent Sunday newspaper an advert for a large 4x4 SUV pictured the vehicle driving down a flooded street and promoted the vehicle as a solution to living in adverse weather conditions. When the connections have been made in one's mind that the adverse weather conditions may have been the result of climate change and that CO2 emissions from vehicles contribute to climate change the incongruity of the image leaps out.

Here the motor vehicle department tutor and/or student may have to discuss issues raised with fellow students or staff from the media department. There may be accepted devices used in media and advertising that could be used to decode images or advertisements which may form the basis of discussion.

Strachan (2011) also suggests the application of systems thinking helps to break down an overwhelmingly complex problem into manageable sections. What is particularly powerful about this stage is the engagement of higher-order thinking skills such as analysis, evaluation and synthesis, as

well as encouraging students to examine the underlying thought processes that support their values, beliefs and attitudes (Anderson and Krathwohl 2001; Rovai et al. 2009), as well as those of their peers. These skills can be taken forward to other problems independent of and outside the formal learning environment.

Box 8.4:

Here are the three stages in a brief review. Read through them and think of ways in which you might use this approach in your teaching.

Stage 1—Creating Awareness
Strachan's (2011) suggestion that examples of unsustainability are explored further is an excellent way to initiate systems thinking. Provided with a series of images or statements, students can start with a rather crude sorting exercise such as separating them into categories: 'Sustainable', 'Unsustainable' and 'Unsure'.

Teacher notes—Using an authoritative approach the teacher helps students identify the issues by using the series of questions identified in Table 8.1. The students become more sensitised to the issues and the sources of data and evidence and this promotes student independence and begin to encourage critical engagement with the problem identified.

Stage 2—Maintaining Momentum
Students are encouraged to discuss why they have categorised the images or statements as 'Sustainable' and 'Unsustainable'. This can be in the form of paired or small group discussions where they support their position for the categorisation of the image or statement. The 'Unsure' will be dealt with last. The teacher can oversee their discussions and identify any emergent themes, as well as question assumptions.

Teacher notes—In this stage, the identified problem has been clarified. This can be a teacher-led activity but be flexible as the students may have a better issue that they want to investigate. It could also be in the form of a prepared problem.

Stage 3—The Wider Perspective and Systems Thinking
The final stage is to apply any new insights to the 'Unsure'. The aim is to have only two categories with accompanying notes or an explanation

(*continued*)

Box 8.4: (continued)

as to why those remaining in the 'Unsure' category cannot be categorised, for example, further information or data may be required.

Teacher notes—The teacher can encourage the students to start making connections to the notes or elements. What will gradually emerge is a series of links that will become more complex as the students make second and third order connections. It is the connections between the elements that help them conceptualise the issue in terms of systems thinking.

The system thinking approach will highlight the broad-nature of the connections. The teacher can use these to initiate the development of wider understanding of the issues. This holistic thinking starts to reveal the multi-layered and interconnectedness of the world the students are living in. If they have a better understanding of this they are more able to engage with it in a meaningful way.

Chapter Summary

This chapter set out to look at ways of ensuring that teaching and learning were exciting and engaging, not only for students but for staff as well. Certainly when it comes to teaching successfully about sustainability, we are almost compelled to abandon the Apollonian didactic approaches, for they are clearly unsuited for the type of flexible and critical learning that ESD seemingly requires. The contested issues that ESD addresses in terms of environmental, societal and economic impacts lends itself perfectly to the less confined and less controlled Dionysian approaches especially when applied to methods such as sustainability contextualised issues forming the basis for PBL. By using such teaching approaches, it is hoped that the development of sustainability literacy with students will be more engaging and therefore more effective.

The three-stage approach described here is not intended to be prescriptive. For some it will certainly appear unstructured and sometimes discernible relevance may be difficult to recognise. Certainly active learning methods such as PBL do on occasion *look* chaotic but there is normally a

good deal of learning going on. Furthermore, their adoption does take a significant change in role of the lecturer and therefore their relationship with students. These changes can be difficult to accept and there is often an understandable reticence to do so. The transition from agency and authority to facilitation and guidance is for some a considerable step into the unknown with all of the concerns and anxieties that that entails.

However, allowing the Apollonian and Dionysian approaches, the space to interact rather than keeping them apart is a central feature for teaching ESD. The potential engagement and the flexible learning skills that such methods promote are the very ones that students will need to meet the challenges of the future. After all as Eric Hoffer poignantly put it,

> In times of change the learners will inherit the earth, while the learned will find themselves beautifully equipped to deal with a world that no longer exists. (Hoffer 1973, p.32)

The FE sector has traditionally prepared students in a wide range of academic and vocational programmes and as such has played a vital role in providing skills and training for the present. However, now in the twenty-first century, it will increasingly need to provide them for our futures.

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CHAPTER 9

Teaching for Sustainable Learning in an Uncertain Future

Mark Delf and Tanya Ovenden-Hope

Introduction

> Most of us cannot do a great deal about the macro environment … We can however gain control over the immediate environment and transform it so that it enhances personal creativity. (Csikszentmihalyi 1997, p.140)

The link between a successful knowledge-based economy and a workforce with transferable skills, such as innovation, creativity and enterprise, that support employability has been evidenced for over a decade (Seltzer and Bentley 1999; European Commission 2006). This realisation has resulted in a call on European Union member states by the European Commission (2006) to accelerate progress in promoting entrepreneurial 'mindsets' in which are essential for everyone living and working in a modern economy in a changing world. The UK government reported that 'courses that deliver improved employability will prosper; those that make false promises will disappear' (Browne 2010, p.31). The role of education in supporting and sustaining the economy was clearly identified and directed towards a type of teaching that develops students with transferable and sustainable skills embedded in an innovative, creative and enterprising (ICE) mindset.

To establish entrepreneurial mindsets, it makes sense to consider Initial Teacher Education (ITE) and how teachers are trained to support learning that develops the skills needed for a sustainable future. ICE embedded in

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ITE appeared to have the potential to affect mindset change in students by altering the way that teachers think about how students learn and in the way that they teach them. ITE, by embedding high quality innovative, creative and enterprising strategies for educating their student teachers, could develop the first generation of teachers equipped with strategies that enable and sustain transferable skills for teacher and student.

> It is a pity that the notion of creativity in education has to be fought for or reclaimed, as it should be a central feature of teaching and learning. It is the crucial element in each generation's renewal and enhancement of itself. Without it, society would not even stand still. It would gradually roll backwards … thinking up fresh ideas is what teachers are paid for. (Wragg 2003, cited in Eastwood et al. 2009, p.2)

The need to focus on applying established approaches to developing enterprising behaviour with learning underpinned by students engaging in behaviour that feeds entrepreneurship, creating a climate from which future entrepreneurs can emerge, led to the development of the ICE House project which we discuss in the next section.

The ICE House Project Case Study

The Cornwall College Group and Plymouth University received a European Social Fund (ESF) grant to establish the ICE House Project in 2009. Over three years, the project put ICE at the core of the Postgraduate Certificate in Education and Certificate in Education (PGCE/Cert Ed) for the post-compulsory further education and skills (FE&S) sector, offered by the Plymouth University partnership of further education (FE) colleges in the South West of England. In 2009, the ICE House Project developed an ICE enhancement module at Cornwall College, to support the requirements of the ESF grant, which required evidence of economic regeneration in Cornwall through enhancement of skills and in the 2011 re-approval of the programme the ICE criteria influenced the criteria underpinning the whole programme.

The ICE House Project aimed to explore, define, introduce (teach) and examine practical strategies for embedding ICE into the PGCE/Cert Ed curriculum in order to establish learning and teaching strategies that engaged and challenged student teachers, supporting the development of ICE skills and techniques within their teaching practice.

Strategies developed included problem-based learning (PBL); creative problem-solving (CPS); innovation education; enterprising behaviour; mindset and their links with employability. The aim of embedding these strategies into the PGCE/Cert Ed, alongside modelling the ICE principles, was to encourage our student teachers to develop these strategies and principles within their own practice and encourage ICE in their own students. If successful, it would suggest that embedding ICE in ITE programme in other sectors and other countries would enhance their ability to facilitate innovative, creative and enterprising behaviour in their future students.

The ICE House Project team identified innovation, creativity and enterprise, in their broadest senses, as the key areas for promoting engagement with work and life in the twenty-first century. This focus was as a result of research that suggested enterprising behaviour stimulates entrepreneurship by creating a climate from which future entrepreneurs can emerge, therefore transforming education, businesses and communities (Seltzer and Bentley 1999; Robinson 2009). A vision for teaching and learning in 2020 commissioned by the Secretary of State for England (Gilbert 2006, p.10) also identified innovation, creativity and enterprise as key skills for transforming mindsets:

> [Schools] need to ensure that young people develop the skills and attitudes that employer's value, many of which are becoming even greater priorities in knowledge-based economies. These are sometimes misleadingly called 'soft skills' and include… being creative, inventive, enterprising and entrepreneurial.

The emphasis on innovation, creativity and enterprise as fundamental skills for a successful twenty-first century economy is persuasive in championing the need to embed ICE in education. Employers want employees who can solve a problem, who can function in the real world, who can be relied upon to do a job well (Deloitte 2009). However, in order to develop resilience and sustainability of such skills, the facilitation of this mindset is best modelled through teaching having been developed in ITE.

Underpinning these techniques and the delivery of the ICE module were the seven fundamental ICE principles (see Box 9.1) we developed that create the foundations for nurturing a broad level of readiness, equipping learners for both life and work in the twenty-first century.

> To thrive in an economy defined by the innovative application of knowledge, we must be able to do more than absorb and feedback information. Learners and workers must draw on their entire spectrum of learning experiences and apply what they have learned in new and creative ways. A central challenge for the education system is therefore to find ways of embedding learning in a range of meaningful contexts, where students can use their knowledge and skills creatively to make an impact on the world around them. (Seltzer and Bentley 1999, p.viii)

Box 9.1: Seven Fundamental ICE Principles for reflection.

In your practice, do you:

1. **Provide opportunities** (without explicit direction) for learners to develop abilities and skills of noticing. ENABLING learners to notice self, others and the environment (thoughts, feelings, behaviours, 'habits of mind'), AND THEN doing something with what is noticed (diagnosing, wondering why).
2. **Provide opportunities** for an honest environment in which internal dialogue becomes explicit and external.
3. **Actively** notice and capture learner interactions, behaviours and engagement with process in order for the teacher and learners to formatively assess learning and learner self-development (distance travelled).
4. **Provide opportunities** (without explicit direction) for learners to work independently and collaboratively to make a tangible contribution to what is learnt.
5. **Provide opportunities** for learners to authentically experience uncertainty, to directly address taking risk and fear of failure.
6. **Focus** on question quality—expectation of questions to be generated, both naturally emergent and planned to deepen learning through challenge and stretch.
7. **Promote and model** learning habits that facilitate cultural change to contextualise teaching for ICE through the use of language and engagement.

The ICE House Project team, consisting of academics and experienced Initial Teacher Educators form Plymouth University and Cornwall College, aimed to support teacher educators and student teachers in engaging with ICE strategies for learning and teaching as well as evaluate the effectiveness of this.

Problem-based Learning and Creative Problem-Solving

PBL (Allen et al. 2001; Isaksen and Treffinger 2011) and CPS (Boomstrom 2005) approaches were reviewed and evaluated and considered appropriate strategies for teaching and learning for an ICE mindset. PBL is a strategy by which learners typically work through problems to discover specific solutions, whilst acquiring and applying subject knowledge, skills and values. Through this process students also discover and apply skills that should enhance their entrepreneurial qualities (Allen et al. 2001). These skills can then be extended using CPS, which is based on identifying situations, or concerns, that present an authentic problem to those involved.

Establishing ICE strategies in ITE included developing questions around authentic possibilities (rather than a focus on correct answers); wrestling with concepts; dealing with uncertainty; close association with real life/world experiences; and solving open-ended problems of particular interest to the student teachers. This provides the opportunity to work in co-creational and co-constructed environments where possibilities can emerge, are considered and are questioned, reflected upon, tested and refined as potential solutions to problems. These strategies are all fundamental to CPS and it was believed that by enabling teacher educators to model and facilitate ICE skills, it would nurture these in the student teachers' approaches to learning and their own teaching, creating a cycle of ICE that would be sustained in their own students.

Bentham et al. (2014) argue for the embedding of problem-solving within pedagogy to equip individuals and therefore society with the skills required to solve complex environmental issues in the future. This provides opportunities for a constant engagement and re-engagement in teaching and learning processes which can lead to what Sterling (2008) terms as an authentic education based on relationships. To achieve this, the Action Learning Set (ALS) model (Bond 2004) was adapted from the world of coaching and learning within the workplace. This model focuses on reflective and experiential approaches to learning and transferred very effectively from the work environment to the education context in not only developing learning of explicit content but underpinning wider employability skills. Whilst a reflective process that needs a disciplined approach within this, individuals hone their listening skills, questioning techniques to deepen understanding and challenge assumptions and support individuals to make their own decisions and find creative solutions. Through this process, the participants gain improved communication skills, self-confidence, self-awareness and initiate.

Growth Mindset

The ICE House Project recognised the importance of 'mindset' and attitudinal change (Dweck 2008) for the success of embedding new strategies for learning and teaching. Extensive research on achievement and success (Dweck 2008) suggested the value of teaching a 'growth mindset' to create motivation and productivity in the worlds of business and education. This growth mindset necessitates an explicit, active and honest focus on how we think and behave, including a consideration of how mindset impacts on the teaching and learning space. This concept was used within the design of the ICE module to ensure that teacher educators were of an 'appropriate mindset' to support the facilitation of ICE strategies with their student teachers, who in turn were supported in establishing a mindset supportive of teaching for ICE development in their students, regardless of the subject they were teaching. However, changing attitudes and mindsets was a key challenge for the project as described in Box 9.2.

Box 9.2: Case Study: ICE House Project Student Teacher.

Barry was a student teacher teaching a Level 1 group who was becoming increasingly frustrated with the lack of progress and some behavioural issues within his group. During ITE sessions he continually argued his group was so challenging that if he relaxed his tutor led methods his sessions would collapse into chaos. However, following some frustrating and unproductive sessions, he made a change. He relaxed, became more reflective, introduced choice and engaged learners in the planning of sessions. This resulted in calmer and productive sessions with students engaging in developing their own learning. With this mindset shift, Barry became one of the most innovative and creative teachers in the group working effectively with ILT and supporting other students to embed ICE principles. 'I cannot pin down the "eureka" moments when it comes to growth, but I know that I am not the same person I was at all when I began this work. It has helped me grow in more ways than I could possibly have imagined, and I know for the better.'

This has been highlighted within Hattie's (2009) Visible Learning research, in which he uses a meta-analysis of 800 educational studies from which he identifies the effect of a wide range of influences on student achievement. He identifies 'self-reported grades' as the number one

influence on achievement, a process in which students are actively engaged in predicting their own performance and setting targets. If based on previous achievement and applying a 'fixed mindset', these grades can limit achievement; however, in the context of a 'growth mindset' achievement can be significantly improved. Whilst initially appearing a simple solution of setting stretch targets, Hattie argues low personal expectations can be embedded in students from very early in their education. Dweck's (2008, p.59) principles of creating a 'growth mindset' are also essential in underpinning the ability of students to challenge themselves and address their areas for improvement. He also argues that teachers should focus on the quality of learning and not the quality of the work.

> The growth mindset also doesn't mean everything that can be changed should be changed … The fixed mindset stands in the way of development and change. The growth mindset is a starting point for change, but people need to decide for themselves where their efforts towards change would be most valuable. (Dweck 209, p.59)

The ICE module developed in our PGCE/Cert Ed programme included observations that focused on applying ICE principles in their teaching practice. The module was supported through a virtual learning environment (VLE) for both teacher educator and student teacher. The focus for the study was on the full- (pre-service) and part-time (in-service) student teachers taking the ICE module to enable a comparison of outcomes by observation grades for student teachers taking or not taking the ICE module, as well as those in the previous year's cohorts, to consider any influence from the teaching with PBL, CPS and growth mindset in encouraging ICE learning. The findings were expanded by a thematic analysis of reviews, completed at the end of each ICE module session by student teachers as well as end of module evaluations; personal reflective journals completed by the student teachers and personal summary evaluations completed by the teacher educators facilitating the ICE module. This qualitative approach included unstructured interviews with a stratified random sample of student teachers and teacher educators from the ICE module within six months of module completion.

Findings of the ICE House Project

The case study findings suggest that engaging with ICE as a teacher educator and student teacher was an interesting and challenging experience. Participation in the ICE module for both teacher educators and student

teachers stimulated in-depth refection on the process of learning and teaching and in many cases inspired practice change and growth mindset. Alongside that provided by interviews and observations, evidence of impact for the ICE module enhancing teaching is also highlighted in comments within module evaluations and in the module summaries of the teacher educators. This was supported by a rise in the number of grade 1 (outstanding) and grade 2 (good) observations of teaching practice for the in-service student teachers in comparison to previous non-ICE module groups. Interestingly, this increase in grades was not reflected in the pre-service student teachers, perhaps suggesting it may be advantageous to apply the ICE strategies while actually engaged in teaching as a real job, that is, keeping it authentic, rather than as a student teacher who is 'borrowing' a class. This finding supports a recommendation that ICE continuing professional development (CPD) could be successful in enhancing practicing teachers' strategies for developing ICE skills in learners. The key themes, located within PBL, CPS and mindset, emergent from the ICE House Project were identified as contexts for solving problems, engaging with resources, the key ICE question (see below) and resistance and change as discussed in the next section.

Teaching to Sustain Learning

Solving Problems

The PBL and CPS principles (Allen et al. 2001; Isaksen and Treffinger 2011; Boomstrom 2005) were core to the ICE House Project developments for and were identified by teacher educators and student teachers as enabling engagement with ICE in learning and teaching. The first session of the ICE module was designed to promote curiosity and inquisitiveness (Brandes and Phillips 1990), which from interviews it was clear that student teachers initially found frustrating as they would have preferred to have been given answers. Reliance on the teacher as the 'font of all knowledge' had been established through previous experiences of education and established the mindset that learning is passive. However, as the module progressed the student teachers demonstrated increasing empowerment, developing the confidence, resilience and personal growth needed to engage in the process of solving problems (Claxton and Lucas 2008) and thereby support the development of their own ICE skills.

Reaction to the devolution of control to the learning group was difficult for student teachers, prompting comments such as:

> Feelings of apprehension, disillusionment and uncertainty in the initial week. (Skills for Life Student Teacher)
>
> The first three sessions literally made me angry! (Outdoor Education Student Teacher)

This demonstrated that ICE principles were having a powerful effect on the learners; however, this must be managed sensitively as challenges to established learning habits were stressful. However, these challenges when judged correctly are in themselves not an inhibitor to learning but can also stimulate deeper learning and promote a 'growth mindset'.

> Could it be that people who have faced greater uncertainty, even though this might have caused them hardship, are better prepared mindfully with novel situations? (Claxton 1999, p.185)

Engaging with Resources

Student teachers and teacher educators were encouraged to bring a new resource or artefact to share with the group to each session of the ICE module. This stimulated the process of innovation and creativity within the group, enabling an environment of mutual support to stretch boundaries (Churches and Terry 2009). The process was recognised as a key strength in the module, allowing the use of concepts and mediums never attempted before. In this context ICE 'frees' the teacher (educator and learner) to consider anything and everything as a potential resource for teaching and learning (Robinson 2001) Box 9.3.

Box 9.3: Strategies to engage with resources.

The ICE Lab

Create an 'ICE Lab'—a group resource that enables peers to share an idea, resource, activity, book, website, article, artefact, video; in fact, anything students and tutors have found interesting, stimulating

(*continued*)

Box 9.3: (continued)

and/or useful in their learning. Whilst seen as ongoing activity, time was taken within each teaching session to share, demonstrate and explain new contributions to the lab and experiences of those who experimented with resources.

ICED UP
For this task, identify an activity that you have previously used in your teaching practice. The focus of this task is to apply ICE principles (Ice up) to this activity and review through fresh eyes. This is most effective with a peer/student or groups of peers/students all sharing, or it can be framed in an Action Learning Set.

The sharing and risk-taking by the student teachers and teacher educators emphasised the importance of collaboration and trust in the learning process. Students were given responsibility to encourage learning for their peers and the teacher educator was not only facilitating the sharing of an enhanced range of ideas and inputs to the learning environment, but also modelling the benefits of full group engagement and collaboration in developing student confidence and autonomy.

> It generally made me feel more valued. It made me want to engage more. The ALSs were particularly useful – I really enjoyed the collaboration. (AS/A2 Level Photography student teacher)

As Trilling and Fadel (2009, p.108–109) note:

> there are significant benefits for students who work together on learning activities compared to students who work alone. The benefits include greater individual and collective knowledge growth, better confidence and motivational levels, and improved social interactions and feelings towards other students.

The Key ICE Question

The ICE question came from the student teachers, whilst trying to get to grips with ICE in the early stages of the module, and struggling to refocus their mindset to one of growth:

> How can you work with your learners to provide opportunities to ask useful and/helpful questions; enabling them to become more resilient, to persevere, be curious problem solvers, self-reliant, self-aware, observant, proactive and able to deal with failure and uncertainty? (Question that emerged from one cohort)

In identifying this question, the student teachers acknowledged their experience of the process of learning to teach through and for ICE and acknowledged their commitment to supporting their own learners through the same journey. They had acknowledged the challenge to existing mindsets and the need to go through the discomfort of rethinking their own strategies for a sustainable way of learning that would allow them to engage in an uncertain future. This difficult transition of mindset has been seen as 'painful, risky, difficult activities that stretched the person's capacity and involved an element of novelty and discovery' (Csikszentmihalyi 1997, p.110) and crucial to the development of authentic learning. An emerging attitude was demonstrated by both student teachers and teacher educators of 'What if?' in relation to planning teaching, devising an activity and choosing a resource.

Resistance and Change

Barriers were identified in developing the application of ICE in teacher education. The first was transitioning teacher educators and student teachers to a new mindset of what a good or outstanding lesson might look like. Both teacher educators and student teachers identified the difficulty of thinking creatively at the beginning of the ICE module. The experiential environment created was referred to by many as 'shocking', stimulating strong emotions such as anger, frustration, disengagement and disempowerment, which initially inhibited learning. This response was interesting, but not unexpected due to culturally defined and experienced ways those involved had been taught to learn (Cowley 2007). All involved in the module understood that it was about 'Innovation, Creativity and Enterprise' in teaching for learning, but still struggled with the 'doing'.

Some resistance to engaging fully with PBL, CPS and new mindsets for learning was linked to the beliefs of some teacher educators and student teachers that ICE was already embedded in their teaching. These teachers were the hardest to engage fully, as they believed they already had a creative mindset and they did not need to think differently about learning and teaching. It is important to encourage and support teachers and learners to develop, as it is not an automatic process (Handy 1990), but this barrier presented a clear challenge.

ICE was also challenged as being less relevant to some subject areas, for example, Maths, with student teachers in these areas resisting the appropriateness of new concepts and techniques for learning more creatively. The mindset was very much the acceptance of a more didactic teaching strategy to support perceived 'scientific' and 'absolute' subjects. In addition, concerns were expressed concerning the ability of learners to manage their own learning and the implied culpability of the teacher in handing over responsibility to learners. In an educational culture in which a teacher's performance is linked directly to learner achievement the tendency is to rely on proven methods and tight control which have resulted in adequate performance. This highlights a significant barrier that needs to be overcome when asking teachers to 'risk take' in developing their practice (Yates 1992).

> The captain has abandoned the ship and let the crew take the helm. He is trying to relax on his little boat, bobbing along in the wake of the larger vessel but the turbulent waters around him are making him nervous and he starts to question whether or not he has made the wisest decision in leaving the young crew – what if they wreck the boat? Do they really know what they are doing? Did I leave the clear directions and do they have the necessary charts. What if they choose a different course from the one I had intended? Can I cope with that? Are their enough supplies on board to survive – we have a deadline we need to be in Port Exam having rounded Cape Coursework by Christmas before the seas get too big. (Vocational Diploma Student Teacher)

The barriers and resistance of established mindsets were clearly evidenced and were typically formed by prior learning and teaching experiences, consolidated by a fear of potential institutional disapproval, including failure in employer or inspection-based teaching observations. It could be suggested that this fear instilling resistance to new more innovative learning and teaching strategies identifies the need for a societal mindset shift to accept and acknowledge new ways of teaching to support sustainable learning.

Student teachers did identify a growth mindset in themselves, and their students, based on the use of ICE principles in their practice. This shift was seen to involve a refocusing of the student (be it themselves and/or their students) from passive recipient of teaching to active student fully engaged in creating, focusing and driving their learning (Dweck 2008). This change was not easily achieved, with much resistance evidenced in all sources of data, however the move from expecting to be 'taught about ICE', to an expectation of 'learning together' through ICE, did occur,

resulting in high levels of risk-taking in the way both teacher educators and student teachers facilitated teaching and learning. The increased levels of motivation and personal awareness stimulated change (Dweck 2008).

The qualitative approach taken by the project does not support an assumption that teacher educator modelling of ICE learning and teaching or the immersion in PBL or CPS of student teachers supported an increase in 'risk taking' in teaching practice. However, it could be suggested that a new way of thinking about teaching and learning was developed in student teachers *and* teacher educators through participation in the ICE module. Student teacher comments in module reviews and personal journals support this suggestion, identifying an increase in risk-taking, growth in confidence and use of student-led practice leading to positive results with learners. The student teacher and teacher educator post-ICE module interviews also identified a change in behaviour, with both teacher educators and student teachers spending more time with students in order to understand their learning needs and barriers to learning.

The ICE House Project highlights how resistance to ICE learning and teaching strategies can be overcome and may result in positive change of mindset that increases opportunities for sustainable learning. Embedding innovation, creativity and enterprise in teacher education enables and promotes increased opportunities for thinking about learning and teaching at its most limited and at its best, teaching for sustainable learning in an uncertain future by developing transferable skills Box 9.4.

Box 9.4: Take time to consider being an ICE teacher and challenging your role.

WHAT ICE IS NOT:

1. Giving resources and information that limits or closes off further learning and engagement because students assume this is all that is needed.
2. Noticing participation at a surface level in terms of physical engagement.
3. Unchallenging learner activity, for example, sending learners to research.
4. Rescuing, that is, when a learner initially feels uncomfortable or challenged providing the answer.

(*continued*)

Box 9.4: (continued)

POTENTIAL BLOCKS to ICE:

1. As experienced tutors and under the demands of targets, ticking boxes and time pressures we struggle to draw out concepts and just 'give' students 'the answer'. This sets a tone for the expectations of the relationship that students do not need to wrestle with their engagement with processes of creative problem-solving.
2. The Comfort Zone and habits that we default to when under stress and time pressure. ICE lessons take time and thought to prepare and confidence to support.
3. Personal constructs of a teacher's role, for example, leading learning from the front, performing, being the expert, controller and decision maker.
4. I must not let my learners fail at tasks.

Conclusion

The ICE House Project identified that teacher educators and student teachers had fears and concerns about the application of ICE learning and teaching strategies in educational settings outside of the teacher education programme. There does appear to be a lack of understanding in external and internal quality review/inspection systems of how ICE learning and teaching strategies enhance learning, however this dissonance with recommendations from Demos, a cross-party think tank (Seltzer and Bentley 1999), the European Commission (2006) and UK government reports (Browne 2010) is slowly receding, particularly given the recent push from the Department for Education to embed 'character education' (DfE 2014) in compulsory education. For teaching to sustain learning through the development of skills required by the twenty-first-century economy, society and environment, further consideration needs to be given to the way in which teachers teach and the appropriateness of accepted strategies for an uncertain future characterised by digital and technological change (House of Lords 2015).

The ICE module was recognised by participants as positively impacting on their practice; however, it is recommended that reconsideration be given to the 'first contact' experienced in the ICE module. Student teachers and teacher educators felt confused by the absence of a frame of reference at the beginning of the ICE module. This was deliberate, the module being designed to disorientate and 'jump start' an alternative way of thinking. It is argued that this approach to a new way of teaching and learning was too distant from previously experienced practice and caused anxiety and anger, rather than an openness to learn something new.

The aim of the ICE House Project was to evaluate the impact of embedding ICE in our PGCE/Cert Ed. It is suggested as a consequence of this project that engaging with innovative, creative and enterprising teaching and learning strategies in teacher education stimulates a change in mindset and promotes reflexive internal dialogue associated with professional action and the development of the ability of students to lead their own learning where possible. Essentially the ICE House Project has established the need to consider a self-sustaining cultural shift in the way we think about and acknowledge effective teaching and learning. An institutional and societal level change in mindset will take time and persuasion and should be located in the infrastructure of education. However, the strategies for embedding ICE in learning allow the individual teachers to consider and take control of their classroom and acknowledge personal responsibility for stimulating change in learning and teaching practice.

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Further Reading

Claxton and Lucas (2008) provide a background to the social and economic importance of creativity and provide guidance on how to develop and apply the skills and attitudes needed to and break out of our normal patterns. The book is constructed in an accessible manner and includes practical activities and strategies to help you achieve a creative mindset and inspirational examples of the impact of these changes.

In Carol Dweck's (2008) seminal work on the power of our mindset in helping people reach their potential, she outlines that it is not only intelligence and skills that encourage success but the strategies we can employ to achieve a growth mindset.

Hattie's (2009) groundbreaking book resulting from 15 years' research and synthesises of over 800 meta-analyses on the influences on achievement in school-aged students, addresses areas of impact in teaching with special attention on challenging learning strategies to developed shared conceptual meaning of learning.

Robinson's (2009) entertaining and engaging book tackles the phenomena of the 'bored' learner and considers how to think creatively to inspire people to use their own talents and motivations to achieve. Case studies of successful people across the world are provided who when engaged and motivated have achieved incredible things.

CHAPTER 10

Complexity Theory and Emergence: Contributions to ESD

Sarah Chave

An Introduction to Complexity Theory

How to approach Education for Sustainable Development (ESD) is a challenging issue for teachers who are often called upon to embed it into their practice. We are faced with demanding ecological and social problems, often with apparently competing claims, such as poverty eradication and environmental protection. These can seem contradictory if we only consider these claims through current knowledge frameworks. New ways of thinking, doing and being are needed if we are to live harmoniously as part of nature now and in the future. Huebner (1999, p.403) uses the idea of 'the call of moreness' to articulate this. We need to have hope that we can draw on past and present knowledge, identify our current limitations and seek to go beyond them. Complexity theory offers a way to approach this challenge.

So, What Is Complexity Theory?

Complexity theory argues that environments, organisations or systems can be 'complex' if:

> large numbers of constituent elements or agents are connected to and interacting with each other in many different ways. This interaction causes organisation and reorganisation and if sufficient or critical level complex

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> interactions are allowed to develop, new and sometimes surprising patterns and structures can emerge which are more than a sum of their parts. It is this notion of emergence, and the conditions required for it to take place, which is of central interest to complexity theorists. (Mason 2008a, p.119)

Educational settings *do* have the potential to be places which are 'complex'. Emergence of the new is possible (although not certain) if, as educators, we create opportunities for numerous connections and interactions to take place between many constituent elements. For example, students could be encouraged to interact with each other, the tutor and the wider community, as well as exploring ideas from formal and informal curriculum sources. Allowing the emergence of different patterns and structures emphasises the importance of listening to new and unexpected ideas and including them in what is deemed to be valid. Such an approach does not have to occupy all of one's practice—although it could! It is possible to identify and build on 'moments of complexity' when they 'interrupt' (Biesta 2013, p.1) more standard practice. Indeed, many practitioners already encourage and value such moments without necessarily knowing about complexity theory!

Potential Advantages and Possible Issues with Complexity-informed Approaches

Since what emerges is more than the sum of inputs, complexity theory allows for the possibility that education can be about 'enlarging the space of the possible' rather than 'replicating the existing possible' (Davis et al. 2004, p.4). However, a focus on the emergence of new ways of knowing or being in the world raises the important issue of ethics. If the 'radically new' (namely new ways of knowing or being in the world which could not be predicted in advance from our existing way of knowing or being [Osberg in press]) is allowed to emerge from a free play of ideas, what if this 'radically new' is deemed unethical and who decides this? This is particularly relevant to ESD which openly proposes that certain ways of living are better than others. We will need to develop ethical frameworks alongside emerging new ways of doing things, as, for example, we are seeing with new communication technologies. We must also include different perspectives in this process. All these factors are challenging and risky, but continuing in the current way and supressing the possibility of the new could also be unethical.

Recognising the Value of 'Messiness'

Osberg and Biesta (2008, p.324) point out that an educational approach informed by complexity theory:

> introduces a language of education in which the messiness of classroom practice and the unpredictability of learning can be made more central to understandings and justifications of teaching practices, so that it is no longer necessary to hide it away as something 'that all good teachers know but that they nonetheless cannot speak of'.

Messiness (the unplanned and uncontrollable aspects of the teaching and learning process) is not all that is important in education! Learning existing knowledge and skills is also important. However, recognition of the inevitability and value of some messiness enables us to ask whether rigid curricula and teaching practices leave any time or opportunity for unpredictability and emergence of the new.

Educationalists working with complexity theory include Osberg (in press), Biesta (2013), Davis and Sumara (2006) and Doll (1993). It is important to note they are not proposing complexity theory as a 'grand narrative': a solution to all our problems or to replace existing theories. Indeed, educationalists working with these ideas propose using them to 'perturb' existing theories and practices. Perturbation, in this sense, means to agitate or 'stir up' and is valuable since it creates the possibility of living in new ways and doing education differently. Many of the characteristics of complexity-informed approaches discussed so far can be identified with approaches to education which encourage participation. A key difference with complexity-informed approaches, however, is that what emerges from the participation has not been decided in advance. This is not the case with all participatory methods.

Critics of complexity theory in education (e.g. Hunter and Benson 1997) argue that ideas cannot be simply transferred from science and mathematics to the social sciences. However, Kuhn (2008, p.184) suggests that to think ideas develop in compartmentalised disciplines is too narrow and that a simultaneous awareness across disciplines of the need to understand the world in different ways has occurred. There has been a move within many disciplines from an understanding of the world as a finite machine to a more complex understanding of an emerging world where the parts that make it up are changing and evolving. This matters

for education since it means that knowledge is not simply something to be transferred or discovered, it also has the potential to be something *created* through the process of educational interaction.

Complexity as Metaphor or Actual Process

A question often posed regarding complexity thinking in education is whether it is being used as a metaphor or a literal description of actual processes. Turner (2005) suggests that rather than see these positions as opposites, it is possible to see them as positions on a spectrum which attempts to understand and describe the world. What is important are the insights that complexity theory can bring to understanding what is happening in the 'messy' places that educational settings can be.

Another related question is, which part of the educational process is being referred to as a complex system? Is it the societal or school level; the level of the classroom as a complex system or the learning process in the brain of each individual? Davis and Sumara (2006) suggest this question can be addressed by the concept of nested complex systems, with smaller or local systems nested within a larger system, like the parts of a Russian doll. Each part of the educational process can be a complex system nested within, and interacting with a larger one.

Box 10.1:

1. To what extent can you identify with the ideas of complexity theory and emergence? What do you see as the advantages and also possible problems with the theory and its uses in educational settings?
2. Does your classroom allow for messiness, for interactions, for the emergence of new ideas not anticipated in advance by you or the students?
3. What are the barriers to such emergence?
4. Do you think it is more appropriate to think of complexity and emergence as a metaphor or as an actual process? Does this distinction matter to you?

A Framework for Action

Doll's (1993) *4 Rs Approach*

A commonly recognised approach to curriculum development is that based around

Tyler's (1949) model of education geared to meeting the needs of an industrial society. Tyler identified four steps for successful instruction which probably seem very familiar to teachers in further education. The stages are: deciding on what needs to be achieved and stating this as learning objectives, identifying teaching methods which can most effectively achieve these objectives, organising the process and, finally, evaluating achievement of the objectives and the process used to achieve them.

One can argue there is something to be said for such a structured approach, sometimes, for some topics, but it is not *all* that education is or can be. The problem with the Tylerian approach is that what is to be learnt and the process for achieving it have already been decided in advance by the teacher and/or curriculum-setting body. Biesta (2013, p.1) points out that such a technocratic approach tries to take away the 'risk' inherent in the educational process. He reminds us, 'education is about lighting fires as well as filling buckets' and lighting fires is inherently risky. It is to encourage such open and interacting 'risky' settings in which the new can emerge (key features of complexity), that Doll proposes in his 4 Rs approach.

R is for richness: Richness refers to a curriculum's depth, to its layers of meaning and multiple possibilities or interpretations. Doll (1993, p.176) suggests a curriculum needs to have sufficient indeterminacy, anomaly, inefficiency, chaos, disequilibrium and lived experience to be provocatively generative so that new ideas can 'self-organise' and emerge, but not be so chaotic that they completely lose form or shape. What is 'sufficient' or the right amount cannot be determined in advance but needs to be negotiated and renegotiated in the learning process. Richness could be exploring patterns in mathematics, looking at text from a variety of standpoints in literature or considering different scientific interpretations. Practical and vocational subjects can also explore richness in the curriculum. For example, in plumbing, students can explore different interpretations of which power generators are 'carbon neutral' and why such decisions can be hard to make. Use of handheld devices (tablets, smartphones, etc.) can bring richness into classrooms and workshops. Indeed, it is often 'surreptitious' use of such devices that leads students to challenge or perturb the existing

wisdom put forward by the teacher. Teachers already do work with these tensions. Complexity-informed approaches do not necessarily introduce something new or strange; rather, they value and encourage the richness already apparent in educational practice. Complexity theory can enable teachers to feel more confident to explain to students that whilst the existing wisdom is important (especially for a multiple-choice test!) the tutor also values alternative and new viewpoints and is prepared to discuss what these could mean for future practices.

R is for Recursion: Doll (1993) differentiates between repetition and recursion. In repetition, the emphasis is negative—identify what you did wrong and then keep repeating the task until you 'get it right'. What is 'right' has already been determined. Recursion is positive—it explores what could be learnt from each iteration (activity) and incorporated into the next. The result of one experience informs the next and the way forward cannot be decided, or predicted, in advance. Some curricula require things to be done to a very particular standard and in a set way. In such situations it is still possible to reflect on some of the wider issues involved in the process. For example, in carpentry, even if the methods and end products are defined by an awarding body, one can reflect on the source of the wood, or what happens to offcuts. Moreover, most curricula do have more open aspects, such as modules on environmental protection, new developments in an industry and self-development units. As a further education teacher, it *is* possible to pay attention to such opportunities. It is also important to develop the reflective skills that students will need once in the workplace. Reflection needs to involve others in an open dialogue to bring about the richness that different perspectives can bring. It is also important to remember that reflecting in itself is not recursive if it is only used to identify and correct deviation from the 'right way'. In recursion, 'moving the goal posts' about what is 'right' is seen as a positive!

R is for Relations: How ideas and properties interrelate is a very important part of complexity thinking (Mason 2008b, p.48). Doll (1993) identifies two ways in which such relations are important in a transformative curriculum: pedagogical—the networks within the delivery of the curriculum—and cultural—how the curriculum relates to its wider environment. These occur simultaneously and intermingle.

Pedagogical and cultural relations between aspects of the curricula are explored through reflection and the exploration of the richness within subjects. There is no set knowledge to master, as though a single set knowledge exists 'out there', separate from us. Rather, ways of knowing, being

and doing are understood as emerging. What we do and discover becomes part of knowledge and such knowing cannot be undone. Furthermore, our contributions affect existing knowledge since there is now something in the world which was not there before (Osberg and Biesta 2008). For example, in IT, the programming that was developed to track the ownership of Bitcoin (a virtual money system—see https://bitcoin.org/en/) is now being used to track ownership of other assets—a technique which has been used to reduce corruption. Students in hairdressing can identify a new technique for reducing use of chemicals, and this can then be shared by the tutor with the wider industry via their professional body.

To encourage such exploration of pedagogical relations, Doll (1993) uses reading within the curriculum. With higher-level courses he details readings for initial weeks. In later weeks he asks students to choose readings and then report back to the group. However, this is not in the format of a résumé of content, but rather how the new readings relate to the earlier readings. With other groups he encourages students to engage with texts and ideas by reconsidering them in 'what if' scenarios, or from a first-person perspective. For example: 'Imagine if you were a customer wanting to install a new boiler/fitted kitchen. What safety considerations would you want to check out?'

Cultural relations—how our curricula relate to the wider world—can be explored through questioning our interpretation of knowledge and current ways we do things. It is through reflecting on how our understandings are influenced by, and interact with, local and wider conditions that we begin to develop new ways to live in the world. Cook (2004) has developed the website followthethings.com to explore such interactions. This mirrors a shopping site and students have uploaded articles about how products are made and transported and the impact of these on society and the environment. The emphasis is on our relationship with the makers of the products and the wider natural world rather than seeing products and services as somehow disembodied. There has been success in developing such approaches in schools and there is scope for developing such approaches within vocational curricula.

R is for Rigour: Doll (1993) suggests that rigour is essential to ensure that a transformative curriculum does not descend into 'rampant relativism' (anything goes) or sentimental solipsism (extreme preoccupation with, and indulgence of, one's feelings, desires, etc.). Rigour is not about using appropriate scientific methods and proof; rather, it is about purposefully and critically exploring sources, strengths, assumptions and

pitfalls of certain viewpoints and looking for connections. Doll (1993) does not claim that rigour understood in this way is unique to complexity theory. Rather, he emphasises that rigour has an important role within a complexity-informed approach.

Box 10.2:

Doll's (193) 4 Rs model encourages 'a large number of constituent elements to connect and interact in many different ways' with the hope that 'new and surprising patterns and structures will emerge.' (Mason 2008a, p.119)

1. What do you think are the strengths of his ideas? Would you like to try them out in parts of your own curriculum?
2. What are some drawbacks with the approach?
3. How could some of the drawbacks be overcome?
4. How do some of these ideas build on other models of education you have explored and how are they different?
5. Identify ways that you already incorporate these ideas into your practice and areas where they could be introduced or extended.

Democratic Approaches to ESD

Adapting Heron and Reason's (2001) co-operative inquiry approach to research, with its emphasis on researching *with* people rather than *on* people, offers a way to introduce a democratic approach into exploring 'what' is allowed to emerge in educational settings, since decisions about curricula are made with learners. Indeed Heron and Reason (2001, p.185) show awareness of complexity theory and emergence when they state that, in adopting co-operative inquiry:

> a mental mind-set is needed which allows for the interdependence of chaos and order, of nascence and knowing, an attitude which tolerates and undergoes, without premature closure, inquiry phases which are messy. These phases tend, in their own good time, to convert into new levels of order. But since there is no guarantee that they will do so, they are risky and edgy. Tidying them up prematurely out of anxiety leads to pseudo-knowledge. Of

> course, there can be no guarantee that chaos will occur; certainly one cannot plan it. But the group can be prepared for it, tolerate it, and wait until there is a real sense of creative resolution.

However, when we consider the issue of democracy the question of 'who' as well as 'what' is allowed to emerge becomes important. An 'open' attitude (i.e. not decided in advance by the tutor, the student, parents and society) to what constitutes a 'successful' learner or ultimately a successful adult creates a possibility that different ways of being and interacting with others in the world can emerge.

Case Study

The following case study discusses an ESD module using a complexity-informed approach with nine part-time in-service student teachers in the UK Further Education and Skills sector. The module drew on Doll's 4 Rs and Heron and Reason's (2001) co-operative inquiry model to encourage democratic emergence. In the first session, students were initially resistant to a module on ESD, anticipating they might be 'preached to' or burdened with yet more tasks. They vocalised this in the session and their discussions were written on the interactive whiteboard and posted to the group's virtual learning site. The student teachers also reflected on this experience in their personal learning records. Then, one challenged the tutor, saying, 'How can we expect students to care about taking responsibility for the world when they can't even take responsibility for bringing a pen to their lessons?' A definite pause occurred—and from the body language this appeared to the tutor (the author of this chapter) to be a thoughtful pause. Rather than countering this challenge, the tutor suggested the group might like to explore this. The group decided to take this 'interrupting question' as a starting point for the module.

The student teachers took the issue of responsibility back to their vocational students, who devised projects. These all had a connection to 'taking responsibility' ranging from reducing cyberbullying to taking responsibility for development of new values in addiction and substance abuse settings, mechanical engineering of a swing bridge which enabled regeneration, taking responsibility both for our own studies and for attending to the needs of our fellow classmates and music literacy as a way for young people to have a voice (Chave 2015). This initial process encouraged richness and reflective pedagogical and wider cultural relations.

Since these are not 'usual' sustainability topics, the student teachers were concerned as to whether the module moderator would accept them. The tutor contacted the moderator who confirmed their acceptability and provided this useful UNESCO (2005) definition of ESD as learning which aims to:

- respect, value and preserve the achievements of the past;
- appreciate the wonders and the peoples of the Earth;
- live in a world where all people have sufficient food for a healthy and productive life;
- assess, care for and restore the state of our Planet;
- create and enjoy a better, safer, more just world;
- be caring citizens who exercise their rights and responsibilities locally, nationally and globally.

During their weekly sessions, the student teachers chose activities and spontaneously offered to share areas of interest and expertise—again encouraging richness and pedagogical relations. Topics explored included the Milgram experiment (1963) and how this relates to taking responsibility for self and others; responsibility and sustainable construction; Rokeach (1973) on human values and Miller and Rollnick's (2002) motivational interviewing technique to encourage behaviour change. The emphasis was on reflective exploration of different ideas. These were written on interactive whiteboards, posted to virtual learning sites, and reflected upon in the student teachers' professional development records. They also tried out, reflected on and then retried teaching and learning methods (recursion) which could allow their learners to take responsibility. Approaches included: supporting the development of time management skills; peer teaching and work in action learning sets (students define problems and work on solutions with support from relevant others); case studies and project work; allowing time for students to develop trust in themselves, tutors and peers; use of technologies which enable learners to identify and research issues of concern to them; and avoiding 'spoon feeding' by the tutor.

The approach was chaotic at times, and it was necessary to provide some reassurance to the student teachers. One concern was whether they would 'pass' the module. The group solution to this was to devise a framework of headings for writing up their assessment—providing reassurance that order

could emerge from the 'generative chaos'. The tutor also brought along materials they had requested, for example, Biesta's (2003) discussion on responsibility in 'Learning from Levinas'. The students also requested some more 'standard' input on sustainability such as the 'linkingthinking' *resource* (Sterling et al. 2005) and Jensen and Schnack's (1997) action competence model. All nine students finished the module which was assessed by a teaching observation (the tutor commented on ESD aspects, including the 'taking responsibility' theme adopted), an informal presentation and a short written assignment. The module assessment was both rich and rigorous.

The evaluation of the unit was rigorous and included ongoing and final reflection by participants and tutor and external quality assurance which provided triangulation of the views expressed. Further quality assurance carried out included observation by the course leader of a session led by the tutor, moderation of the assignments including their professional development plans and comments from the student teachers to the quality assurance committee. Their comments indicated they both enjoyed and benefited from the approach and that it was 'provocatively generative' overall. They did comment that they felt anxious until they had reassurance from the moderator and had also devised their written assessment framework. Whilst it could prematurely close down the process to introduce this framework earlier into the module, the fact that it was a possibility could be explained earlier.

In the post-module review submitted to the moderator, the tutor reflected that the module worked well with the group as they were in the latter part of their programme and were comfortable and trusted each other and the tutor. Also they were ready for a different approach by this stage in the programme. This group of nine was small and the technique would need careful handling in a larger group. For example, 'fluid' subgroups could be established which could then report back to the whole group. The tutor needs to be confident with a more chaotic feel in the classroom and have the ability to *allow* students to run with ideas. Since the role of the tutor is to provide support and further information as requested—as well as sometimes challenging (or 'interrupting' [Biesta 2013])—the tutor needs to have time to respond to, and be skilled in, dealing with these requests and situations. Did new ideas emerge? Was the approach more democratic? The richness of issues discussed did encourage the student teachers and their students to explore sustainability and

find means to address the issue in ways that were meaningful to them. These were often original—emerging from *within* them rather than from external imposition. The range of topics, approaches and possible solutions explored helped everyone involved in the project to consider how sustainability is a complex, interconnected issue with no easy or one-size-fits-all solution.

Closing Thoughts

This chapter has explored complexity thinking, ways that emergence of the new can be encouraged and what this can contribute to ESD. It recognises that complexity approaches are already present in many educational practices. Knowledge of complexity theory can give tutors and students confidence not to be afraid and to value those messy, unexpected moments when new ideas and attitudes can emerge. It emphasises the importance of *allowing* opportunities for students to bring new and unexpected ideas into the educational process.

Much of what has been discussed relates to educational ideas and processes in general. This is valid. If we are to live more sustainably in the world, rather than see ESD as a bolt-on to an unchanged approach to the curriculum, we need to do education differently. Complexity thinking can contribute to this challenge.

Box 10.3: Areas for development

1. Use ideas from Doll's (1993) 4 Rs model and the case study to enhance an area of your curriculum. Reflect on these changes with your colleagues/peers and students.
2. Select a further reading idea from the list below. Identify how it enhances your understanding of the issues explored in this chapter and use these ideas to redesign part of your curriculum. Discuss why you have made these changes with colleagues.
3. Reflect on the issue of democracy in your teaching approach. How can you expand what and who are allowed to appear? Discuss your ideas with your peers/colleagues.
4. Visit the followthethings.com website. Reflect on how this could help you to redesign part of your curriculum.

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Further Reading

Doll (1993) provides, introduces, the possibilities offered by complexity-informed approaches to education and connects these to the work of theorists such as Piaget and Dewey.

Davis and Sumara (2006) provides a straightforward introduction to complexity thinking and education.

The *Journal of Educational Philosophy and Theory* published a special volume in 2008 (Vol. 40 No. 1) exploring complexity theory and educational research. It provides articles on: complexity theory and education (Mason 2008a and b), complexity and truth (Radford 2008), Foucault 'as a complexity theorist' (Olssen 2008), human research and complexity theory (Horn 2008) and the student as subject (Osberg and Biesta 2008).

Biesta (2013) provides a challenging discussion of democratic possibilities of adopting complexity thinking in education.

CHAPTER 11

Education for Sustainable Development in Initial Teacher Education: From Compliance to Commitment—Sowing the Seeds of Change

Denise Summers

Introduction

In the UK in 2010, David Cameron, the newly elected prime minister, claimed he wanted his coalition government to be 'the greenest Government ever' (cited in Randerson 2010, online). However, one year on, Jonathon Porritt (2011) reviewed their proposals in a report to Friends of the Earth and found little or no progress in the majority of them. The education system seems to have done little better as, according to Sterling (2009, p.105), education is 'a slow learner', a view echoed by Blewitt (2010, p.16) who argues:

> Sustainability literacy should by now be woven into the fabric of our educational culture. Our present ignorance and lack of engagement is nothing short of shameful.

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Although national and international policies suggest education is the key, Sterling (2011, p.18) questions the commonly held view that all learning is 'a good thing', as it may be 'at the service of questionable values and ends'. As Orr (2004) observes, colleges and universities have had a huge influence in promoting the domination of nature required for the industrialization that has caused the current environmental crisis. If we, as one of the advanced industrialized societies, are to learn to live more sustainably and produce and consume in a way which is less damaging to the environment, then we need to move from a limited focus on education for jobs towards a broader focus on building a society and economy which is ecologically sustainable (Sterling 2001). This requires a move from transmissive learning, which focuses on the efficient and effective transferral of information, towards Sterling's (2001) transformative approach which encourages a creative and deep awareness of different world views and promotes change (Sterling 2011).

Taking Up the Challenge

In 2007, an initiative to address Sterling's (2001) challenge to move towards a transformative approach to learning was taken by a team of initial teacher educators providing the Postgraduate Certificate in Education and Certificate in Education (PGCE/Cert Ed) for teachers in the further education and skills sector (i.e. post-compulsory further education, adult and community education, work-based learning), within Plymouth University's partnership of eight further education (FE) colleges. Changes in statutory requirements meant a revision of the PGCE/Cert Ed was required for September 2007 (DfES 2004), presenting an ideal opportunity to include an assessed learning outcome requiring student teachers to introduce Education for Sustainable Development (ESD) within their practice.

The team carried out a co-operative inquiry research project (Heron and Reason 2001; Summers and Turner 2011 and see Chap. 3) to encourage the professional and curriculum development required to support students in meeting this outcome. This democratic and participative approach enabled the team to develop into a collaborative community of practice in which they supported each other in developing the necessary knowledge, experience and values to confidently introduce sustainability to their students. The strong team ethos they developed supported them in tackling the difficulties and dilemmas they faced, as well as building on the successes they experienced, which led to the embedding of ESD throughout the programme. The author of this paper led the co-operative

inquiry (Summers and Turner 2011) and has seen the influence of ESD develop within her own, her students' and her colleagues' professional and personal lives. This raised questions about the influence on teacher educators (tutors) and student teachers (students) across the partnership and encouraged further research to:

- explore students' and tutors' conceptualisations of ESD, to gather a broad perspective on the different ways of making sense of what is Sustainable Development, and its role in Education, to identify what has informed and influenced this understanding;
- examine the stories of how this understanding has developed, and how it is affecting students' and tutors' personal and professional lives;
- develop understanding of how this may have been influenced by the introduction of ESD within the PGCE/Cert Ed.

Research Design

The decision was taken to develop case studies as this study is 'an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context' (Yin 1984, p. 23). In considering the influence of the introduction of ESD, it was important to collect data from the perspective of the students and the tutors introducing it to them. Questionnaires were sent to 441 students, who completed the programme in the 2009–2010 academic year, and 38 tutors. 22 responses were received from students and 13 from tutors, representing a 5% return for students and a 34% return for tutors. Although the response rate from students was low, on analysing their responses, it was evident they represented a range of views from those who appeared very committed to including ESD in their practice, to those who, at least initially, did not see its relevance in a PGCE/Cert Ed. Themes were generated and discussed with a critical friend who helped design the interview frameworks. A question had been included to indicate those willing to be interviewed and from those, a 'purposive' sample was selected to reflect a 'typical' range (Wellington 2000, p.59–60) of the views expressed. Seven students, who represented the range of responses, and six of their tutors were selected to participate in interviews.

Interviews, lasting approximately 30 minutes, were recorded and transcribed, and participants chose pseudonyms. All were asked the same open questions, as well as questions to explore their questionnaire responses. The transcriptions provided descriptive case studies of the perceptions of each participant. Alongside this process, a review of the literature was carried out

to identify relationships between the participants' responses and 'literature, policy issues or other substantive source' (Yin 1993, p.4), to be able to provide a descriptive analysis of individual conceptualizations of ESD and explore the influences on, and effects of, these.

The Conceptual Framework

Both ESD and sustainable development (SD) are contested concepts and invariably the word 'development' is at the heart of the debate (Stevenson 2006). SD has its origins in the environment but, in recent years, its meaning has evolved to include society and the economy (Jabareen 2008). The terms 'sustainable' and 'sustainability' are often used as if their meanings are obvious and value neutral, although there is little consensus on what should be sustained (Bonnett 1999). Although there may be benefits in the current ambiguity (Pezzey 1989 in Stevenson 2006), this may mask the intentions of policy makers who appear concerned about the environment but are actually focusing on economic growth (Rist 1997). Even the Brundtland report (World Commission on Environment and Development 1987) emphasizes the need for economic development to reduce poverty in the Third World, and 'deemphasizes the environment' (Jabareen 2008, p.181). However, when there are so many in the world suffering from a lack of development, it would seem 'both unjust and unrealistic to expect them to remain so' (Bonnett 1999, p. 314). Nevertheless, if such development requires even greater levels of extraction of scarce resources, then SD is an oxymoron as, according to Harding (2006, p.232):

> sustainability and development are contradictory concepts and 'sustainable development' is just economic growth dressed up in the language of deliberate obfuscation, used knowingly or not by those who care nothing for the Earth in order to fool us into thinking that they are taking her concerns seriously.

In what could be termed the 'over-developed' world, it is important to guard against potential abuse of this ambiguity, as there is a need to sustain 'that which is valued, but which is currently endangered through depletion, pollution and so forth' (Bonnett 1999, p. 313). However, Rauch (2002, p.48) considers the ambiguity:

> implies that the contradictions, moral dilemmas and conflicting targets inherent in this vision need to be constantly renegotiated in a process of discourse between the players involved in each and every concrete situation.

If this is the case, then when introducing ESD, the recognition that there are no easy answers to current dilemmas, provides the opportunity for critical debate amongst students and teachers alike. However, as Jickling (1992, p.8) argues:

> Education is concerned with enabling people to think for themselves. Education "for" sustainable development … or education "for" anything else is inconsistent with this criterion.

Although recognising the importance of developing students' critical thinking and encouraging a rational understanding of the issues involved, Bonnett (1999) questions the viability of incorporating democratic values into any consideration of ecological sustainability. As Ophuls (1977, cited in Bonnett 1999, p.214) argues 'liberal democracy as we know it … is doomed by ecological scarcity'. Bonnett (1999, p.318) considers the ambiguity of SD to be problematic and at worst may become 'a term of political convenience used to mask and/or legitimate vested interests'. He argues that interaction with nature is central to our self-identity and, if teachers view sustainability as a 'frame of mind', this could have wide-ranging educational benefits and allow the whole curriculum to be seen as a medium for embedding environmental education. Huckle (2012, p.36) considers that as such a frame of mind recognises society's impact on nature, then social and economic development would be limited by ecology and would encourage students to develop:

> a deep empathy towards the flourishing of things beyond themselves. They will need to be open and engaged with the complexity and meaning of things in the manner of great art or literature; attuned to the harmony and discord in the world via a heightened sense of attachment; and capable of viewing nature in ways that are essentially poetic and non-manipulative.

This could address a concern of Kopnina (2012) that the shift in environmental education towards ESD has resulted in a radical change from an ecocentric focus towards a focus on social issues and the fair distribution of resources. Although this encourages recognition of a moral obligation to those in poverty, there is less emphasis on caring for other species and ecosystems. However, Stevenson (2006, p.286) cautions against:

> divesting us of our humanity in not recognizing our unique capacity to construct views of reality or worldviews which themselves must in some sense be anthropocentric.

Using Bonnett's (1999, p.322) 'strong' *and* 'weak' versions of anthropocentricism helps to develop this point. Both versions accept that to confer or recognise values requires the level of consciousness of human beings. However, the strong version leads to the assumption that human beings are the only 'bearers of intrinsic value' and therefore the dominant species. In contrast, the weak version suggests:

> it is perfectly intelligible, and … much closer to some aspects of our experience of nature, to allow that an essential part of human awareness is its capacity to recognise the intrinsic value of the 'other', indeed to be capable of a deep respect for things non-human and that are not perceived as primarily serving human purposes and, indeed, on occasion precisely because of this. (Bonnett 1999, p.322)

Huckle (2012, p.36) argues for an ESD or 'learning for sustainability' which is more realistic and considers politics, as well as values, and is:

> [m]ore alert to issues of inequality, social class, and sustainability politics; more firmly anchored in the realities of the dominant forms of unsustainable development and underdevelopment shaping the contemporary world; and more attentive to the struggles of the workers and citizens to introduce more sustainable alternatives.

He builds on Bonnett's (1999) foundation of sustainability as a frame of mind and moves through sustainability ethics to political economy to encourage the development of democratic classrooms which, through direct experience, encourage learning about equality, democracy and sustainability. Students would consider:

> how social, environmental and ecological relations have changed over time; the benefits and costs of capitalism in its diverse forms; the validity and viability of different kinds of reformist and revolutionary change proposed by diverse social movements; and the desirability of people acting collectively and successfully to shape and change their own natures and the natures that surround them. (Huckle 2012, p.43)

To this end, Stevenson (2006) calls for academics and researchers to engage teachers in ESD, as they have much to contribute with their knowledge of their subjects, their students and their localities. They can encourage the necessary connections to be made with their students' lives and

experiences, in a way which fosters their need for hope and a sense of purpose in their learning. Some points of reflection are suggested in Box 11.1.

Box 11.1:

Reflect on your students, your subject specialism and your local community. How can you use this knowledge to introduce your students to sustainability and help them to make the connections with their lives and experiences in a way which encourages a sense of purpose and hope for the future.

Smyth (1995, in Stevenson 2006) argues that the healthy state should be presented as the norm, with problems considered in terms of how they should be corrected. Although this is supported by teachers with concerns about the effect on students of a focus on environmental disasters (Cross 1998), it does not follow that a positive focus is sufficient to motivate learning (Brophy 1987, in Stevenson 2006). Of more importance is engaging students in work which is challenging and connected to their own lives in order to encourage a sense of ownership (Stevenson 2006). As Selby (2007, p.249) argues 'the heating is happening' and calls for 'education for sustainable contraction' in which we accept the climate change threat and move away from the current denial.

To contribute to an understanding of the transformative approach necessary for this, Sterling (2011, p.19) draws on Bateson's (1972, in Sterling 2011) concept and models of zero, first, second and third levels of learning and change which relate to the quality and depth of the learning experience. Tosey (2006) describes Bateson's zero level of learning as 'responding to stimuli but making no changes based on experience or information'. The concerns of Dawe et al. (2005), Sterling (2009) and Blewitt (2010) suggest that education in general may be languishing at this level in relation to ESD. Sterling (2011) summarizes the different levels of learning and change in the following Table 11.1, with the arrow representing a move towards the higher-order learning required for transformation:

It is Bateson's (1972, cited in Sterling 2011, p.23) third level, involving 'a shift of epistemology or operative way of knowing and thinking that frames people's perception of, and interaction with, the world', which is required in order to challenge current ways of thinking and acting. As Sterling (2011) suggests, although moving from first- to second-order and from second- to third-order learning and change can be inspiring, it

Table 11.1 Sterling's (2011) levels of learning and change

Orders of change/ learning	*Seeks/leads to*	*Can be labelled as*
First-order change Cognition	Effectiveness/efficiency	'Doing things better' Conformative
Second-order change Metacognition	Examining and changing assumptions	'Doing better things' Reformative
Third-order change Epistemic learning	Paradigm change	'Seeing different things' Transformative

Source: Sterling (2011, p.25)

may also cause student resistance, as it can be challenging and threatening to question existing beliefs and assumptions. As Selby (2007, pp.10–11) argues, the transformation necessary will require educators to support students in addressing the 'despair, pain, grief and loss' which may result. However, this may be difficult for educators who are working within a policy context which promotes sustainability on the one hand, but high economic growth and consumerism on the other. As most formal education is concerned with first-order learning, this presents major barriers to educators attempting to encourage higher levels of learning and change (Sterling 2011), demonstrating the challenges ahead for the team of initial teacher educators as they started their project in 2007.

The Role of Teacher Educators in Encouraging Education for Sustainable Development

In considering how teacher educators can encourage ESD, Martin et al. (2007) suggest a professional values model that moves beyond individualism, performativity and compliance:

> towards one where democratic values, communities of practice, sustainable economies, sustainable communities and social justice are embedded. (Martin et al. 2007, p.358)

Although Avis et al. (2002) note that FE student teachers have empathy with notions of social change and justice, these concerns are limited by a narrow view of teaching as a technical process unconnected with the wider socio-economic and political context of post-compulsory education

and training. Summers (2005) found that the reflections of FE student teachers are mostly technical and practical, although the influence of the PGCE/Cert Ed is enabling some to become more critically reflexive. She suggests this should be further encouraged by teacher educators, as engaging in only practical reflection can lead to an unquestioning acceptance of demands placed upon the individual. Developing this critical approach should encourage 'the recovery of a politicised critical pedagogy' (Avis and Bathmaker 2004, p.15), which may support Huckle's (2012) call for a more realistic approach to ESD. Engaging with a professional values model, such as the one proposed by Martin et al. (2007, p.359), should encourage the development of teacher educators as a 'community of practice' of 'engaged public intellectuals' and 'agents of change' who are committed to developing student teachers who can extend their ethics of care (Avis and Bathmaker 2004; Summers 2005) to make the connections with ESD and become 'agents of change' themselves.

In recognising the institutional and personal barriers educators and their students face in working towards such a paradigm change, it is bound to be a difficult journey. It may be that an initiative such as the one resulting in the research discussed in this chapter, only encourages the first steps in this journey. However, as Sterling (2011, p.30) recognises:

> transformative social learning – albeit reactive – whether precipitated by energy price shocks, health scares, terrorism or global warming for example, is already with us, shaking public assumptions. Under such conditions, it behoves academe to be anticipative, to re-examine how it can move towards more transformative, more socially engaged and future oriented models of teaching and learning that can nurture positive personal and social development.

The team who embarked on this action research project took a democratic and participatory, co-operative inquiry (Heron and Reason 2001) approach to developing themselves, their practice and their curriculum and supported each other in their individual and joint development (Summers and Turner 2011). They drew on support from the Centre for Sustainable Futures at Plymouth University and in turn supported partnership colleagues in developing their own and their students' practice. To discover whether this team can be considered to have been agents of change and whether there has been any progress towards a more anticipative and transformative approach in their students' and colleagues' teaching, the following section analyses the responses of participants to investigate the effects of the introduction to ESD.

Analysis and Discussion of Findings

In analysing the student and tutor questionnaires and interview transcripts, the different responses suggest a wide range of levels of learning in relation to ESD. The analysis enabled the identification of themes which are discussed in the following subsections and links have been made to Sterling's (2011) levels of learning and change and with the theory explored in the literature review.

Perceptions of ESD

Participants' understanding of ESD ranged from the majority who focused on the environment, to those who included social and economic conceptions. Dawn felt teaching should include 'the reality of needing to recycle and reuse all and everything to permeate all of our work' and Paul explains how 'our influences can change the world for the better'. Lorraine understands it to be 'the promotion of green issues' and the 'sensible/frugal use of resources'. In Sophie's teaching, she includes topics about recycling and saving money on energy use. Imogen teaches Early Childhood Education and although some topics taught come within the ESD agenda, that is, poverty, waste, war and Forest School sessions which encourage environmental awareness, she had not made the link with sustainability until being introduced to it on the PGCE. Although unsure at the start, she has since been influenced by the media and her personal travelling which has encouraged her to develop her practice further. Harry's understanding of ESD was originally limited to 'back-to-back photocopying and turning the lights off when you leave'. He feels it can *be* 'a slippery concept to get across to students and as such I'm not always sure if I have'. He recognises areas of ESD which are very important and 'cannot even begin to imagine how I can influence them'.

Effie recognises the ambiguity of the concept and the confusion this can cause, but feels this is 'necessary given the various global, local [and] regional perspectives'. However, as Rist (1997) cautions, there are risks to this ambiguity and constant debates on the definition can lead to 'paralysis by analysis' (Fien and Tilbury 2002, p.3) undermining progress towards a sustainable future.

Sarah considers it wrong to simply focus on the environment as she feels ESD should consider the 'sustainability of communities, organisations, departments, courses and staff and students'. However, there could

be a danger in separating elements of ESD, particularly if this leads to Kopnina's (2012) concern about a shift from an ecocentric focus towards an anthropocentric focus. Alex recognises the relationship between the different aspects of ESD which:

> encapsulates a culture towards recognising human potential and interdependence of the world we inhabit. It should be a way of being, implicit to our daily lives, the well-being of the world.

This corresponds with Stevenson's (2006) view that as human beings we can construct world views which, to some extent, will be anthropocentric but, as Bonnett (1999) suggests, not only serve our purposes but also demonstrate a deep respect for the well-being of things which are other than human.

Culture of Compliance: First-order Learning and Change

The growth of regulation in FE colleges, since incorporation in 1993, has increased what has been termed a 'compliance culture' (Hadfield and Atherton 2008, p.1). A consequence of this has been a rise in risk-averse managers exerting close control over teaching staff, resulting in a similarly risk-averse approach to teaching (Coffield 2008). This can be seen in some of the participants' responses. One said 'I haven't got the authority to teach my own personal theories' and another confirmed the introduction to ESD had very little influence on their practice as it was 'not part of mainstream education or our curriculum'.

Another example is Bill who, since completing his Cert Ed, had not introduced sustainability to any subsequent groups of students. He teaches literacy and numeracy to construction students and, to meet the ESD outcome, planned a project which involved students researching a topic of their choice on sustainability to present to their peers, demonstrating their communication skills. He was delighted with their response:

> they knew more than I did and they were all really switched on to it … when the presentations were being given, no-one was speaking, and I wasn't at the back threatening. I was just at the back watching and everyone was watching … the different angles they came from, that I hadn't even considered … one of our weaker students … started giving us all this information and it was fascinating.

Bill is under pressure from his college to get results from his easily distracted students and so he tends to focus on what they 'need to know' to pass. Even though the sustainability presentations had engaged the students and encouraged 'fascinating' presentations and met the criteria of what they 'need to know' in relation to their communication skills, when there was no requirement to include sustainability, he did not. Lorraine was also compliant in terms of meeting the outcome but not following it up afterwards, as she considered ESD was not essential to her students.

Sarah, a tutor, had been keen to research ESD and introduce it to her students to enable them to see the 'bigger picture'. However, when her college changed to a different provider, with no such outcome, their focus on ESD was considerably reduced:

> it's covered a little bit in Year 1, but it's not a big part of the programme, so it's almost us playing lip service … it's a lost opportunity … we could possibly have done more to build it in there.

These responses suggest Sterling's (2011) first order of learning and change in terms of doing existing things better with an emphasis on efficiency and effectiveness. The concern with this conformative approach is that when the impetus to include ESD is taken away, there is a danger of the initiative being sidelined.

Overcoming Initial Anxieties: Moving Towards Second-order Learning and Change

ESD as a 'bolt-on'

Sarah and John were concerned about including ESD alongside the many *top-down* policies already required in the PGCE/Cert Ed. Initially, John found there were 'factions' within the groups; some were converts who recognised the importance of ESD and others who were quite negative. He compared it with 'equality and diversity' which at first was introduced as 'some sort of bolt-on', which may be how ESD might now be perceived. He considers the negativity may have been increased due to his lack of confidence in introducing it in 'a meaningful way'. His confidence is now much greater and he feels he is an 'advocate' of ESD and 'planting seeds':

> For me it's about creating that sort of ethos within … 20 trainees, they go and talk to their trainees and … when their trainees or learners go off and have a business, they might think ethically about their business.

Lack of Understanding

Elizabeth remembers it being embarrassing at the start 'because it's a value laden area and … there wasn't a general understanding of the potential of SD and the role of ESD'. As the focus seemed to be 'mostly environmental' and the issues were 'hugely contested' and some had a 'fairly cynical view', she felt she had to say:

> I'm not saying to you that this is exactly what you should be getting involved with, but these are issues that will have an impact in the years to come and it is a growing area of concern.

At the time, she was concerned about 'tackling people's personal value bases' and introducing something which, she felt, had not been sufficiently critiqued. However, in the main they were 'at least accepting and willing to engage with it, if not positive about it'. Now she feels students are more positive and saying 'yes, I couldn't agree more'.

Head in the Sand

Effie found some students were reluctant to engage, commenting:

> I don't want to know that there's this stuff going on, I've got enough on my plate already thank you.

This was also experienced by the original team as one of their students felt she 'just wanted to bury her head in the sand and hope it all goes away'. This confirms Selby's (2007) view that encouraging the transformation required may cause anxiety and despair and teachers will need to support students in coming to terms with this. Although it may be challenging and threatening, as Stevenson (2006) suggests, teachers have the necessary knowledge of their students, their subjects and their localities to make purposeful connections with ESD which should foster their students' need for hope and may help to counter the anxiety and despair.

Preaching or Practising?

Alex was concerned about sounding 'evangelical', which was also experienced by members of the original team when first introducing it to students and colleagues. Interestingly, John, one of those colleagues, admitted feeling this, 'but then my intelligence kicks in and I think "no she's not, she's saying some quite good stuff"'. This relates to other anxieties expressed, which were almost apologetic about introducing ESD. Elizabeth felt embarrassed, Harry and Alice were concerned about lack of knowledge and John and Sarah felt it was yet another addition to the programme, along with other statutory requirements. Sarah was also concerned about 'appearing to be hypocritical and condescending' due to a concern that as she was introducing ESD, she should set an example and model sustainable practice. Alex was concerned about being a hypocrite in her personal life:

> It is no good doing things externally because you're told to do it. You actually have to internalise those values and I think I'm definitely beginning to internalise those values.

John was also concerned about this and admits being 'more theoretically sound than practically achieved. Sorry', demonstrating the guilt feelings to which this can lead. This was noted by the original team, as there were criticisms from students about not practising what they were preaching, due to the vast amount of paper required to meet programme requirements:

> Although these comments were few, they caused anxiety as we were wary of being perceived as 'preachers' and not as 'good' role models, both of which strike at the heart of the values which underpin our professional practice. (Summers and Turner 2011, p.461)

Many tutors felt anxiety when introducing ESD for the first time. Alice was concerned about her lack of knowledge and it was only when she found out more that she recognised 'I did know quite a bit, I just didn't realise I knew it'. As with Harry, she feels she and her students have learnt together. Harry is now more confident in his approach and always tries 'to go from a values base rather than a preaching practical base'. However, as Harry and Alice found, introducing ESD led to tutors learning alongside students, which was also experienced by the original team as it:

> reinforced the importance of us not setting ourselves up as 'experts' but rather as being on a journey, which we hoped our trainees would join. (Summers and Turner 2011, p.462)

There will be dilemmas along the way, but together tutors and students can explore these and the factors influencing the decisions to be taken, deciding on the most appropriately sustainable way forward. This suggests a reformative movement towards Sterling's (2011) second-order level of learning and change, where both tutors and students are examining and changing their assumptions in order to do better things; learning together in a way which may not have happened before.

Our Responsibility as Teachers: Evidencing Second-order and Creating the Potential for Third-order Learning and Change

Teacher as Expert?

Although some teachers may be influenced by the need to be compliant, other responses suggest a range of influences on professional practice. Harry started introducing ESD in a 'perfunctory' way to meet requirements, rather than 'what I would call the deeper stuff, change of mindsets and things like that'. He felt most of his students had a similar understanding and they developed 'an uneasy truce' when he admitted he was not sure what he was doing. Harry's students were from the military and they have a 'very authoritative role' and a 'very fixed view' about the role of a teacher. Due to Harry's awareness of their views of teachers who do not know their subject:

> that then becomes a script or a manifest within myself, which probably spurs you on to go and find out more information so you are one step ahead. Not because you necessarily want to know the information, you just don't want to look a fool.

He felt their developing knowledge 'was limited in size by my knowledge'. However, through him developing his knowledge and encouraging those familiar with ESD to share theirs:

> someone bites and gets enthusiastic, and you think 'thank god for that' because I have now got somebody who can make that connection. And yes, it does start to spread out.

This made him more confident about admitting he 'doesn't know something'. He now has 'confidence in something I'm not confident about and I actually use that lack of confidence or lack of knowledge as a teaching device'. This is taking him away from the need to feel that as a teacher, he has to be

the expert. It is this which is suggesting second-level learning and change as he examines and challenges his assumptions, with the potential to move on to third-level learning and change, as he 'sees things differently' and encourages this in his students, as they all learn together.

Bottom-up or Top-down?

John sees the importance of a bottom-up process:

> by embedding the basic principles [of] economic, social and directly environmental sustainability issues in our teaching practice and curricula, a growing awareness will occur within society. We therefore have to model sustainable teaching and ensure sustainability issues and links are highlighted … where possible.

This is also the case for Dawn, who takes as many opportunities as possible to embed ESD in Performing Arts, as 'we have only got the one planet … and if we mess it up, we have nowhere to go'. She has developed projects with her students exploring waste, recycling, poverty, consumption and community relations within the local community and further afield. This confirms Stevenson's (2006) view that educators have much to offer with their knowledge of their subjects, students and localities, encouraging a sense of hope and purpose in their learning.

However, this contrasts with Bill, who has become disillusioned and feels action from the top is also required:

> What's the point when no-one is taking [it] seriously. Education is paying lip service! There is no concerted effort in this college for sustainability.

For ESD to be effective, there must be a link between the curriculum and the institution's approach to sustainability, otherwise it is 'contradicted by the students' daily experience within the institution' (Dawe et al. 2005, p.23).

Effie clearly remembers her group's introduction to ESD as everyone was enthused and really engaged. They were:

> bouncing ideas off each other … doing presentations on ESD and our own role, which I think was really interesting for people, because the ones that were struggling with that, kind of just said, 'here's what I do, can you all tell me what I can do' which was really good. I think we got more out of that because we were all there just as individuals.

This confirms the importance of students and teachers supporting each other in developing their practice, as was the case for the original team in their co-operative inquiry (Summers and Turner 2011). As Effie said, 'it really made my PGCE' and encouraged her to go on to a Master's in Education for Sustainability. She now introduces it in her teaching by including articles on sustainability when covering study skills or encouraging debate and when teaching about mass media in social sciences, she has encouraged discussion about aid and media's representation of Africa, to encourage a global perspective. She has been pleased to see some students, who had no prior knowledge or interest, have chosen to do research projects based on sustainability.

Rising to the Challenge of Ambiguity

Alex enjoyed the challenge of introducing ESD as she has always believed in what she calls 'the grey areas of professionalism' for which there are no easy answers:

> I was familiar with that ambiguity and I suppose I like ambiguity in teaching because it always gets students looking and thinking.

Although at first she found students were surprised at the introduction to ESD, this is now less apparent. Alex considers 'teaching is a work of heart and you've always got to care' and it is important to keep emphasizing why ESD matters. She recognises the need to encourage change as a teacher:

> Attitude changes only occur if you've actually been able to weigh up the pros and cons, which is partly why I do that in teaching. I allow them the latitude to go up one way, then go up the other and then come to some sort of resolution because that's how you can deal with conflict.

Elizabeth recognises the need for good stewardship of the earth, but is reluctant to impose this on others as 'it's one thing to share that with somebody, but to actually make it part of a taught programme is tricky'. She feels moving away from the 'purely ecological and environmental' into the 'other realities of being humans on the planet, has made it easier to engage with'. In the last five years, she feels education's role in sustainable development has become clearer and more mainstream.

Nevertheless, as with Jickling's (1992) concern about indoctrination, she is aware of potential dangers:

> Without a questioning and enquiring approach patterns of behaviour can quickly become entrenched and thoughtless – dogmatic, even.

When Harry reflected on his current commitment, he posed the question, 'how do we know we've actually committed to it' or if 'we're just complying'. He thought a good test for him was that 'if they said you don't have to do the SD teaching anymore, I think I'd still like to do it'.

These examples suggest Sterling's (2011, p.25) second order of change, moving towards being reformative, encouraging students to start challenging their beliefs and assumptions and 'doing better things'. The potential to move on to the third level of learning and an anticipative, as well as a transformative approach, has been considered by Elizabeth:

> I did toy with the idea of seeing whether we could actually re-write the whole [PGCE/Cert Ed] … based on sustainable development … it would include ESD, but as a programme it is actually modelled in its behaviour … because if we were going to be truly radical we shouldn't be teaching people to teach subjects, the train of thought seems to be heading in the direction of 'we will stop teaching subjects and actually we need to be developing citizenship and survival and flexibility and all of these other sorts of personal attributes'.

The focus of the programme would be:

> you are training people, you are teaching people, you're working with people who are going to be working in jobs that at the moment don't even exist.

As she recognises, this would completely change the perception of what a PGCE/Cert Ed is trying to do. It would be preparing teachers for 'a future that we don't know yet. Not for sustaining a future that we already possess.' This could potentially be radical, anticipative and transformative. As Effie states:

> I am passionate about ESD, but the more I learn, the more I realise that the spectrum is so vast!! Becoming an agent for change is vital.

Box 11.2:

Consider how you can become an agent for change and encourage this in your students as they move into employment. What support can you access, who can your work with, what will be your first steps? Reflect on possible approaches you might use to research such developments.

Conclusion

As can be seen, the effects on students and tutors of the embedding of ESD in our PGCE/Cert Ed have varied in degrees from compliance to commitment. There is some evidence of Sterling's (2011, p.25) first-order learning and change in those who were conformative and simply complied in order to 'do things better' and meet the PGCE/Cert Ed requirements.

There is more evidence of Sterling's (2011) second-order learning and change in those starting to examine and challenge their assumptions and 'do better things'. Most of the students have continued to include ESD following their PGCE/Cert Ed and some are developing this further as they have become more familiar with the agenda since completing the programme.

Although a few reactions from students were initially negative and non-committal, the main response has been positive and now the majority of students are unsurprised to have ESD included in a PGCE/Cert Ed. All the partnership tutors have continued to develop their knowledge and understanding of ESD in order to support their students in meeting the outcome, as well as making efforts to make additional links throughout the programme.

There are glimmers of Sterling's (2011) third-level change, as some of the tutors and students are beginning to 'see things differently' which could lead to the transformative and anticipative approach required. This suggests there is the potential to encourage a 'politicised critical pedagogy' (Avis and Bathmaker 2004, p.15), which could provide the more realistic approach to ESD which Huckle (2012) requires.

The introduction of ESD has encouraged teacher educators and student teachers to develop as a 'community of practice' enabling them to make the connections between ESD, their subject specialisms and their students' lives and experiences, thereby encouraging the hope and sense of purpose needed for learning (Stevenson 2006). This will support the development

of both the teacher educators and student teachers as 'engaged public intellectuals' and 'agents of change' (Martin et al. 2007, p.359) with the potential of encouraging this in the students of the student teachers too.

From initial compliance to commitment, it is clear that seeds of change have been sown within our programmes. As the original team found and Sterling (2011) confirms, there are many obstacles to overcome in striving to encourage second, let alone third-order learning and change. However, the second-order learning achieved in this project is a good step forward and in a highly regulated, intense and short programme like the PGCE/Cert Ed, it may be a more realistic goal than the radical shift of world view which is required for third-order change. It is important for us to continue developing our practice to consolidate the second-order learning and change that has been evidenced. By continuing to be agents for change, this may be the stepping stone necessary to encourage a move towards 'future oriented models of teaching and learning' (Sterling 2011, p.30). It is this which could encourage the transformation necessary to prepare student teachers for the unknown challenges in a sustainable future.

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PART IV

Respecting Our Roots Whilst Developing New Branches

CHAPTER 12

Grandfather's Axe: Embracing Change While Maintaining Values in Curriculum Development

Sue Webster and Simon Webster

Introduction

Over the last 15 years, there have been changes in expectations and practices around technology, policy, inspection frameworks, professional identity and professional formation in the further education and skills (FE&S) sector, all of which have challenged values for teacher educators as well as for student teachers. Looking back over what has changed and what has been maintained in the Postgraduate Certificate in Education and Certificate in Education (PGCE/Cert Ed) programmes provided at Plymouth University and its partnership of further education (FE) colleges in South West England, it is possible to identify some essential qualities and values that underpin success and resilience in these programmes. Changes in terminology, content and structure of such programmes may all have an impact in terms of how the characteristic features are perceived, but to what extent have these changes challenged the values within the PGCE/CertEd and the practice of those who provide the experience of teacher education and training? As we practitioners, yet again, reposition our role and ourselves as providers of initial and continuing teacher education and training, how do our core values sustain us as we act in the world?

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Setting the Scene

In 2001, two years into the life of the then new Labour government in the UK, employer-led occupational standards for FE lecturers were introduced by the national training organisation (GOV 2012a). This was a sea change for practitioners in FE who had traditionally come into the sector from a variety of backgrounds. Some practitioners in FE were trained as secondary or primary school teachers, whilst others came having industry backgrounds with, perhaps, no formal training or qualifications at all. Therefore, in this complex and inconsistent arena of practice, a new framework of Professional Standards was devised to underpin newly accredited awards for FE teachers, as well as professional development activities, and also to support organisations in improving quality in 'recruitment, appraisal and the identification of training needs' (FENTO 2001, online). Intriguingly they also provided the first, clearly articulated values for the sector, namely reflective practice and scholarship; collegiality and collaboration; centrality of learning and learner autonomy; entitlement, equality and inclusiveness. Of course these were not necessarily reflective of the values that practitioners held for themselves (at this point you may wish to reflect on your responses to Box 12.1). Unfortunately, the values read almost like instructions to be followed rather than to be upheld and indeed, by tying them into FENTO's Professional Standards, they became measurable elements and were therefore presented as being 'required to perform effectively as an FE teacher' (FENTO 1999, online).

Making teachers more accountable to external agencies through sets of standards was a key element of the government's 'New Professionalism' project that focused on competences rather than values, preparing the way for a profound change from initial teacher education to initial teacher training (Patrick et al. 2003). Following the 'Lingfield Report' (GOV 2012a), it was no longer a requirement to have a professional qualification or recognised teacher status to teach in the FE&S sector (Samson 2010)

Box 12.1:

- Can you identify your own 'core values' in relation to teaching and learning?
- In which ways do your core values influence your practice?
- In what ways do the values of colleagues and students impact on your practice?
- If you have taught for some time, have your values changed?
- How many of your colleagues do you think share your values?

and in 2014 the current Professional Standards emerged that moved even further away from 'requirements', and 'commitments', although this time inviting a critical engagement:

> Teachers and trainers are reflective and enquiring practitioners who think critically about their own educational assumptions, values and practice in the context of a changing contemporary and educational world. (The Education and Training Foundation 2014, online)

Now, three years on from Lingfield, this chapter presents an exposition of the personal and professional values that are the basis for initial teacher education and training offered by the Plymouth University Partnership. Furthermore, it explores to what extent these have helped sustain, sometimes re-establish, and develop good and excellent teaching practice for the sector. Given that these values have derived through practices, by practitioners, they could be seen to underpin any set of professional standards said to represent practice in the sector.

Underpinning Values and the Problem of Definition

Discussion around the nature and meaning of the term 'values' is a consistent theme of educational and philosophical debate. Snyder (1967, p.437) suggests that values have been seen as representative of 'ideals or goals that people in a society strive to achieve'. However, he warns that in complex, diverse and multicultural societies there will inevitably be contradictions and conflict. These then require education to maintain a wider view and to rise above what he calls the 'parochialism of the immediate'. Ultimately, he calls for education to instruct the next generations so that they gain the 'autonomy to transcend pure tradition and … make meaningful decisions' (Snyder 1967, p.443).

Box 12.2:

Before going on it might be worth reflecting further on Synder's Some points for further reflection. He argues that values themselves contribute to the selection of the means by which they are themselves upheld and might therefore be self-supporting. Think carefully about that. How far do you think your selection of personal values in Box 12.1 has been upheld by your own learning experiences at school and college? Or do your values stem from other sources, such as your cultural background or family? How far would your personal values in teaching allow your students to 'transcend pure tradition'?

(*continued*)

Box 12.2: (continued)

Oancea (2012) proposes that 'the nature, aims and values of education [include] issues of autonomy, self-determination, and well-being' (p.67). Therefore, an argument is being made for education playing a central role in the process of creating a society that values values. If education, as a whole, could be asked 'Whose values, and what values, should be propagated?' should the response be 'Mine'?

Within the climate of 'new professionalism', attention has focused on values of society being closely aligned to the regulation and directives required for what is considered to be good management and performance (Storey 2007). Storey reports that although it was found there were examples of congruence between productivity and performance as underlying drivers of professional practice for teachers, there were also examples where this had been felt to be insufficient as a measure of the quality of the learning and teaching. He notes that this critical view is also shared in the wider education research literature, resulting in an 'erosion of creativity and professionalism' (Storey 2007 p.253) caused by a limited and limiting view of educational practices; beyond productivity and performance lie values.

Recognition of the significance of values for educational practitioners continues. Contemporary debate in education increasingly calls on all those involved to reconceptualise the key issues by looking at education and its values differently. This could shift from a tight focus on managerial or economic concerns to a renewed focus 'on such values as respect, trust, participation, ownership, democracy, openness, and environment', deemed to have been somehow lost along the way (Sterling 2001a, b online). Sterling sees this as the need for a cultural change in education to a:

> transformative paradigm which values, sustains and realises human potential in relation to the need to attain and sustain social, economic and ecological wellbeing, recognising that they must be part of the same dynamic. (Sterling 2001a, b, p.22)

The call is for economic and social imperatives to work together, with shared values and understandings, rather than being in opposition to each other. Without co-operation, those things valued culturally, globally and educationally—the ecological environment, social cohesion, economic sustainability—will be under threat. Without holistic understanding of the

discourses of our time, we threaten the core values in education, and specifically in Education for Sustainable Development (ESD). Box 12.3 looks at these points in more detail.

Box 12.3:

Thinking about Core Values. Read through the following UNESCO (2005) core values for ESD:

- Respect for the dignity and human rights of all people throughout the world and a commitment to social and economic justice for all;
- Respect for the human rights of future generations and a commitment to intergenerational responsibility;
- Respect and care for the greater community of life in all its diversity which involves the protection and restoration of the Earth's ecosystems;
- Respect for cultural diversity and a commitment to build locally and globally a culture of tolerance, non-violence and peace.

You might find them hard to disagree with, but how far is each one addressed in your own teaching?

Could you devise ways in the taught curriculum whereby you could promote them further?

Think back to your list of personal values from Box 12.1. Can you see any connection or similarity? If so, in which areas?

Reading through the UNESCO list of values, the emphasis on respect is apparent. However, there is a potential tension here between, on the one hand, the values that promote liberal, critical education and, on the other, respect for tradition and culture in increasingly pluralistic and multi-ethnic societies. Conflict is of course not inevitable and may only arise when personal values of respect compete with diverse cultural practices that may represent intolerance and even violence. In situations such as these, the professional values would perhaps take primacy over policy or other external drivers. To return to the metaphor of Grandfather's axe, the relationship between policy and professionalism could be described as being a combination of the head and handle, each needing to be joined with the other to help form the right tool for the job. As further change will occur over time, it is values that underpin, form and inform practice, retaining the essence that is Grandfather's axe.

The Development of Values

Reflecting on the values promoted by the PGCE/Cert Ed offered through the Plymouth University Partnership over the last few years, several threads appear and come together as tenets that we have stood by. Repeatedly, in programme documentation, certain themes emerge: well-being—social, economic, environmental and personal; professionalism; reflective practice; pedagogical knowledge; having an impact on learners and the learning experience; and critical reflexivity.

However, a more radical view of the underpinning values might look like:

1. Curiosity
2. Courage
3. Creativity

These are meant to be positive and forward looking, yet to realise them over time suggests a fourth value of:

4. Commitment

Each is discussed below.

Curiosity

The programme is a generic teaching qualification with students already having subject specialist knowledge that is appropriate to the FE sector. Although they have all experienced educational processes from a young age, few of the students have even studied education as a unit or module in their previous courses. Some students have qualifications that are relevant to the field of education, such as sociology, psychology and, of growing relevance in recent years, business (Hayes and Wynyard 2002), but these students are in the minority. The students are studying education at a higher education level and, with most entering these studies without a formal grounding in the subject, this can be challenging. The programme of study recognises this and tries to turn it into a strength.

The subject specialisms and life experiences the students bring with them are mixed but form the basis of valuable discussions. They share experiences of both their own education and their experiences from teaching placements. This enables the students to understand the content of the course from a variety of perspectives, rather than simply from their own. The programme's 'generic qualification with multiple disciplines' approach does

not encourage a simple intradisciplinary approach, over time it helps the students build a curiosity for, and an appreciation of, difference and facilitates opportunities for multidisciplinary, cross-disciplinary, interdisciplinary and transdisciplinary approaches to teaching (Stember 1991). For example, notions of scientific methods put forward by the physicist Richard Feynman are of enormous interest and worth to student art teachers because it provides them with new and alternative ways of engaging their learners with approaches to hypothesis forming, experimentation and learning through experience (Feynman 2015). By encouraging curiosity and inquisitiveness for the world around them, and by developing empathy for other disciplines, the programme hopes to open up the minds of our students to new opportunities for the development of their subject pedagogy. We are trying to provide what Sir Ken Robinson (2008, online) calls an 'aesthetic experience' (2008, online), one that excites and animates the students.

Curiosity is fostered in a number of other ways, throughout the programme. Students are asked to reflect on practice and to theorise their teaching (Schön 1984; Brookfield 1995). All of the module assignments are investigations of the students' own teaching practices, from their classroom pedagogy through to curriculum design, and the ways that teachers interact with internal departments and external agencies. Students quickly build a complex contextualisation of their practice. We encourage our students to research the history of their subject pedagogy so that they understand trends and trajectories relevant to their own developing professional knowledge (Timperely 2011). We try to develop practitioners who are not 'technicians' (Ball 1995) who deliver predefined packages of education but are 'intellectuals' who are widely informed and able to make conceptual links concerning the interrelationships between individuals, their education and wider social structures (Jarvis and Parker 2007).

By valuing curiosity, we hope to create a learning environment where the students feel engaged, rather than alienated (Mann 2001), where they see the world around them as one that is full of opportunity, where they feel empowered and positive, ready to tackle the challenges that lie ahead of them. These are characteristics that we also hope they pass onto their learners as they create their future (Sterling 2001a, b).

Courage

In a revision of their grading criteria in 2012, Ofsted reclassified 'satisfactory' education as 'requires improvement' (GOV 2012b). Their aim was to attain the highest possible standards, rather than aiming for the minimum

standard of acceptable performance. There is a degree of performativity and surveillance attached to Ofsted's inspection regime and the effects that it has on those being inspected. Ball (2003, p.216) explains performativity as:

> a technology, a culture and a mode of regulation that employs judgements, comparisons and displays as means of incentive, control, attrition and change based on rewards and sanctions (both material and symbolic). The performances (of individual subjects or organizations) serve as measures of productivity or output, or displays of 'quality', or 'moments' of promotion or inspection. As such they stand for, encapsulate or represent the worth, quality or value of an individual or organization within a field of judgement.

This construction of performativity closely parallels the ways that the PGCE/Cert Ed programme pushes students to be the best they can be, and to evidence this process of 'becoming' a teacher (Rogers 2004). However, our approach has a strong values base, rather than a mere performative production of evidence. As Palmer (2007) suggests, to be able to teach the teacher needs courage. For student teachers, the challenge is to understand educational policy and theory, gain mastery of the full roles and responsibilities of a teacher in the FE sector, establish a professional identity and to do all of this whilst under close scrutiny.

Student teachers on the programme get to experience the whole academic year in their placement. They are expected to attend placement from the start of the academic year, meeting many new learners, with all their hopes, expectations and anxieties, as they cross the threshold of their new college for the first time. To help the student teachers gain confidence in their new professional identity, the programme supports their learning experience in a number of ways. Perhaps the most important of these is that every student is assigned a personal tutor from the programme teaching team and a trained mentor to help guide their practice at their placement. Confidence gained through authentic engagement with experienced practitioners helps the student to want to move forward. Courage is developed through the student feeling they are part of a team, standing shoulder-to-shoulder with allies, drawing strength from those around them. Palmer (2007) recognises, even in experienced teachers, there can be fear induced by a sense of failure if things do not go well in the classroom. Similarly, Hargreaves (1994) identifies feelings of guilt associated with teaching contexts. Both of these strong and challenging feelings are derived from values-based practice.

In terms of sustainability, it is vitally important to scaffold the learning of the student teachers in the early months of the course. They are being pushed to be the best they can be in an environment that can be disorienting and stressful. They are being asked to confront (and sometimes deconstruct) who they are, and to knowingly, and publicly, develop many facets of their being-in-the-world. They are going through a rite of passage (van Gennep 1960), or what Turner (1967) calls a period of liminality. As they are making this transition from one state into another, there is a danger of depression, disillusionment or hostility (Fisher 1999). Apart from the economic loss to the student and the course, there are matters of social sustainability to consider as relationships within a community will have been formed between the student teacher, their learners, the mentor and the programme lecturers. Effective support can help ensure that positive outcomes occur (Hitchcock and Willard 2011).

Creativity

Creativity is a defining and complex value for those helping teachers in the development of their practice, whether in-service or pre-service. Bleakley's (2004, p.469) definition of 'creativity as problem solving', is a useful approach to take when supporting student teachers in demonstrating their understanding of professional practices. Of interest here is the way Bleakley (2004, p.469) aligns this form of creativity with the 'Protestant work ethic', where the practitioner is, firstly, expected to take part in a 'dedicated form of gathering and coagulation of life experience', through portfolio building, before 'a more technical transformative process as a re-arrangement of the known, that may provide the conditions for a shift in learning' (Bleakley 2004, p.470). This approach to portfolio building allows students to draw on the 'well' of experience, expertise, knowledge and so on gathered and evident in a professional portfolio, aligning this with the 'will' to reorder 'this often chaotic material' (Bleakley 2004, p.470).

The language of creativity has become integral to the criteria for higher-level work in the coursework element of the programme where research and investigation is expected to demonstrate 'deep and systematic engagement in/with current research to encourage innovation/creativity and improve own practice'. Similarly, for 'outstanding' grades in placement practice, students are required to show creativity in the negotiation of learning goals, employ and design 'creative and realistic subject specific assessment activities' and consistently 'make use of a range of creative,

innovative and motivating learning opportunities' (Plymouth University 2014, online). This desire to maintain the values of innovative practice is now also clearly supported by the new professional standards for the sector (The Education and Training Foundation 2014). The relevant standards, which comfortably mirror the criteria stated above, are:

> 4. be creative and innovative in selecting and adapting strategies to help learners to learn
>
> 16. address the mathematics and English needs of learners and work creatively to overcome individual barriers to learning

Even though the language changes, as does the way in which creativity is recognised in various areas of the programmes on offer, there is a consistent, even persistent, expectation and call to engage in creativity as thought and deed. This could be described and defined as 'creative praxis' (Goodman 2004; Belinda 2012).

Commitment

The programme tries to elicit and foster conscious and conscientious engagement in continuing professional and personal development. The students show curiosity, courage and creativity through their early engagements with the course, but the application of these values need to be sustained over time and be reapplied or translated into a range of contexts and behaviours. Summers (2010) and Summers and Turner (2011) explain the commitment that the programme has to ESD and how it has been embedded into the written and taught curriculum. Most students arrive on the course with an understanding of environmental sustainability, and some have understandings of social and economic sustainability. These understandings tend to be from a personal perspective and reflect activities that the students have personally taken part in as part of their personal life such as recycling, or that they have seen or read about such as global warming or ethical sourcing of materials. Asking students to take a lead on ESD in their professional life by getting them to embed it into their teaching practices is a major step change for them. Suddenly, their roles and responsibilities regarding ESD move from a private arena to a public one. They are expected to understand policy relating to ESD at college and both national (GOV 2013) and international levels (Intergovernmental Panel on Climate Change 2007; UNESCO 2007). Through reading suggested texts (Murray 2011; Jones et al. 2010; Stibbe 2009; Sterling 2001a, b),

but even more importantly, through sharing ideas and experiences with each other, the students quickly develop a range of competences in not only mapping and tracking ESD-related events in their practice but also creating genuine opportunities for new ESD practices. As the students develop their professional identities, and take on a more autonomous role, they develop what Murray (2011, p.142) might call 'conscious practice'. Understanding that the educative process they are leading involves more than the transmission and assessment of a particular body of knowledge is an important stage of development for a student teacher. Box 12.4 may help you consider these points a little more.

Box 12.4:

Thinking about teaching and ESD.
How might you embed ESD into your teaching practice and curriculum?
How can ESD principles be used to enhance your students' wider curricular experience?

With autonomy and increased responsibility comes the realisation that individual teachers can have a significant influence on their learners. This realisation can be daunting, but also empowering. It heightens the awareness the student teacher has of the values they are passing onto their learners. The programme offers intrinsic values that are embodied in practical, pragmatic application of those values, such as a contextualising framework for ESD (UNESCO, undated, online), and a humanistic approach to interactions with learners (Heron 2001, 2005; Rogers 1969). Having these pragmatic value applications to hand enables the student teachers to transmute their commitment into transformative practice (Taylor and Cranton 2012).

Conclusion

The future is in the hands of those involved in FE&S, not the policies. Whether it is to enact change, or maintain good practices, the core values, capabilities and capacities of lecturers and teachers are central. If ESD is at the heart of our practice, one of the ways this is expressed is through the shared values of the teacher educators seeking to maintain the effectiveness of Grandfather's axe—the technologies, policies, inspection frameworks and interpretations of our professional identities may appear to change but the values and purpose underpinning practice should be clear, well articulated and well maintained.

Through investigating and identifying the common practices that have survived or been rediscovered over the last 17 years of change and readjustment, patterns emerge of what beliefs, values and actions have been sustained. The humanistic approach to training and values-based teaching, along with an expectation of professionalism, emerges. If the aim is to facilitate the emergence of disciplined teachers who are also reflexive and critical thinkers, this can be achieved through the integration of UNESCO's (2005) core values for ESD. The values of curiosity, courage, creativity and commitment are principles that underpin the PGCE/Cert Ed programmes. If these are upheld, and sometimes refreshed, then the programmes will remain the right tool for the job whatever may change around them. UNESCO (2005) cite respect as the key value, in its various forms, and this is mirrored in the values listed here. Curiosity, courage, creativity and commitment both demand and can engender respect for and by others and our environment. In educational terms, if these values are modelled by practitioners, promoted in the programmes and embedded in curricular processes and procedures, they then become sustainable in themselves as they are renewed and rediscovered on a regular basis.

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CHAPTER 13

Health and Well-being Matters

Laura Ginesi

The first article of the Rio Summit (1992) Declaration on the Environment and Development declares "Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature" (United Nations 1992). This clearly suggests an equivocal interrelationship between health and well-being and sustainability. This chapter discusses this relationship and contemporary views of health and well-being and will consider the important role that college practitioners may have in their promotion with young people and the wider community.

Definitions of sustainability can be illusive and yet everyone has an idea of what health and well-being is and is not—even though professionals across the globe struggle to produce a single meaning that is acceptable to everybody. A successful society is one which delivers high levels of sustainable well-being for all of its citizens (New Economics Foundation 2006) but subjective well-being is about much more than physical health, feelings of happiness or even about money (Fig. 13.1). The characteristic features of

- a sense that all is well with the world,
- perception that we and those we care about are flourishing and
- a feeling of satisfaction with things that matter

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Fig. 13.1 A 5S model that highlights the complex webs of well-being (based on Prilleltensky and Prilleltensky 2012)

depend on a complex, non-linear relationship between social, cultural and economic matters that is not easily unravelled.

Although they are sometimes used interchangeably, the terms "health", "well-being", "quality of life" and "happiness" are remarkably difficult to define, disentangle or explain. Life expectancy, although rising, varies widely across the globe as do life satisfaction levels. People who live in some of the world's richest countries do not have the highest levels of either happiness or subjective well-being. In sharp contrast are findings that those who live in economically deprived communities do not feel ill-being and report high levels of subjective well-being. Nevertheless, health and well-being both include aspects of physical, emotional and social functioning whether in the home, the workplace, an educational setting or the wider world of national policy.

Sites of Health and Well-being

Health is a powerful state (Gorin 1998) that undoubtedly makes each individual think about their own beliefs and attitude towards health and health behaviours, for example, their eating patterns, recreational habits or the way people manage their lifestyle habits and cope with the stresses of life. A recent review highlighted that relatively few studies have focused on health-related quality of life (HRQoL) of college (Anye et al. 2013) or university (Rania et al. 2014) students but the argument presented here holds that several key determinants of health and well-being contribute to the life of any vibrant college community. Unpacking the web of factors that contribute to individual and community well-being—from physical aspects of student health and/or safety, health literacy (Rowlands et al. 2014) to social functions such as motivation for learning and classroom behaviour, communication across the

institution or health and safety provision—has the potential to help practitioners in college settings to develop innovative collaborative solutions that move theory into practice. Learning about the various signs and sources of health and well-being offers educators the opportunity for exploration and discussion of what young adult learners may know or misunderstand about key aspects of their own well-being or global trends in health. Psychological and cognitive aspects of health and well-being relate to self-esteem, learning outcomes and academic performance as well as individual emotional and relational lives. Furthermore, increasing numbers of people are finding themselves trying to cope with the impact of long-term health conditions within the home so the need to ensure that people, including students, live and work in safe and strong communities becomes increasingly important (Black 2008). Subjective well-being (Allen, Carrick-Sen and Martin 2013) thus contributes to positive aspects of college life, such as motivation for learning, happiness and life satisfaction. Through active learning activities, learners can be encouraged to problem-solving and devise strategies that may impact on their own long-term health, resilience, life satisfaction and on the dynamic well-being of the college.

Signs of Health and Well-being

The origins of today's health policies recall the early days of the post-war period. Almost 60 years ago, the World Health Organization (WHO) offered a concept of health, which formalised the idea that health is an essential resource and a fundamental human right. Defining health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO 1946) was a positive step that helped health professionals to explore ways in which the various components that contribute to health fit into wider cross-cultural contexts. Some people seemed to be fortunate with health coming apparently effortlessly, while others struggled to survive. Nature and geography can make health a continual contest to stave off ill-health but modern medicine was providing a helping hand.

In the UK, the Health Protection Agency (HPA) was established to protect the population from infectious disease and prevent risk of injury and hazard (see Table 13.1) but sustaining good health continued to present some formidable challenges in the latter part of the twentieth century. Preventing harm and reducing impacts when hazards include infec-

Table 13.1 Example priorities for healthier individuals and communities

Health Protection	*Preventative Services*	*Health Promotion*
Unintentional injuries	Maternal disease and infant health	Smoking cessation
Occupational safety and health	Cancer	Nutrition
Environmental health	Heart disease	Alcohol and other substances
Radiation protection	Stroke	Mental health
Oral health	Chronic conditions e.g. diabetes, obesity	Violent behaviour
	Sexually transmitted diseases	Education-based programmes
	HIV/AIDS	

tious disease(s), chemicals, poisons or radiation occurrences play a part in the health status of individuals and communities but this focus tends to suggest that health is a purely biological state that can be averted.

The earliest health outcome goals were to increase the normal span of life for individuals, but freedom from disease and infirmity suggested a more integrated balance between the various elements that contribute to physical wellness, mental health and social well-being. The range of technologies, interventions and medications available increased dramatically. The twenty-first century thus offers hope where prospects of longevity were previously bleak (Table 13.1). More recent policy initiatives continue to shape the health of the population, for example, compulsory seat belts, smoke-free public places and regulation of embryo and stem cell research.

Cultural influences add to the complexity of conceptualisation of health and well-being; culture profoundly influences people's beliefs, values and lifestyle customs and habits while a sense of social justice also tends to bring a feeling of concern about inequalities in health outcomes and well-being. The Marmot review (2010) highlighted that people with higher socio-economic position in society possess better health, wider life chances and more opportunities to flourish. Colleges are generally in an excellent position to demonstrate an active contribution to challenge existing health and social conditions thus reducing health inequalities. Nevertheless, the United Nations Millennium Development Goals and subsequent Sustainable Development Goals continue to commit world leaders to achieve specific targets and indicators to combat poverty, hunger, disease, health inequalities, illiteracy, environmental degradation and discrimination.

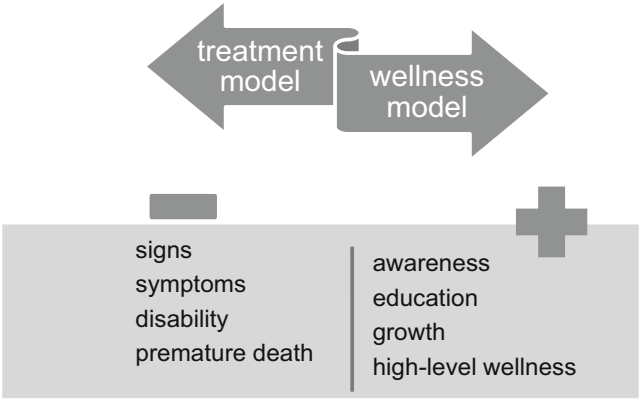

Fig. 13.2 The wellness–illness coninuum. This was introduced to support conceptualisation of progressively improving or gradually deteriorating states of health and well-being

The wellness model (see Fig. 13.2) was introduced in reaction to a preoccupation with illness; it highlights the ways in which cause and effects in life—as in health—tend to merge into connections between individuals and their inner and outer worlds. Health, therefore, was not viewed as a static condition but as dynamic continuum in which the potential for change and improved health is/was always present (Anspaugh et al. 1994). Disease (*dis-ease*) was defined using a multifactorial, ecological perspective; a failure of an individual's ability to sustain homeostasis and adapt in a way that could counteract daily stimuli and stressors. Adopting this approach helped to develop a better understanding of the various components that contribute to health, well-being and quality of life. The challenge was to determine whether health and disease are mutually exclusive.

Disease originates from biomedical approaches but health *promotion* emphasises the gradual shift towards better health at all stages of the lifespan. Promoting health and well-being, which offers many opportunities for students to take action, is generally considered to be concerned with positive strategy and approaches through which individuals can influence their own health (and that of their family, wider circle and community) so early outcome goals were to increase the span of life and improve quality of life for people through:

- Passive strategies which involve individuals and populations as inactive recipients, for example, public health measures to maintain clean water supplies and sanitation systems to reduce incidence of infectious disease.
- Active strategies which depend on individuals taking personal responsibility for their health and well-being, for example, adopting lifestyle changes to incorporate daily exercise or reducing intake of salt or fats (see Fig. 13.2).

Mental health was later defined as a state of well-being in which everyone "realises their potential, copes with life stresses, works productively, and contributes to the community" (WHO 2011). These statements reflect aspects of the synergy and interrelationship between health, well-being and quality of life.

Physical Aspects of Health and Well-being

Patterns of well-being vary across the world and are affected by culture, experience, knowledge and personality (Helliwell and Barrington-Leigh 2010). New evidence on genetic influences and the short- and long-term impact of material deprivation during pregnancy and early infancy on health trajectories along the entire life course is becoming available and is contributing to improved understanding of socio-economic gradients of health and disease.

Young people's health and well-being within the college setting will undoubtedly be affected by sedentary behaviour since the average UK adult spends 60–75 % of their time sitting down. No matter whether they may be sitting at a desk, watching TV or playing video games, prolonged inactivity is associated with increased risk of diabetes, cancer, heart disease and premature death (Dept. of Health 2011). Encouraging students to take positive steps to make healthier lifestyle choices can reduce their risk of long-term chronic conditions that reduce longevity such as coronary heart disease (CHD), hypertension, obesity and type 2 diabetes. Although the potential health gains are significant, changing health behaviours amongst young adults presents a challenge for educators but strategies such as motivational interviewing, coaching and peer education have been found to be particularly effective.

Problem-based and discovery learning both offer opportunities to promote interest for learners encourage engagement with complex subject

matter such as lifestyle and health. Screening programmes clearly indicate that malnutrition—both underweight and overweight/obesity—often goes undetected in the UK. Surveys reveal that, when given a choice, nearly half of young adults would opt for energy-dense foods such as burgers and drinks that are high in simple sugars. Whether this situation has arisen because of a lack of nutritional awareness, student habit, or simply availability in educational institutions and high streets is a debatable point. However, all could be topics for investigation by young people themselves, for example, group work or individual projects. Since the least popular options for students appear to be foods that are rich in vitamins, minerals and fibre, that is, fruit, fruit juice, salads and vegetables, students could devise solutions, for example, recommendations that restrict choices to more healthy options or using incentives to increase their appeal (Fig. 13.3).

Box 13.1: Pause for Thought.

How healthy are you today? What do you imagine when you think about your own health? What level of health would you like to achieve? What kind of old age would you like to plan for? What steps could you take to improve your health?

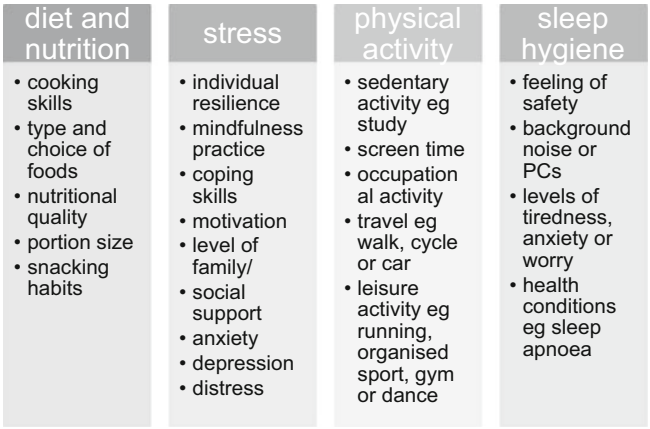

Fig. 13.3 Some of the lifestyle factors that contribute to individual health

Interconnections between the built environment can be complex but students could examine why and how "housing-environment" interrelationships may impact both positively and negatively on well-being, for example, for elderly people or those with disabilities. Doing this could encourage critical evaluation of current situation(s) and proposed solutions, for example, doors and access points, fuel poverty, carbon or water footprints and flood preparedness. Classroom-based formative exercises require students to practise effective team working and thinking skills centred on the application and demonstration of critical reflection and creativity and innovation.

Box 13.2: Pause for Thought.

Collaborative projects amongst groups of students may offer solutions that can develop strategy to benefit the health and well-being of the whole community.

Trigger question: Is it time to change our sedentary habits?
Consider the ways in which physical inactivity might have an effect on

- Your family
- College environment
- Business environment
- Local communities
- The public purse

Devise a health-promotion campaign that encourages a target group of people to become more physically active.

Cognitive and Emotional Well-being

Are happiness and subjective well-being the same thing? Two perspectives have given rise to different research focuses that contribute to the knowledge base. The eudemonic theorists (see Fig. 13.4) assert that happiness and subjective well-being are distinct constructs because not all sources of pleasure promote health, self-determination or well-being, for example, drug or gambling addictions.

Damaging life events, especially during the early years, can have a profound influence of health risks in adulthood and across the lifespan. Every child and young person deserves the best start in life that will foster a

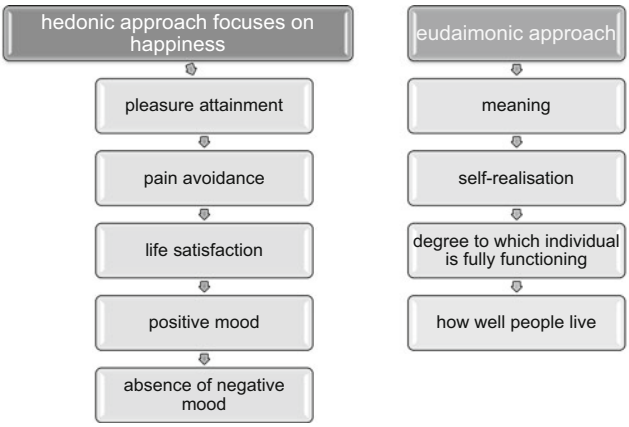

Fig. 13.4 Summary of different research approaches to happiness and subjective well-being

sense of control and self-efficacy, maximise his/her capability for learning and future employment, and encourage their contribution to a healthy community.

To a large extent, health beliefs and values are transmitted to adolescents and young adults through socialisation and normal practices, so a useful mnemonic for promoting dialogue around well-being is HEADSSS (Upton 2010):

- **Home**—living circumstances, parental influences, hosing context
- **Education**—college peers, goals, achievement
- **Activities**—friends, leisure, recreational, spiritual/religious
- **Drugs**—use, curiosity, misuse (alcohol, tobacco, street drugs)
- **Suicide and stress**—isolation, withdrawal, mood and emotion, body image, psychological history, bullying
- **Sex**—curiosity, orientation, partners, exposure to sexually transmitted infections (STI), pregnancy
- **Safety**—abuse, fighting, weapons, protective gear and skills, home, college, neighbourhood

A sense of belonging—to a crowd, a gang, a family, a couple or a specific group—is often a means for young people to explore and develop new roles and relationships with a set of common rules and norms can be expected to

cause stress that is different from academic challenges but which may impact on individual achievement. Western society is orientated to "looking better", "feeling better", "being sexier", and the influence of celebrity is hard to ignore. When all of these challenges arrive at the same time, the stress on students can be compounded; establishing an open dialogue within the college community is essential for promotion of well-being amongst students who may be feeling fearful about the transition to college life and adulthood.

On the one hand, there is a need to promote safe discussion of underlying reasons why people may be anxious, depressed or afraid, adopt unhealthy coping strategies, for example, alcohol or drug misuse, gambling or promiscuity, or become violent and abusive but this is matched by the equally important provision of evidence-based resources and skills. Clarity about who or where help and support is available, for example, college nurse, counselling, learning support, is essential. It is not unusual for young adults to be grappling with abstract constructs that they may never previously have thought about and which challenge the status quo. Although each individual may pass through these stages at different rates, the college environment can promote discussion of moral and ethical issues, for example, is war ever justified? Are the wealthy obligated to care for those who are poor? Does playing violent video games increase violent/aggressive behaviour?

Until adolescence, young people are very dependent on parents and other responsible adults in their circle, although often still economically dependent. However, the college environment tends to promote new roles; young people become more mobile and spend less time with their family so it is not unusual for family crises concerning rules, academic performance, religion, privacy and choice of career to develop, sometimes with heated conflict. Verbal, behavioural and other clues can indicate that a student may not be coping well and that well-being as well as learning is compromised. The student may exhibit signs of changing weight or eating patterns, altered sleep patterns, loss of energy and enthusiasm for usual activities, drop in academic performance, disengagement/resignation from student groups. Mortality amongst 16–25-year-olds is high; fluctuating self-esteem, a sense of invulnerability, feelings of anxiety and depression, poverty versus economic privilege mean that young adults who feel nurtured and valued are more likely to emerge unscathed.

The challenge for educators generally and specifically in colleges, therefore, is to try to ensure provision of a safe, supportive learning environment in which training and education enhances coping mechanisms and promotes skills that improve resilience in the face of stress and adversity.

Doing this not only supports students while they are passing through an important life transition that prepares them for higher education or for employment but which has the potential to help prepare them for an adult role in creation and development of sustainable communities in an uncertain world. Educational processes can build resilience through focus on planning, managing anxiety over deadlines and achieving long-term goals. People also learn to model professional behaviour(s) and leadership skills. Encouraging reflective practice can help to build social capital and enhance learning through acknowledgment of stress, discussion of work–life balance and workplace cultures, for example, time limits and expectations

Box 13.3: Pause for thought again.

When working with young people in college sessions, an interesting approach in tutorials may be to discuss the following headings in relation to peer pressure.

- Deciding how you really feel about the situation
- Standing up for your opinion
- Not making excuses or apologies for your position. Simply assert your opinion and repeat if necessary
- Say No! Say it over and over again if you need to
- Recruiting a "buddy" to support your position.

Through discussion and reflection, students can be encouraged to at least recognise peer pressure and that there are strategies that they can adopt to help them cope in situations where they feel uneasy or unhappy with events.

Lifestyle change that improves well-being is rarely achieved in a single leap. Applying health education models such as the transtheoretical model (Prochaska et al. 2008) can enhance well-being amongst young people because it highlights the various stages of behavioural change (Fig. 13.4). With student populations, it may be more effective to provide options, consistent, relevant messages and guide decision-making to create action plans that can be regularly reviewed. However, there is also a need to take account of social and cultural barriers when devising appropriate classroom tasks or workshops; for example, lower socio-economic groups may have higher levels of addictive behaviours and there is always a need for cultural sensitivity and language difficulty (Fig. 13.5).

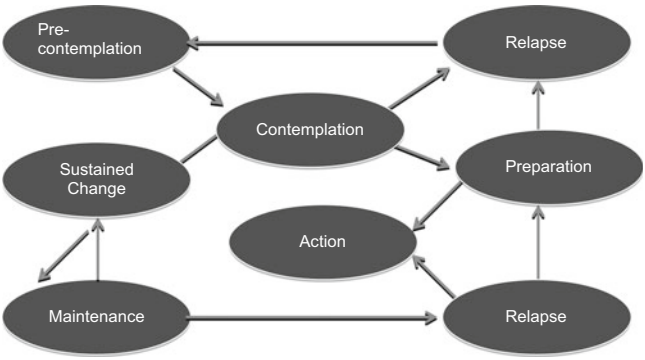

Fig. 13.5 Stage-based model of behaviour change describes the way on which people determine how their actions affect their lives and well-being.

National Measures of Well-being

All over the world, individuals, organisations and countries are measuring well-being in ways that could not have been imagined in the twentieth century. Since 1970, the UK's GDP has doubled, but people's satisfaction with life changed very little and evidence suggested that 80 % of the population believed that the government should prioritise the creation of happiness rather than the creation of wealth. However, the Office of National Statistics has been measuring people's well-being since 2011. Following national consultation events, four key questions were developed:

- How satisfied are people with their lives overall?
- To what extent do people feel the things they do in their lives are worthwhile?
- How happy have people been feeling?
- How anxious they have been feeling?

The average ratings on all of these measures have improved every year since then, driving exploration between subjective well-being and material conditions with the aim of developing strategies that will enable findings to inform economic progress and be incorporated into policy. On a global scale, a growing body of epidemiological and other evidence suggests that improved health and well-being may be be one of our greatest achievements and so the United Nations have recently announced their boldest goal—to eradicate extreme poverty for all people everywhere by 2030.

Box 13.4: Ideas for student activities.

The Happy Planet Index (HPI) was designed by the New Economics Foundation to measure ecological efficiency with which populations achieve long and happy lives. A tiny Pacific State, Vanuatu, came top in 2006. Is eradication of extreme poverty an impossible dream?

Student exploration could compare and contrast lifestyle habits of pacific islanders with those of UK citizens. What data would they collect? What conclusions can students draw? How could they determine the validity of their conclusions?

The field is still in a developmental stage; lots of ideas and emerging data are helping to support the understanding of what well-being actually means, but as yet there is no single theory which encapsulates it (Diener 2009a, b). If the focus on well-being is to be taken seriously—rather than perceived as a "fad"—then individuals, families and organisations could be transformed through commitment to values that embrace learning about social capital. In further education, these concepts could be employed with the aim of transforming college communities in ways that enhance learning for the future. While the concept of well-being seems set to remain subject to debate and discourse, community and "grassroots" activity that promote multidisciplinary, collaborative learning between students, educational professionals, lay populations, health care teams and the wider world of business and political stakeholders will be necessary. Research and practice into this complex but emerging field could be viewed as a form of "productivism" based on service to the community and investment in social capital with the aim of strengthening learners' ability to cope, achieve and improve collective well-being in a sustainable manner.

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Further Reading and Useful Resources

Ed Diener—a primer for reporters and newcomers http://internal.psychology.illinois.edu/~ediener/faq.html#measure

Has Q & A approach to exploring happiness and subjective well-being.

Gapminder—http://www.gapminder.org

Has teacher guides that make suggestions about how to discuss life expectancy and global development.

Health Literacy—http://www.healthliteracy.org.uk

Health literacy is a social determinant of health and at least one in five adults has problems with basic skills. Ideas for promoting change through access to better information and care.

Institute of Health Equity—http://www.instituteofhealthequity.org

The Institute is supported by the Department of Health, University College London and the British Medical Association. It seeks to increase health equity through action on the social determinants of health.

NHS Health Check—http://www.healthcheck.nhs.uk

A collaborative programme that aims to help prevent heart disease, stroke, diabetes, kidney disease and certain types of dementia.

The King's Fund has infographics, statistics and about public health and inequalities in mental health which could be used to promote discussion of health trends and changes over time. http://www.kingsfund.org.uk/time-to-think-differently/audio-video/improving-health-nation-infographics

We Can End Poverty—http://www.un.org/millenniumgoals/

The Millennium Development Goals (MDGs) ranged from halving extreme poverty rates to halting the spread of HIV/AIDS and providing universal primary education by the target date of 2015. They formed a global blueprint agreed by the world's leading institutions.

Wellcome Trust Big Picture—http://bigpictureeducation.com

Originally published for biology teachers, this resource explores science innovations, ethical and social implications including a wide range of topics from obesity, addiction, cognition music to climate change.

CHAPTER 14

Student Voice and Its Role in Sustainability

Sasha Pleasance

Introduction

Education has the potential to be a key force for sustainable development if dialogic spaces can be created in which both students and teachers have the freedom to examine and debate challenging issues. A key proposition of transformative learning theory recognises the fundamental distinction between instrumental and communicative learning (Habermas 1971, 1984). Instrumental learning focuses on the transmission and acquisition of skills and information to do specific tasks and problem-solve. Communicative learning involves understanding the meaning of what others 'communicate concerning values, ideals, feelings, moral decisions, and such concepts as freedom, justice, love, labor, autonomy, commitment and democracy' (Mezirow 1991, p.8). There is an important distinction to be made between dialectic and dialogic discourse. In dialectic discussion, the aim is to arrive at a common understanding, whereas dialogic discussion, coined by Bakhtin (1981), 'does not resolve itself … [but] through the process of exchange people may become more aware of their own views and expand their understanding of one another' (Sennett 2013, p.19). This empathetic reappraisal of assumptions may encourage a more compassionate and understanding society and help address the five guiding principles of sustainable development identified in the UK Government's strategy document 'Securing the Future' (Department for Environment, Food and Rural Affairs 2005, p.16):

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- Living within environmental limits
- Ensuring a strong, healthy and just society
- Achieving a sustainable economy
- Promoting good governance
- Using sound science responsibly

The social justice once championed by the further education (FE) sector seems to have lost traction; the more FE is positioned as a tool for the economy. Although this may limit the potential for transformative education, particularly as neoliberal policy has positioned FE students as consumers rather than citizens, the social values founded on altruism are still widely held by many who work in FE (Randle and Brady 1997; Jephcote and Salisbury 2009). Nevertheless, as Schumacher (1997, p.208) states:

> The volume of education has increased and continues to increase, yet so do pollution, exhaustion of resources, and the dangers of ecological catastrophe. If still more education is to save us, it would have to be education of a different kind: education that takes us into the depth of things.

To do this we need to move from learning as an instrumental commodity to a transformative model in which:

> learning is understood as a process of using a prior interpretation to construe a new or revised interpretation of the meaning of one's experience in order to guide future action. (Mezirow 1996, p.162)

It is only through transformational learning that Education for Sustainable Development (ESD) can ever be realized.

Box 14.1:

Morrell and O'Connor (2002, p.xvii) suggest transformative education affects a change in perspective and identify the following characteristics of transformative learning. Consider these in relation to your practice:

- A deep structural shift in the basic premises of thought, feelings and actions
- A shift of consciousness that alters our way of being in the world

(*continued*)

Box 14.1: (continued)

- Understanding ourselves, our self-locations and our relationships with others in the world
- Understanding relations of power in interlocking structures of race, class and gender
- Envisioning alternative approaches and possibilities for social justice.

With issues such as political apathy, disillusionment, radicalization and ongoing disparities in educational achievement, transformative education could potentially play a key role in challenging the concerns which have significant ramifications for our local, national and global society. Globalization and the dominance of free-market capitalism have accelerated social and economic inequality, both within countries and internationally (Hobsbawm 2008). This, coupled with the political global ambition of global liberal democracy, heightened since 9/11, has resulted in mass human catastrophe and fear, population displacement, fear of terrorism, fear of immigration and fear of the next catastrophe. The UNHCR (2014) reports the number of displaced people as 45 million, with over half coming from Afghanistan, Somalia, Iraq, Syria and Sudan and the majority seeking refuge within their own countries. This has a significant impact on the whole world and its economic, environmental and political stability. In the UK, the prevention of radicalization, in which vulnerable young people can be manipulated or seduced by extremist views, has become part of a teacher's remit. The Prevent Strategy (Gov.UK 2011) requires teachers to address this in the classroom, where young people may have extreme views about issues such as immigration, war, religion and violence. However, a key approach of this strategy is to build strong partnerships between local police forces and schools, colleges and universities, potentially resulting in:

> intelligence gathering outsourced to teachers and other frontline service providers in a way that necessarily conflicts with their primary professional obligations and responsibilities. (Liberty 2010, p.4)

This demonstrates how such a strategy may curtail opportunities for open debate to challenge such issues. This could result in indoctrination at one extreme, although if handled well, could potentially encourage a transformational learning experience at the other.

Although political engagement is a significant issue in the UK and the decline in the turnout of young people at general elections has been a concern for many years, their turnout has increased from 51 % in 2010 (Dar 2013) to 58 % in 2015 (Fieldhouse 2015, online). Research by DEMOS (Birdwell et al. 2015) suggests young people are not defined by traditional left- and right-wing politics; instead they are concerned about the gap between rich and poor in the UK, and key issues such as affordable living costs, housing, unemployment, healthcare and cost of higher education. To increase political engagement further, Dewey's (1916) philosophy of a democratic education would prepare people for active citizenship in a participatory democracy. His philosophy is a means for social development and democratic empowerment which requires us to educate for inquiry and critical reflection about the uncertainties and challenges of living in a constantly changing world. This requires dialogic spaces in which issues affecting young people can be debated safely and honestly to develop understanding of the views of others, and challenge their own views and assumptions. This can lead to transformational learning, change in thinking and, importantly for Dewey *and* ESD, action.

However, finding spaces for such dialogue is increasingly challenged by the constraints of market-based mechanisms within the education system. To create these spaces, a different relationship is needed between students and teacherst—one of partnership and collaboration. When students' views are taken seriously by a teacher or by an organization, it is empowering; students see themselves as agents of change and see that their voice matters and can make a difference. Although recognition of the need for student views has increased, the locus of control is still with the organization and/or the teacher and rarely moves beyond tokenism. Arnstein's (1969) Ladder of Citizen Participation is a useful framework to analyse the levels of student participation in democratic processes.

Box 14.2:

Read through Arnstein's (1969) levels which range from non-participation at 1 to full-participation at 8, and the explanation that follows and then answer these questions:

- At which level do you consider the students in your organization to be?
- Is there room for improvement?
- Can you see how this could be encouraged?

(*continued*)

Box 14.2: (continued)

8. Citizen Control
7. Delegated Power
6. Partnership
5. Placation
4. Consultation
3. Informing
2. Therapy
1. Manipulation

This model conceptualizes the underlying power dynamic at each level and the semblances of participation at the mid-point of the ladder which Arnstein (1969, p.219) refers to as a 'window-dressing ritual', recognizing that like spinach, 'no one is against it in principle because it is good for you' (p.216). Without a redistribution of power, participation is tokenistic as the power holders are able to maintain the status quo. The upper rungs of the ladder metaphorically represent empowerment, where powers of decision-making are distributed to all stakeholders.

Although it is not a new concept, transformative education is a critical component of ESD. Mezirow (1978) is attributed with the evolution of transformative education which, in short, is the transformation of a person though learning. His work was influenced by Kuhn's (1962) paradigm, Habermas (1971, 1984) and his dialectical contribution to educational theory and the work of Freire in the 1970s on 'conscientization'. For a person to change, we need to create the conditions for dialogue and democracy in our learning environments: a prerequisite for the realization of ESD. As Mezirow (1998, p.197) argues:

> learning to think for oneself involves becoming critically reflective of assumptions and participating in discourse to validate beliefs, intentions, values and feelings.

He developed the concept of 'meaning perspectives' which is our overall world view developed through primary and secondary socialization and meaning perspectives change as we respond to life experiences. However, our cultural assumptions may limit our willingness, or ability, to challenge or question these perspectives. These assumptions thus become a double-edged

sword which validate our experiences on the one hand, but also constrain our experience. A meaning perspective is a frame of reference constituted by habits of mind; shaping how we perceive people, events, beliefs, experience and ourselves. Habits of mind comprise six dimensions as follows:

These habits of mind consist of smaller components such as 'sets of immediate specific expectations, beliefs, feelings, attitudes, and judgments', or meaning schemes (Mezirow 2000, p.18). A number of meaning schemes work together to generate our meaning perspective. Meaning schemes influence our point of view and are often unconscious responses to what we see, how we see it and how we react. It is because they are habitual, that they need to be examined through critical reflection, and most importantly critical self-reflection.

According to Mezirow (2000), there are four types of learning:

- elaborating existing meaning perspectives or frames of reference;
- learning new meaning perspectives or frames of reference;
- transforming habits of mind;
- transforming points of view.

Reassessment of meaning schemes and perspectives, and therefore the realization of the five guiding principles of ESD, relies on challenging assumptions, exploring alternative perspectives, transforming old ways of thinking and acting on new perspectives, all of which transformational learning can promote (Mezirow 1997).

Box 14.3:

What assumptions do you come across in your students? How do you approach this?

What could you do to expose students to alternative viewpoints and promote critical reflection on their own assumptions?

What are the potential barriers to transforming 'habits of mind' within your own practice?

Whereas instrumental learning is the acquisition of skills and knowledge, the 'how' and the 'what' of learning, transformative learning is a social process of examining meaning perspectives and schemes, whereby prior interpretations and assumptions are critically examined to form new

meaning: the 'why' of learning. Mezirow (1995, p.50) argues that transformations often follow some variations of the following phases:

- A disorienting dilemma
- A self-examination with feelings of guilt or shame
- A critical assessment of epistemic, sociocultural or psychic assumptions
- Recognition that one's discontent and the process of transformation are shared and that others have negotiated a similar change
- Exploration of options for new roles, relationships and actions
- Planning a course of action
- Acquisition of knowledge and skills for implementing one's plan
- Provision trying of new roles
- Building of competence and self-confidence in new roles and relationships
- A reintegration into one's life on the basis of conditions dictated by one's perspective

This can be simplified into four key stages of the transformation process: disorientating dilemma; critical reflection; rational discourse; action. The first stage is for us to experience something which does not fit into our pre-existing meaning structure and causes a disorientating dilemma or disjuncture, which may be epochal or incremental over time. If our experience fits into our meaning structures then we are not engaging in transformational learning.

Jarvis (2006, p.134) defines transformative education as follows:

> Human learning is the combination of processes throughout a lifetime whereby the whole person—body (genetic, physical and biological) and mind (knowledge, skills, attitudes, values, emotions, beliefs and sense)—experiences social situations, the perceived content of which is then transformed cognitively, emotively or practically (or through any combination) and integrated into the individual person's biography resulting in a continually changing (or more experienced) person.

He considers all human learning is the transformation of experience which begins with disjuncture, or a sense of not-knowing. By means of thought, emotion or action, or combination of these, meaning is given to our experience and the disjuncture is resolved. This process changes who we are as a person as it 'affects the self of the student' (Jarvis 2009, p.23).

The Education and Skills Act (2008) requires student views to be sought to fulfil accountability measures defined by Ofsted, rather than to

activate a sense of democratic agency. Research studies in student voice (Pedder and McIntyre 2006; Rudduck and McIntyre 2007; Thompson 2009) report improvements in organizations, teaching practice, teacher–student relationships, communication and learning, as a result of seeking student views on aspects of learning and educational experience. However, it gives a mixed landscape in terms of agency, with most organizations and teachers using student voice as a consultation process, restricting students' agency due to the teacher–student power relationship (Mannion 2007), as well as concerns that the consultation does not always result in responding to students' ideas (Pedder and McIntyre 2006; Whitty and Wisby 2007; Thompson 2009).

Ruddock and Fielding (2006a, b) have identified three key elements of student voice: authenticity, inclusion and power. Authenticity is essential if students are to participate fully; it should connect with their needs, aspirations and lives (Smyth 2006) and they need to feel the commitment from their teachers and organizations. Inclusion is imperative to ensure all voices are heard and avoid an 'unconsulted majority' (Pedder 2009, p.4). Clearly, within student voice there are power relations, but the issue of power also needs to be negotiated in terms of class, gender and ethnicity. For students to exercise their power to become active citizens, they need to have a sense of their personal ability, engage in dialogue and build alliances with teachers, peers and others in order to enact their voice, and agency. If this is misappropriated by management, students may feel betrayed by the process (Roberts and Nash 2009).

Box 14.4:

- Reflect on the three key elements of student voice: authenticity, inclusion and power.
- Can you identify any issues with regard to these elements and the mechanisms for student voice within your institution?
- What could be done to address the issues you have identified?

There are representative bodies of students within FE, but these are controlled by staff, thus creating a façade of delegated power and consultation designed to placate students and meet Ofsted requirements. The emphasis on curriculum consultation is employer-led, focused on job-specific skills for employment:

> Providers and employers need to collaborate to ensure that the training provided helps to reduce national skills shortages and equips students with the skills that employers are looking for. (Ofsted 2014, p.6)

These key decisions about FE are based on traditional ways of thinking about learning and education and suffer from short-termism and short-sightedness. We are educating students for an unknown future and are basing our assumptions on what they need on old epistemological foundations which are fundamentally flawed (Robinson 2009). Attempts to embed ESD into the curriculum are important, but alone cannot address the issues which ultimately require a fundamental transformation of the current education system, not reform. Education can then be freed from the constraints which shackle it to these longstanding epistemological assumptions which have given rise to the National Curriculum, standardized testing, exams and the organization of learning premised on fallacious notions of intelligence. Learning within education currently assumes psychological (cognitive) models of learning whereby learning is seen primarily as a cause and effect relationship, as an intellectual activity located in specific parts of the brain. Furthermore, Smyth (2006, p.279) suggests:

> It is no coincidence that disengagement from school by young adolescents [in most Western countries] has intensified at precisely the same time as there has been a hardening of educational policy regimes that have made schools less hospitable places for both students and teachers.

Now is not the time for complacency, opportunities for democratic involvement of student voice even at classroom level can be utilized to help young people see that current challenges in our global society are not immutable or beyond human control, and therefore become more aware of their own sense of agency. Orr (1992) developed the concept of ecological literacy which means to be literate in our practices and knowledge of the interconnectedness of life on earth:

> the disorder of ecosystems reflects a prior disorder of mind, making it a central concern to those institutions that purport to improve minds. In other words, the ecological crisis is in every way a crisis of education. (Orr 2005, p.x)

Orr (1994) argues that education has become servile to the dominant assumptions that human domination of nature is good; the growth

economy is natural; all knowledge, regardless of consequences is valuable and material progress is our right. This instrumental rationality destabilizes humanistic and democratic values and practices in education and society and legitimates a worsening of social inequities and a continuation of the industrialization of the earth. As such, we are in a crisis of sustainability.

Box 14.5:

Read the core aspects of ecological literacy (Orr 1992) summarized below, and consider embedding the skills, attitudes and knowledge needed to develop ecologically literate students. What challenges might there be in embedding these in your practice?

1. Principles of Living Systems: An understanding of the natural world, including the cyclical nature and interconnectedness of natural systems, provides a deep sense of place.
2. Design Inspired by Nature: Humans need to critically examine economic, environmental, social and cultural structures in order to transform how food, shelter, energy, materials are provided and how they seek their livelihood.
3. Systems Thinking: This acknowledges the complexities of ecological, social, economic and other systems but emphasizes the need for making links when seeking solutions to interdependent problems.
4. Ecological Paradigm and the Transition to Sustainability: A world view that sees humans as part of ecological systems is needed, in order to envision a future which reduces poverty and improves human well-being, whilst conserving the planet.
5. Collaboration, Community Building and Citizenship: Sustainability is a collaborative enterprise requiring partnerships, dialogue, negotiation and participation in decision-making to empower people to create a better society.

As Mezirow (1997) argues, transformative learning does not occur when new learning fits comfortably into our existing meaning perspectives. We need to take students out of their comfort zone to enable them to develop greater autonomy. However, Boyd (1998) differed in this respect, as he saw transformative learning as an opportunity to build greater interdependence and compassionate relationships with other people. Furthermore, as

part of the transition to sustainability, Orr's (1992) agenda ethically guides society to meet basic needs and ensure human survival. This challenges existing assumptions, as the current refugee crisis in Europe exemplifies. When discomfort is experienced it can result in anxiety and psychological defence mechanisms which may prevent new interpretations, as students default to compatible assumptions: transformation is a process which may take time for students to feel unthreatened by.

Integral to Mezirow's theory of transformative education is experience, critical reflection and rational discourse.

> Learning experiences establish a common base from which each student constructs meaning through personal reflection and group discussion … The meanings that students attach to their experiences may be subjected to critical scrutiny. The teacher may consciously try to disrupt the student's worldview and stimulate uncertainty, ambiguity, and doubt in students about previously taken-for-granted interpretations of experience. (Tennant 2003, p.112)

Critical reflection necessitates self-examination and critical evaluation and may cause discomfort as the validity of new interpretations and assumptions are evaluated. These points of disruption can be recognized as building blocks for potential transformative learning by creating dialogic spaces where alternative interpretations can be explored. In the current education system, these opportunities within a learning context can be suppressed by the frameworks of the official curriculum.

Rational discourse is where we engage in dialogue with others to explore newly discovered mismatches between our experience and our mental structures and explore other potential interpretations whereby the process of transformation becomes a shared social experience. Psychological models of learning generally neglect the social interaction integral to learning. In transformative education, the changed person is the outcome of the learning (Jarvis and Parker 2005).

Box 14.6:

- Can you think of any examples where the transformation process may have been experienced by your students?
- What was the outcome of this experience?
- If you cannot think of any examples, how could you try to create the conditions for this process to occur?

Developing Our Thinking

Bateson (1972, p. 461) suggests most of us are 'governed by epistemologies that we know to be wrong'. Senge (1990, p.73), a leading systems writer, further suggests 'it appears we have latent skills as system thinkers that are undeveloped, even repressed by formal education in linear thinking'. This lack of systems, or holistic, thinking is, according to Korten (1995, p.11), the major obstruction to realizing the guiding principles of ESD:

> When we limit ourselves to fragmented approaches to dealing with systemic problems, it is not surprising that our solutions prove inadequate. If our species is to survive the predicaments we have created for ourselves, we must develop a capacity for whole-systems thought and action.

Systems thinking moves us towards a more holistic way of thinking about the interconnectedness of nature and society and the critical challenges we face in promoting economic and social well-being whilst protecting the environment.

> To understand things systemically literally means to put them into a context, to establish the nature of their relationships. (Capra 1996, p.27)

However, systemic thinking is still unfamiliar; it tends to be an effort rather than a habit of mind as fragmentary thinking is still habitual and its limits are increasingly apparent. As Sterling (2001, p.14) argues:

> most mainstream education sustains unsustainability—through uncritically reproducing norms, by fragmenting understanding, by sieving winners and losers, by recognising only a narrow part of the spectrum of human ability and need, by an inability to explore alternatives, by rewarding dependency and conformity, and by servicing the consumerist machine.

To create the conditions for a participative citizenry in the future we need to engage students in every dimension of their educational experience. Research on student voice (Fielding and Bragg 2003, p.15) shows the benefits of democratic participation and consultation:

- Developing a positive sense of self and agency
- Developing enquiring minds and learning new skills
- Developing social competences and new relationships
- Reflecting on their own learning
- A chance to be active and creative.

As do the findings from an ESRC/TLRP project, 'Consulting Students about Teaching and Learning' (2003).

These findings show the potential to enhance the lives and experiences of both students and teachers in and beyond the learning environment. The recognition and understanding of their agency as active and creative collaborators is enhanced through systemic thinking on issues within their organization and on more challenging issues within the wider community. This is empowering for students and has significant implications for their future engagement in society, which is aptly captured by Rudduck and Fielding (2006a, b, p.229):

> atomistic consumerism is superseded by co-operative agency (that) is fundamental to the revitalisation of our schools as learning communities within a democratic society.

Conclusion

The potential of collaborative and democratic relationships between students, teachers, staff and managers, to challenge practices and extend existing knowledge, skills and perspectives, is an untapped resource in education. It is vital for education and personal development but foremost for its critical contribution to wider society in the form of active citizenry. However, student participation in consultation is not enough. It must encompass all students to ensure every voice is heard and not simply reflect the status quo, but provide an opportunity to challenge existing practices, create new knowledge, innovate and transform.

However, the conditions needed to create these open spaces in which the outcome is uncertain, are not currently in place. FE, like other education sectors in the UK, is constrained by performativity and surveillance. Working in these conditions makes it challenging to develop dialogic spaces. Yet, it is through a dialogic approach that students can be empowered to transform habits of mind and meaning perspectives. It is the transformations in values, attitudes and behaviours that will ensure students not only have an active role in changing or shaping their education, but also in working towards achieving the principles of sustainable development to secure a sustainable future.

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Further Reading

Jarvis (2006b) 'Towards a Comprehensive Theory of Human Learning' concentrates on the processes of human learning. It considers the fact that research into learning has been mainly psychological which has simplified its conceptualization. Jarvis argues that learning is existential, and gives much inspiration for a new paradigm of learning theory which is related to theories of human learning.

PART V

Moving on and Finding New Pastures

CHAPTER 15

Education for Sustainable Development in Further Education: A Reality Check

Paul Matthews

Further education (FE) colleges are tasked by the government and its agencies to serve the needs of society and industry. This has two main aims: to provide education and training to learners so they can secure work in a twenty-first-century marketplace and make a positive contribution to society and to provide industry and the economy with a skilled workforce in the context of a competitive, global economy.

> We need a more competitive, rebalanced economy, which is environmentally sound and resource efficient … Our ambition is that the UK should have a world-class skills base that provides a consistent source of competitive advantage. If we are to achieve this, we must enable businesses and individuals to transform the performance of the nation as a whole. (Department for Business, Innovation and Skills [BIS] 2010, p.5)

Contemporary government policy directs FE to provide educated and skilled individuals who employers need in order to succeed in the global economic race (BIS 2014). According to the logic of our modern western economy, this is good for business, good for learners and good for the state. For many, this is a win–win policy.

In 2010, amidst the claim that the new government would be the greenest ever, the Skills Minister advocated a more environmentally sound and resource-efficient economy contextualised primarily within a constant growth economic model linked to global competitiveness, but also

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accepting the benefits of an environmentally benign economy (BIS 2010). Shortly after this, a government research report reached this conclusion.

> There is evidence of latent demand for green skills, although many employers are not clearly articulating this. As a result the demand-led skills system may not respond as it needs to. Organisations do not have the right level of awareness or understanding of their green skills requirements and the implications of the green economy. As a result they are unlikely to realise the importance and benefits of incorporating green skills within their business. (HM Government 2011, p.25)

The core business of FE is funded by the state, and this means the relevant government agencies have the potential to control the way colleges run as the normative business model is contingent upon maximising such funding and thereby delivering the curriculum the Government wants to promote. FE policy is dictated by a government predominantly driven by economic and political concerns in a fiercely competitive global context.

Arguably, the Office for Standards in Education (Ofsted) is the principal driver of FE practice in England. In 2009, in line with the pro-sustainable development (SD) policies of the time, Ofsted included an evaluation of how 'learners develop skills, knowledge and understanding relevant to community cohesion and sustainable development' and how they understand 'issues relating to sustainable development and … contribute to reducing global warming' (Ofsted 2009, p.51). However, the emphasis on Education for Sustainable Development (ESD) has changed, and there was no mention of this in the Common Inspection Framework for the further education and skills sector (Ofsted 2012), and although the later Handbook for the Inspection of FE (Ofsted 2014, p.45) mentions the term once, stating inspectors will, where relevant, take into account 'learners' development of skills in, and knowledge and understanding of, sustainable development', even this was dropped in 2015 (Ofsted 2015a; Ofsted 2015b). As ESD is not graded, this effectively devalues the importance of ESD in FE. Simply put, were Ofsted to grade ESD, then FE would have to make it a priority and demonstrate this in practice.

Despite the fact that the level of support for ESD appears to have diminished, as references to it have largely been dropped from official documents, the government appears to continue to support ESD in principle, and this gives rise to a number of questions that need addressing:

- What are the implications for teachers and students?
- Are there any signs that ESD in FE is helping to create a workforce that can help change the way our industry works?
- Moreover, is anyone researching the impact on teaching ESD in FE on industry and the workforce?

If we accept the powerful influence of audits, punitive inspections, government funding and employer contracts on FE colleges, and the requirement of vocational courses to comply with relevant legislation, then it is not difficult to understand how FE is constrained to deliver what these stakeholders want and the law demands. Given these parameters, does ESD in FE translate into positive action in the workplace; does it, for example, help learners promote biodiversity and sustainable consumption in their jobs; and does it help them develop the critical thinking skills to deal with the problems we face and create a more sustainable society?

To begin to explore these questions, we need to hear some of the voices of those involved, and to this end, I will now reflect on the views expressed, mainly through informal conversations rather than structured research, by some student teachers and employers in the south-west of the UK.

Estate Management

In terms of FE infrastructure and operations, there are some very encouraging initiatives to develop more sustainable college buildings and processes. This is partly due to a genuine desire to improve the carbon footprint and greener waste management of FE estates, but it is also informed by legislation and cost savings. These greener, less wasteful campuses are places where the three tenets of sustainability—society, economy and environment—are promoted and where students and the workforce see positive examples. At my own college, sustainability is vigorously promoted by our estates department: wind turbines tower above the campus, solar arrays occupy roof spaces and solar radiation panels improve the heating and cooling of some buildings. Waste management has also been transformed and recycling is normative. More widely, we read leader briefings in FE news items about how colleges can not only adopt more sustainable practices but also play their part in preparing the world's youth for a sustainable future (Day 2015). However, the relationship between, say, the energy consumption of a particular department, that is, engineering and an FE estate, may not be entirely coherent: typically, estates manage

buildings and departments manage the curriculum, and this may mean the latter is not designed on the basis of a more sustainable model. It seems a reasonable suggestion to create stronger links between the sustainable management of FE colleges and the way curricula are designed and delivered.

Box 15.1:

- How does this match the situation in your organisation?
- Can you think of ways in which good practice in estates management can be linked to the curriculum?
- Consider how you might use the campus to develop your curriculum.

Agriculture

We begin with the land. In this sector, the word sustainability makes everyday sense, but it has a broad range of meanings from ecology to sustaining a viable business model and employment. It is clear that the seeds of ESD taught in FE often find fertile soil in industry, not least because a viable agricultural model requires a long-term strategy. Employers also want to recruit workers with the knowledge and skills to maintain and develop successful practices, but whether the ESD they are subject to in FE translates into the workplace depends on the agribusiness they join. This means FE will invariably teach agriculture students and apprentices about best practice in sustainable farming, but if the business they join chooses to import resources from far away and use pesticides and other intensive farming methods, then their sustainability ideas may be ignored. Essentially, the competition and narrow margins normative in modern farming mean the ESD taught in FE can be disregarded in the workplace. According to one teacher at a rural college, there is clear evidence of a tension between the mindset of some experienced farmers and the ideas of their apprentices and newly qualified workers. Farmers and others also argue our wider society; government and the retail industry need to support the transition to more sustainable models (DEFRA 2006). There is also evidence that an increasing number of farmers and their teams are developing more sustainable practices across a broad range of issues (Farmers Weekly 2011). However, it is more difficult to distil the voices of those who learnt about SD during their FE courses and to know the impact this has had on their working

lives. According to Julie Gray, the National Operations Manager at Skills Development Scotland (in LANTRA undated a), modern apprenticeships in agriculture are preparing people for global careers and are receiving very positive feedback from employers. However, specific data regarding the impact of these initiatives is hard to find. There are case studies which showcase successful apprenticeship schemes in farming by the Sector Skills Council (LANTRA, undated b), but they are, understandably, skewed towards success stories, so more independent, balanced research is needed.

Box 15.2:

- Are you aware of the tension between what is taught through ESD in your curriculum area and the demands and dominant views in the industry?
- How does this impact on your practice?
- Are there opportunities for working with employers to develop this together?

Hospitality and Catering

This is another area of FE provision which has embedded ESD in the curriculum, particularly with regard to sourcing products locally where possible, alongside using more organic and fair trade products. Yet, while high-profile media chefs and others promote sustainability and raise public awareness, FE students leaving colleges with levels 2 and 3 qualifications can find the realities of their industry less open to greener and often more expensive business models. Clearly, much has changed for the better, but the larger supermarkets or local fast-food outlets still show the carbon footprints of exotic fruits in midwinter and highly processed, overpackaged goods. Feedback from chef lecturers at my own College suggests FE tends to reflect rather than transform an industry, where competition and tight margins can undermine more idealist ventures. When asked, one hospitality teacher said things are not always what they seem; for example, 'locally sourced' on some menus in restaurants can mean a local wholesaler is used, but they may get food from a range of sources far and wide. The lecturer said this question about provenance opened up further questions about the impact of teaching sustainability on hospitality courses. Essentially, although some restaurateurs are able to maintain an authentically low-carbon footprint, locally sourced menu by charging a

premium to customers, most cannot afford to do this in a highly competitive marketplace. Despite these concerns, a chef lecturer said his college had made real progress managing waste: used cooking oil and food waste are collected by a local company (which also collects from schools and traders) and taken to a nearby recycling centre, where the oil is reused for heating and the waste food feeds an anaerobic digester which turns it into energy and biofertiliser. Learning about this and working in a training kitchen and restaurant at college means future employees see what can be done. This demonstrates how clear and coherent links between FE, local businesses and a burgeoning recycling industry can be established.

More generally, research carried out by a Sector Skills Council, working to develop better links between the hospitality industry and training for apprentices, focuses on how to mitigate the cost of staff turnover in favour of more sustainable employment (People 1st, 2014).

Automotive Technologies

In FE, legislation affecting the automotive industry means there is a good fit between what is taught in FE and what goes on in the trade, but this only extends to 'the promotion of informed, skilled behaviours and ways of thinking useful in the short term' (Vare and Scott 2007, p.191). The automotive lecturers consulted said the curriculum has to teach and assess compliance with regulations, but in other respects issues related to sustainable development (SD) are informed by practices in the wider automotive industry. This means some old and worn parts are regularly recycled or reconditioned, while others are simply replaced because there is no alternative, given the design specifications and the way the components are manufactured. When I asked automotive industry apprentices in my own organisation about this, they said they are not empowered to make changes and generally not consulted about such things, though a few do suggest things which might help make the business a little more sustainable. For these apprentices, the main change they foresee in their automotive industry will be the transition to electrically powered cars, so they understand the need to learn about this technology. Their lecturers say they teach units on hybrid cars as part of the transition to electric vehicles and that some of their qualified apprentices will know more about how to work on these vehicles than their employers or more experienced colleagues. Clearly, this indicates some positive impact for ESD in FE. However, the apprentices join an industry which wants to see high numbers of vehicles to support current or expanding levels in the industry but they do not critically evaluate this in terms of environmental issues.

Box 15.3:

- How much influence, if any, do you think you have on the curriculum they teach?
- If the principles of ESD conflict with the practices of the industry, what can you do?

Hair and Beauty

In hairdressing and beauty therapy, the picture is mixed: some lecturers say students on courses are taught about how to use products sparingly, but in commercial salons, this may be more to do with the fiscal bottom line than environmental concerns. Here the word 'SD' tends to mean the ongoing viability of the business model, not the impact on the use of natural resources. When asked, hairdressing lecturers said a few salons were basing a significant part of their operation on promoting organic or more natural products and were attracting clients for whom this is important, but generally, this is not the case. Some aspects of beauty therapy courses are a little more positive, especially units linked to more natural treatments; for example, aromatherapy and so-called alternative or complementary therapies. However, the content and assessment of some vocational courses (City and Guilds 2014) show that learners are still taught the techniques of upselling without recourse to environmental factors and salons still promote products in the context of sponsorship by companies with poor environmental and animal testing track records. Research also shows about three quarters of hairdressers in the industry recognise their current practices fail to set a good example to customers in terms of environmental impacts (Baden and Prasad 2014). Even when students experience special events to raise awareness about sustainability, this can be confined to the use of things like power and water in the department and not about the wider impact of the industry on society and the environment. That said, learners in hairdressing and beauty therapy have a great opportunity to influence practices in salons, and some will set up their own businesses, so with the right ESD, and alongside the emergence of greener salons and clients who want their services, there may be positive changes on the horizon.

Wood Trades

In this curriculum area, FE students learn how to use timber from sustainable sources and to maximise the use of wood and reduce waste, as well as being taught to recycle and repair. These things may make sense in a business context, though students cite the same issues about conforming to policies and procedures of their employers and having a limited voice when it comes to suggestions about how to improve the carbon footprint of the company. One lecturer, who also runs his own business and employs apprentices, is well placed to see the tensions between ESD in FE and the commercial context. It is clear that the realities of business dictate the working experiences of apprentices in the industry. He says ESD in FE therefore needs to understand these immediate and pragmatic commercial concerns, while opening learners' minds to developing possibilities and best practice.

Engineering

In engineering, FE students and teachers say they are constrained by the ways employers recruit and manage their apprentices. Most apprentices take level 2 and 3 courses, though some take higher education (HE) level programmes. Engineering is a very broad field: in marine construction, fabrication and welding the employers tend to want FE to focus on developing the underpinning knowledge and hand skills of apprentices and to leave industry-specific issues of SD to them because they think they are best placed to develop sustainable practices in their specialist fields. Generally, employees who enter the workforce at technical level 2 or 3 are not empowered in terms of SD and they have little or no impact on industry practices other than to reinforce the policies and procedures adopted by their employers. However, the situation looks rather different for learners undertaking a level 4 or 5 course in civil engineering. These learners need to know about environmental regulations and other statutory requirements concerned with the sustainable codes incorporated in regulations and they are expected to apply this knowledge in their working lives, reinforcing legislative requirements. Also, some level 3 construction and level 4 or higher civil engineers will consider the wider issues of SD. When asked, both teachers and students thought apprentices and operational staff were unlikely to influence business practices, since decisions about using a lower carbon footprint design, for example, would be made by the customer and architect. However, they would clearly need

to work to specifications and use appropriate methods. Here the impact is one of knowing how and using this know-how when the situation arises.

Construction

In the construction industry, employers' views varied a great deal. A senior manager at a large construction company said FE students need to come into the industry knowing the building regulations and SD targets set by government, but that these are subject to continual review so they will need to update in the workplace. They also need to know how to understand the clients and their needs. In other words, this employer wants workers who understand SD within the context of the law and the customer's preferences. In this sense the employer can see the value of ESD in FE, but it is a limited horizon; the employer does not ask for anything outside this purview. These views are similar to those of a regional business development manager working for a transnational construction company; but he locates the knowledge and skills about SD in HE and training programmes, not in FE. However, the community investment manager at another national construction business, one specialising in sustainable community regeneration projects, wanted employees to know a lot more: both site- and office-based staff should have a sound working knowledge of how to deliver lower carbon footprints in terms of design, construction and installation; and how users will interact with energy use, technology and systems.

In manufacturing, the operations manager at a medium-sized firm making handmade furniture wanted all employees to know about and appreciate the cost of waste disposal and other services affecting the overheads of the company—and how this relates to the carbon footprint of the business. They also want employees recruited from FE to know how to comply with relevant legislation. Interestingly, this employer also wanted learners 'to think outside of the box' as part of the contribution to a progressive business. Is this a sign that some employers recognise the need for workers with the critical thinking skills to solve problems concerned with sustainability and that FE can help develop these?

Box 15.4:

Overall, how far do these case studies reflect your experiences of the fit between ESD in the curriculum and the experience of students when they enter the workplace?

How can you improve this fit?

Having listened to some of the voices of lecturers, students and employers in FE, we can cautiously begin to consider how ESD impacts on students and industry. An obvious observation is that FE has to work closely with the needs of industry and, through funding and other controls, implement government policy. We can also question the relative empowerment of FE learners when they move into the workplace. Given these dynamics, we may better understand the predicament of FE teachers, who are not in a position to change things in the industry or influence policy, though they are part of a wider FE community working towards more sustainable practices.

Pragmatically, FE emphasises the sustainability of jobs, businesses and industries in a fiercely competitive marketplace; while longer-term environmental and ethical issues tend to fade into the background. Employers want FE to prepare students for the realities of their industry, not for a radical transformation based on ecological imperatives and its attendant risks. It also seems ESD in FE could do a lot more to help its technical level learners question assumptions, values and beliefs; or even bring about a shift in the learner's world view (Sterling 2014). Instead, FE's close links with industry mean it is sensitive to the way things are in the workplace and the concerns of hard-pressed businesses. How then can FE practitioners respond to this state of affairs? Given the contested nature of ESD and how it translates into various areas of the broad FE curriculum, subject specialist teachers need to identify the best possible interpretation for their industry. This will require a subtle understanding of SD in the general vocational field and about the needs of employers. Teachers can then embed ESD in the curriculum in such a way as to make it relevant to the learner as an apprentice or future employee and as a potential agent of change in the workplace. To be effective, this needs to be done in dialogue with employers and the workers they recruit from FE, as well as awarding bodies. This could be through a forum using interconnected thinking about sustainability in each specialism; one that can inform ideas and promote change.

It may be helpful to consider a couple of projects further afield. In Australia, there has been some good work on trying to establish positive contributions made by environmental education to business and industry education (Australian Research Institute in Education for Sustainability [Aries] 2004). This review highlights the lack of case studies and research in this field, but does begin to think about how ESD in Vocational Education and Training (VET) can be informed by industry and wider

concerns about sustainability. At this time, Kent (2004) also began to forge a meaningful connection between sustainable education in VET and how it could influence the adoption of sustainable practices in industry. In the same field, Bramhill (2011, p.7) cites Hatfield-Dodds (2008, p.1), who suggests there is a shared belief amongst researchers that to achieve a sustainable, low-carbon economy requires 'a mass mobilisation of skills and training' and commensurate investment in developing business and industry to achieve this. We can see here the development of joined-up thinking between VET and industry; and we can also see the gaps in transformative action, not least because the contemporary and subsequent research remains within the boundaries prescribed by surveys and analyses of industry and business, not the impact of VET. Although this movement did lead to the introduction of a Sustainability Training Package for managers across industry (MISC 2012), there is no formal impact analysis to see if this training is changing the way things are done. Indeed, even Bramhill's (2011) promising report fails to forge any palpable connection between what happens in VET and what happens in industry, still less does it provide any evidence that the sector has made a positive impact on developing more sustainable companies and organisations.

Nevertheless, as shown in the Aries (2004) review, FE may also want to offer courses for business managers, so they get the chance to think about sustainability in a space apart from the concerns of everyday, hard-pressed businesses. Indeed, this can work both ways: some time ago in Sweden they began to think about how industry should be used to educate FE because they see sustainability as a business opportunity (Berrgren 1999). Later, this idea led to the emergence of the European Business forum, which called for VET providers across Europe to learn from companies about how to develop competent workers with the skills needed to support a smarter and more sustainable economy (European Commission 2014a, p.15).

There is also a need for those FE students entering the workplace with level 2 or 3 qualifications to play a more credible part in encouraging SD, otherwise ESD in FE may seem remote and irrelevant to students. FE could have a significant part to play in helping students engage meaningfully with their employers. At the same time, FE can contribute to the kind of SD counter-narrative being developed more broadly across the green movement by professional associations and research groups; and by telling the stories of trainees, apprentices and employers to politicians, lobbyists, researchers, academics, writers and freethinkers. They need to hear the

word on the ground. As part of increasing our understanding of ESD in FE and its effect on the environment, society and the economy, we need more systematic impact analysis.

It is also difficult to evaluate the success of teaching ESD in FE because we are not sure of the initial conditions. It would therefore seem logical to carry out some kind of initial review of the situation. This could be done at departmental or institutional level. Clearly, for this to be effective, it needs to avoid showcasing. More than this, we need to work with others, particularly HE and schools, in order to gauge the state of ESD across the spectrum of education.

A further suggestion is that FE could support the development of social enterprise (SE) in each area of the curriculum as examples to inspire learners and employers. It could do this by linking ESD to SE using design thinking strategies (Brown 2009) applied to specific jobs and fields. This would fit with the innovation and enterprise initiatives promoted by government and its agencies; for example, in the UK the new study programmes include the need to undertake work experience and personal development, so enabling students to create and realise SEs could help meet these requirements.

To unpack this idea a little more, SEs are viable businesses that seek to do good for society and the environment. Students on vocational courses benefit from work experience and developing their personal and employability skills (DoE 2015). Design thinking combines conceptual tools with problem-solving activities to develop new products or business models. Put these things together and we can see how teachers can facilitate projects and real business ventures with students. Clearly, teachers working with students on these projects would need guidance and training regarding SE and design thinking so that they can train their students appropriately. The SE projects could take the form of a challenge, whereby students identify an issue related to their main vocational course of study. Using design thinking strategies to deconstruct the issue, the students could then think constructively and creatively about possible solutions. The challenge could also include the requirement for positive environmental outcomes. FE colleges could also set up SE learning companies focused on providing services or products as viable businesses, generating profits to benefit society and the environment; and develop these as sustainable ventures to provide work experience and employment for their students. FE colleges could follow the lead of some universities by fostering SE initiatives using ‘incubator’ projects to support new philanthropic

entrepreneurial enterprises developed by students which sell goods or services that have a positive impact on society and the environment. These SE businesses could also work in close association with local businesses, perhaps as trading partners. Overall, these SE projects and businesses would align with the goals of the European Commission (2014b, p.5) and the United Nations (2015). In this way, we can envisage a creative synthesis of ESD and SE in FE.

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Further Reading

Stephen Sterling's (2014) article *Separate Tracks or Real Synergy*? *Achieving a Closer Relationship between Education and SD*, *Post-2015* highlights the critical potential of ESD to transform the way we dwell on earth. It argues that 'the quality of the human and biospheric future depends on our capacity and ability to learn and change'. It also shows us how we need to unlearn established patterns of thinking and relearn new, more sustainable paths of thought and behaviour. It will not only give you a good insight into past and current research but also reinvigorate your ESD practice.

CHAPTER 16

Sustainability and Community Initiatives: Where is the FE Sector?

Roger Cutting

Introduction: Motivations

This chapter deals with some of the issues surrounding attempts to widen participation in education for adult students from local communities and to use issues allied to the sustainability agenda as a vehicle for their engagement. This is a particularly difficult and complex topic and what follows is not a definitive exploration, rather an overview of the particular historical antecedence of the role of adult education, followed by a case example of projects that highlight some of the current challenges and the very real problems surrounding such implementation.

If you have ever studied when over the age of 19 years of age, the chances are that you too have been, or are, defined as an 'adult learner'. Consequently, this presents a good opportunity for you to think, not in the abstract about your motivations, but to consider your own experiences in relation to this area. Before continuing it may be useful for you to consider the specific example of yourself. On occasion throughout this chapter it will be necessary to talk to you directly, to help you consider your own wider aims and motivations for learning in the context of adult learning. To begin with then, what were the motivations that brought you to further study? Perhaps you have one eye on the employment market, or perhaps you were just drawn to further learning. Of course these two motivations are not the only ones, nor are they mutually exclusive, but they do introduce two important, and increasingly disparate, areas of adult education, namely vocational- and/or skills-based learning based around

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the further education (FE) sector and a broader educational, possibly even non-certificated, area of provision, tending to be based around adult education centres. At times on a down turn of the seemingly cyclical priority of funding in adult education, it is really no surprise that the latter experiences the greatest pressure, and yet historically this is where the origins of adult education lie (Field 2006).

R.H. Tawney (1880–1962), described by Elsey (1987) as the patron saint of adult education, argued that social justice was inextricably linked to widening participation in education (Hinden 1966). He saw the great social movements of the nineteenth century as also great educational movements (Taylor 2007). Interestingly, in his writings on education, not only does he point out the importance of adult education as a means of achieving social justice, but also talks of the commitment of those delivering such classes, suggesting that such involvement is driven by more than any personal gain, and that these teachers 'become partners in a universe of interests', (Tawney 1950, p.6). He was also on the executive of the Workers Educational Association (WEA) for 42 years and often taught adult groups, who were described by Kelly (1970, p.254):

> They came in search of knowledge, not certificates, and their interest was principally in political and social subjects … The enthusiasm and determination of the students was tremendous.

A review of R.H. Tawney's work provides an interesting philosophical base, not only on community involvement but also with more contemporary concerns relating to sustainability education. Most intriguing are two observations that still resonate: the commitment of teachers and the enthusiasm of students (Tawney 1950). Furthermore, Tawney's views on education now appear highly apposite to the contemporary transformative approaches that are increasingly called for in sustainability education (Sterling 2011). The following passage epitomises Tawney's thoughts on education:

> the process by which we transcend the barriers of our isolated personalities, and become partners in a universe of interests which we share with our fellow men, living and dead alike. No one can be fully at home in the world unless, through some acquaintance with literature and art, the history of society and the revelations of science, he has seen enough of the triumphs and tragedies of mankind to realize the heights to which human nature can rise and the depths to which it can sink. (Tawney 1966, pp.87–88)

For him and his contemporaries, education was about transcendence; adult education in particular was a primary mechanism for collective liberation, what we are more likely to call 'social justice' today. These characteristics of transformation and empowerment are also necessarily at the heart of Education for Sustainable Development (ESD). Furthermore, the contemporary discourses around sustainability also highlight the centrality of social justice to its achievement (Evans 2012; Coote 2015). Therefore, the antecedence of adult education is strongly identified with transformative learning and provides an effective mechanism for the promotion of social justice and participation.

There are contemporary government statements and policy documents that appear to advocate this type of approach to teaching and learning in FE. For example, the Green Paper 'The Learning Age' (DfEE 1998) set out the then new government's priorities for adult education. The foreword talks of 'The fostering of an enquiring mind and the love of learning' being essential prerequisites for a successful future. In the introduction of Section 2, it argues 'the development of a culture of learning will help to build a united society' and that learning provides benefits on a number of different levels. At the individual level, learning 'offers excitement and the opportunity for discovery. It stimulates enquiring minds and nourishes our souls'. At a community level, learning 'contributes to social cohesion and fosters a sense of belonging, responsibility and identity'.

It was a powerful, widely welcomed paper by those employed in the further and adult education sectors. Such sentiments not only resonate with the views of R.H. Tawney, but are closely allied and complementary to approaches associated with the social and community aspects of ESD. What resulted from this Green Paper will be discussed shortly, but before that, it is important to note that the ideas put forward in 'The Learning Age' were influenced by the conclusions of an earlier highly influential Government report, 'Inclusive Learning' here, referred to simply as it became known, namely the Tomlinson Report (1997).

While the Tomlinson Report (1997) dealt primarily with issues concerning those students with disabilities and/or difficulties associated with learning, it recognised, especially in the FE sector, that there was a need to respond by providing routes, not into special classes, but into mainstream provision. This would necessarily require a refocusing of teaching and learning that would be based on the requirements of the individual, so-called 'inclusive learning'. Within the FE sector, inclusive learning was not only concerned with physical access to facilities and courses, but the redesigning of provision in terms of organisation, assessment and, most

importantly, teaching and learning. It needed to provide at an individual level for the learning styles and requirements of all students, traditional and non-traditional. In short, it was not simply about widening door frames; it was about widening learning, challenging the status quo and traditional perceptions and assumptions.

This is a very important point, as in other educational contexts, inclusion will often be related to social inclusion, promoting community involvement and local engagement (Florian 1998; Rosenthal 2001; Blandford and Gibson 2005). However, additionally, the emphasis in the FE sector was to relate to inclusive learning styles within the institutions.

By the late 1990s and early 2000s, policies were in place; therefore, that not only attempted to widen access and community participation but also encouraged the adoption of innovative and inclusive teaching and learning approaches, both of which would promote the sort of approach well suited to the promotion of sustainability. This was accompanied by a marked and impressive increase in adult participation (HEFCE 2008).

However, despite this, there was, and still is, a significant difference that has come to dominate the underlying aims of adult and community education. The view that adult education is a tool for emancipation and social justice has seemingly been replaced by a substantial emphasis on economic imperatives (Gorard and Rees 2002). This formed the primary argument central to the influential Learning Works Report, that later simply became known as the Kennedy Report (1997). This report suggested that social justice could be achieved through economic participation and that by this people would be empowered to take an active part in the economy and therefore wider community. Of course the broad concepts that concern sustainability education are not necessarily divorced from such economic expedience. Indeed, the UK Department for Business, Innovation and Skills Strategy Document (2010) 'Skills for Sustainable Growth' talks clearly for the need of skills to build a sustainable future. However, despite this, the inclusion of sustainability in taught curricula still perhaps relies more on the commitment and creative thinking of the particular lecturer than the so-called hard outcomes of vocational programmes. Since 2005, there has much greater emphasis in the FE sector on vocational training (Summers 2007).

What has resulted is a system dedicated to greater inclusion and participation, but one that is very much based on skills, particularly vocational ones. The provision of vocational education and training is unquestionably valuable, yet, there is the danger of losing sight of the equal value of non-vocational adult education. The push for skills and training outlined in Skills for Growth (2010) has come to dominate many aspects of adult provision. Particularly

as funding in recent years has moved away from adult education and has resulted in a drastic reduction in courses being offered (Tucket 2008).

Box 16.1:

It is very important for you to reflect on the following questions:

- What are the values of non-vocational adult education courses?
- How can adult education provide the approaches and requisite skills that a resilient and sustainable community need for the future?
- How can we design in such skills to existing provision?

Case Study: The Parents as Educators Programme

The following case example will hopefully help you formulate some views as the aims of this programme were not vocational. There were learning outcomes, which concerned 'understanding' and 'application' but there were also deeper, less easily evaluated, emergent outcomes based around notions such as confidence, overcoming the stigma associated with learning and promoting social networks and participation. The Programme Co-ordinator discussing her involvement in the 'Parents as Educators' (PaE) programme best sums it up:

> *we just wanted a course that would let young* parents learn how to be with their children and with each *other.* (Desira 2003)

To reach these groups and promote such courses, particularly as they are not 'vocational', needs specific strategies, and such strategies and their relative effectiveness are discussed here through an illustrative case example.

The PaE programme was set up in the city of Norwich, UK through a local FE college. It was developed in response to an invitation for bids to run Local Initiative Funding Projects from the Learning and Skills Council (LSC), who provided funding to the FE Sector at that time. The initial idea was to develop a programme for parents to help with their children's learning, particularly in the areas of nature and the environment and basic support in mathematics. The primary aim was to support parents to support their children. The secondary aim was to help these young parents themselves gain confidence in learning, thereby encouraging them to progress on to further mainstream course programmes.

Getting Going

> Three out of four girls that went on the course are not normally those that will participate in things, but were prepared to because of the way the Project Co-ordinator had built a relationship with them and the one we had with them allowed us to encourage them, so it was a case of different agencies working together … they liked the course … at least two of them have decided to go on and do other courses. (Response from a partner organisation to PaE)

To briefly explain the significant amount of work that goes into such developments is a difficult task, but any bid for funding from the local LSC was placed against national priorities and would normally result, as it did here, in something of a negotiation between the funder and the provider. Furthermore, to draw income from different agencies, aspects of the programme needed to be modified and adapted to meet the funding criteria of each. The complexity and frustration involved in making such bids was significant, as were the changes that had to be made to the original programme. However, the programme emerged with constraints on recruitment. These are given in Table 16.1.

The original bid was proposed in September and rewritten in November, verified by the Open College Network (a UK accreditation body) in February and started properly in March with the appointment of a programme manager. It took six months of work to secure a £70,000 budget.

Box 16.2: Points to consider:

- The lead in time from the initial idea to its realisation was 6–7 months. Most FE colleges have a cyclical course approval deadline. How effective is your institution in relation to rapid responses?
- What you set out to develop may not be the course that you had envisaged. Consider what you may need to compromise over.
- Course administration can be very heavy. Is your institution in a position to take on more administration?
- Consider some of the opportunities new developments create for you in terms of new community projects?

The Course Design

> many of the group had had fractured schooling and the last thing I wanted to do was to put them off learning by throwing loads of ideas at them. I just wanted to get them used to thinking a little deeper and being confident enough to talk. (Course Tutor)

The course was for young parents with children of primary school age and was verified at both L1 and L2. The students would carry out the kinds of activities in relation to environmental studies that their children would do in class. The programme was to be a practical 'hands on event' one morning a week for eight weeks. The sessions were to be informal, yet informative, fun to be part of and directly relevant beyond the classroom. The students had an additional debrief session to inform on the educational purpose of the activity. There were free discussions where the parents were encouraged to reflect on and evaluate the activity. They were then encouraged to carry out the activity with their own children and to attempt to further evaluate its potential worth through practical application.

This evaluative feedback formed the first session of the following week's class. A new activity was then carried out, and once again the parents were encouraged to evaluate it by carrying it out at home.

Recruitment

Within the time constraint of a project, collaboration with other organisations is one of the most important aspects to working with excluded groups. Contacting groups is the easy part however, what is more difficult is making collaboration productive. This requires openness and planning, as similar provision can sometimes be seen as competition between organisations. Such relationships also require parity of status—small community-based organisation are just as important, if not more so, than an FE College or a local University. Regular contact needs to be maintained and a shared commitment is needed to make things work. Lack of time is a very real pressure point here, in terms of both the lifespan of the project and the time that staff from external organisations and team members can commit.

Table 16.1 Recruitment Constraints

- Wards with the highest number of young parents who had not obtained Level 2 (L2) qualifications were to be targeted.
- Parents needed to be under 25 years of age.
- Parents could not have previous L2 (or higher) qualifications.
- 90 students was the target recruitment.
- 20 students needed to complete CLAIT Plus at L2 (a basic IT qualification)

With the PaE programme, the most successful recruitment strategy was through direct contact. A travelling activity workshop was developed and, working with local primary schools in the identified districts, toured around these schools, putting on learning activity fairs immediately after school hours. The hands-on nature of the activities ensured a very high attendance. This, in a rather underhand way, was something of a ruse, as although it was good for the children, it allowed other team members to approach waiting parents. This was the primary point of contact and was subsequently identified as the most effective marketing method (Desira 2003). In this way, groups of young parents who were, if not friends, then at least familiar with one another and were encouraged to take part. Getting groups of parents from these schools was one of the most effective recruitment tools for this project.

Probably the greatest pressure point with widening participation projects is actualising recruitment. Difficult to reach groups are so called for a reason, and sometimes, despite great amounts of work, potential clients do not enrol and targets are not met. The published literature will always concentrate, understandably on successful projects, but it can give the impression that somehow recruitment is straightforward and easily achieved. This is rarely the case. In that context and with the pressure from funding agencies, and managers, each with their own targets to meet, realising that recruitment on a project is not strong can be a significant source of stress.

Unlocking the Door

The obstacles to returning are difficult to classify into groups, but a broad range of physical or mechanical restraints, such as finance (simply being able to afford it), childcare, travel, employment, home care

commitments. Each one of these needs to be considered carefully during programme development and the bid must include mechanisms to negate these obstacles.

Another range of potential obstacles to returning to education may be more social, or cultural. These are often recognised and discussed, but tend to be the issues that as practitioners we can do least about. Cultural pressures on any individual can be summarised as the degree by which the decision is seen as 'abnormal' by friends and relatives. Such reactions can be powerfully dissuasive, even to the extent of simply excluding FE as an option. Even to a lesser extent, negative comments at home, socially or in the workplace, (even jocular ones along the lines of 'you're wasting your time') can become at best wearing, at worst self-fulfilling. Returning to learn can mark you out and as such lead to feelings of isolation. It is also a high-risk strategy. To study and to test oneself so openly and then to fail may result in some sort of confirmation of a sense of failure.

Most commentators would suggest that confidence, however defined, is the key to at least addressing some of these problems and one effective way around a sense of isolation or lack of confidence is to encourage and foster a close group atmosphere. It is one of the most well-worn truisms of FE to say that the single most important source of support for returning students is that given by other students. This programme did find a number of approaches useful, and some of these are given in Table 16.2.

Table 16.2 Promoting confidence on the PaE Programme

- Not taught at college, teach at local school if accommodation is available, or outside.
- Empowerment of students—adult returners' last experience of education was school. They need to feel like adults. It sounds obvious, but it is vital to treat them as such. Their experience should be as distant from a school environment as possible.
- It is important that the staff team engage with the students in an informal, non-intimidating way.
- Provide academic support. We also arranged talks from the adult guidance team.
- Be flexible in terms of delivery. One way is to not overfill the curriculum. Build in plenty of review time and tutorials. Respond to requests.
- Have fun in the sessions particularly outdoors.
- Place stress on personal goals and concentrate on positive feedback.

The 'R' Word: Retention Issues

Probably the best advice for any new lecturer in adult education is to get used to discussing retention. Keeping students on a programme or a course is equally as hard as getting them on to the course in the first place.

The problem is a difficult one, and it is compounded in the first instance quite simply by the fact that adults have complex lives. Childcare arrangements collapse, children fall ill, personal or social situations change. A young, particularly single parent's life can suffer from variable and unforeseen pressures and when these mount up, it is understandable that the course is the first thing to suffer. Sometimes, particularly on higher-level courses such as an Access to Higher Education course, it can sometimes be the case that a student will struggle with the workload and will increasingly feel overwhelmed, at which point all the original anxieties and the lack of confidence will return. Having a tangible 'problem' outside of college is, to a degree, a face-saving way of leaving the course without having failed. The problem this presents us as tutors is that as students leave for valid extraneous reasons, it may very well hide significant flaws in course design.

Unfortunately, retention will always be more likely to effect adult education, and it is an issue that is difficult to address. Pre-course interviews are important in terms of pointing out to potential students some of the stresses they may experience, but of course paradoxically, at the same time, the interviewer is actively encouraging the student to enrol. In reality, the relationship between recruitment and retention is rarely the inverse; however, an interesting question to consider is, how far do concerns about retention and completion rates act as yet another obstacle to participation?

There is a growing literature on improving retention rates (Thomas et al. 2003) and the topic is too complicated to discuss here, but certainly tutorial support, differentiated outcomes, individual learning plans, in fact all the components of good 'inclusive learning' help to retain students.

Evaluating the Programme

Exit interviews formed the basis for feedback and intended follow-up sessions, and throughout these interviews, one constant theme emerged, namely that of an associated improvement in the student's personal confidence. Indeed, all students mentioned this, and 89 % of the cohort, by the time of interview, intended to return to some form of full-time or part-time education.

However, by June of 2003, the pilot programme had recruited 35 students, yet the target had been 70, meeting only half of the target figure. Of the 35 students, only 26 completed the course and, as a result, missed its enrolment targets, and nearly a quarter of the students did not complete. Therefore by measurement of recruitment and completion, the two most common forms of evaluation in FE, the programme failed.

However, this programme was also evaluated using qualitative methods in an attempt to explore the perceptions and experiences of a 'purposive' sample of the staff team and students. Purposive sampling allows cases to be selected to illustrate particular features that may be of interest (Silverman 2000, p.104). To consider some of these read through the following comments:

Box 16.3:

To consider an alternative means of evaluating the programme, read through the comments given by some of the participants in the course.

> We walked down to the park and just chatted … it was good to just sit and talk about stuff. So yes, it was a good time. (Student)
>
> It was quite interesting, it was funny, we had a laugh you know. It was quite relaxed … a lot of it was group work and we sort of chatted about it in groups rather than working alone and that was good, because we were all just discussing things freely. (Student)
>
> It's quite good really, to know what the children are doing at school and you can actually help them at home … You can talk about things … It's changed my confidence in helping the children learn about the world. (Student)

Think carefully about the conclusions you may draw from these quotes about the deeper outcomes of the programme.

Conclusions on the Programme

> It made me want to go to do bigger things now … it's got me back to College again and that's something I was really nervous about doing, so I think that's the biggest thing actually … it's got me back here, more confident. (Student)

Perhaps when evaluating such programmes, we need to look beyond the prescribed learning outcomes and think of the wider outcomes that

may emerge. Do we design programmes that are inspirational and promote the desire for further study and improve confidence? If we heed the calls for new approaches in ESD, how transformational are our programmes. It is an important point to consider as this is precisely what widening participation in adult education can seemingly provide. It can be a genuinely transformative learning experience that may empower individuals and communities and promotes genuine participation.

A short adult education course such as this may not have radically changed people lives, but it promoted the confidence to ask and to question, to develop a sense of real inclusion to the point where it was 'OK to laugh'. The participants became comfortable with each other—and with themselves. The importance of such community programmes is that sustainability necessarily requires inclusion. These young parents came onto this programme to help their children learn. They had concerns about the world their children may grow up in. They wanted to influence that world and they needed the confidence and the opportunity to do so. Community-based programmes such as PaE sometimes have ill-defined outcomes, but nevertheless, although elusive and subtle, they are crucially important.

In the same way that adult education was seen as a vital to social and political change in the past, today, community-based programmes may well present a same vital function in the promotion of genuinely wider inclusion and wider empowerment in the transition to a more social, equitable and sustainable future.

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Further Reading

In this area of social and community development as part of the sustainability agenda, the following texts are noteworthy.

An American, somewhat homespun, perspective on practical community involvement that has particular insight for the UK may be found in

Sarkissian, W., Hofer, N., Shore, Y., Vajda S., & Wilkinson, C. (2008) *Kitchen Table Sustainability*: *Practical Recipes for Community Engagement with Sustainability*. Earthscan Tools for Community Planning

An interesting debate concerning connecting education-based reflections on sustainability with the real world may be found in Juker, R. (2014) *Do We Know What We Are Doing*? *Reflections on Learning*, *Knowledge*, *Economics*, *Community and Sustainability*. Newcastle: Cambridge Scholars Publishing.

Although nearly ten years old, an excellent review may be found in Blewit, J. (2006) *The Ecology of Learning. Sustainability*, *Lifelong Learning and Everyday Life*. Abingdon: Earthscan.

CHAPTER 17

Developing Pedagogic Approaches to Encourage Decision-making, Invention, Innovative Thinking and Problem-solving

Roger Cutting

Introduction

In relation to sustainability education, David Orr (1992) famously wrote about 'The Problem of Education' nearly 25 years ago, pointing out that given the worsening state of the Planet, we still educate our students while studiously ignoring a growing social and environmental crisis. Subsequently, we now have significant, extensive and irrefutable evidence warning of the declining human and physical state of the planet (Stern 2006; Intergovernmental Panel on Climate Change 2013; WWF 2014) and the need to foster greater sustainability is an avowed international educational aim. To emphasise this point, the years 2005–2014 were in fact declared the United Nations Decade for Education for Sustainable Development. However, not only do critics of environmental and sustainability education suggest that progress remains too slow (Saylan and Blumstein 2011; Huckle and Sterling 1996), but for many years, even the nature and definition of sustainability has also been under a seemingly constant shift of emphasis, if not meaning (Frova 2011).

One of the great problems, as discussed in Chap. 1, is that 'sustainability' remains a contested concept. The differing interpretations of the term 'sustainability' have led to a confusing paradox whereby sustainable development can be so widely construed that it can become the aspiration of both environmental campaigners and the corporations that they may vehemently oppose. However, in an interesting review of the dis-

D. Summers, R. Cutting (eds.), *Education for Sustainable Development in Further Education*, DOI 10.1057/978-1-137-51911-5_17

course around Education for Sustainable Development (ESD), Shallcross and Robinson (2007, p.139) point out that most definitions are 'consistent commitments to changing knowledge, values and attitudes and actions'. This functional characterisation implies that ESD does not necessarily involve the transmission of knowledge but that its outcomes are more related to attitudes and the ability to act. Our students accordingly should be freethinking, adaptable and independent learners who are empowered to direct their own learning and practice. Within the field of ESD therefore there have been calls for significant changes in teaching methods and approaches, if we are to produce a generation, capable, hopeful and sufficiently equipped to meet the challenges of the twenty-first century (Huckle and Sterling 1996; Orr 1992; Hicks 2014). The problem here is that, perhaps ironically, education is not being seen systemically. The teaching methods adopted and the opportunities to implement them are often influenced by a range of other parameters beyond professional choice. These may include additional considerations such as the constraints of time, student numbers, available resources and college policy. Furthermore, the enormity of the topic area of ESD often hinders the design of coherent teaching strategies. The temptation is to embed one potentially 'factual' aspect of sustainability in an already crowded curriculum and to give little thought to research-led practice and delivery. However, what seems evident is that the commonly perceived expository approaches in teaching appear to be at odds with the innovative, student-centred methodologies that ESD appears to require.

However, many of the teaching approaches that are seen to promote the outcomes that are called for in ESD are not necessarily new. Indeed, the antecedence of many such approaches may find contemporary resonance in the Progressive Education Movement beginning in the late nineteenth century (Bruce 2013). Certainly, approaches such as problem-based learning (PBL), co-operative learning and student-centred learning alongside the development of critical thinking and independent learning skills have been clearly identified as having their origins in the work of those most associated with American theorist/practitioners such as John Dewey, William Kilpatrick, Carleton Washbourne and Helen Parkurst (Little 2013).

The kinds of educational approach called for by contemporary writers are very closely related to such established methods and as a result, such pedagogical protocols have significant degrees of evaluative research into their effectiveness as learning methodologies. For example, one approach

to teaching, particularly Health Education, has been that of PBL and its range of variants such as contextualised PBL and scenario-based learning. There has been a considerable degree of research into the effectiveness of this approach across a range of subject areas (Walker and Leary 2009; Strobel and van Barneveld 2009). With such approaches, the emphasis is very much on learning through experience. This could be provided by relevant, contextualised problem exploration and solving that would in turn help develop skills in critical thinking, group work and collaborative learning (Tan 2004). Furthermore, such student-centred methodologies encourage what Petty (2004) has described as 'deep learning'; a constructivist approach where learning is achieved by adapting and building on prior knowledge, skills and concepts thereby allowing the learner to seek meaning for themselves and not the meaning as constructed by their teacher; an approach very much in keeping with the characteristics of ESD identified by Shallcross and Robinson (2007).

Of course one issue related to problem-based or scenario-based approaches is that they are often either centred on previous casework, where the actual outcome (or solution) is known, or is placed in a fictional narrative. Therefore, often the problem is illusionary; it has either been solved in the past, or does not actually exist beyond its function of promoting learning. However, in ESD, we have the potential for students to engage in real-life problems and issues that provide the sorts of experiential transferable skills and proficiencies that are required for the promotion of a more sustainable world (Jones et al. 2010).

Box 17.1: Pause for Reflection.

In Plato's Allegory of the Cave, he imagined a group of people that have lived their entire lives chained to a wall in a cave. The cave entrance, and therefore the light, is behind them and throws shadows of passing animals onto the only wall that they can see. Over time these people give these shadows names, think that echoes are the sounds they make and see them as living creatures. This becomes their reality. One day, one of the people managed to free themselves from the chains and turns to see the cave entrance. The bright light of course hurts their eyes and they are almost blinded by it. As a result they turn and return to the comfort of the dark and the safety of their established reality.

(*continued*)

Box 17.1: (continued)

How far is this allegorical perhaps of our slowness to respond to the environmental crisis? We know that things need to change and that a sustainable future has profound implications for our lifestyle, so we turn away. Is there a sense of safety in the dark? How far can education promote a sense of the possible? To what degree do we as educationalists engage our students with issues relating to sustainable futures?

Yet, as complex as the issues of sustainability are, the need to address them and the ways that we explore, explain and respond to them should interest anyone involved in teaching. For many, when we examine the suggested pedagogical strategies called for it is in fact difficult to see why they should be uniquely associated with ESD. The new methods and outcomes called for in good and effective sustainability education are perhaps simply those required for good and effective teaching and learning (Cutting and Cook 2009; Cook et al. 2010) and have already been adopted by many practitioners. In other words, we are closer than we might recognise to implementing these called for changes in education in the UK.

Given this, the approaches that we may have already adopted in our praxis may have much to offer in terms of an expertise and extant proficiency to the wider international transition to a more sustainable world. Sometimes it is easy to forget the international nature of sustainability education and our responsibilities towards global issues of health and social equity.

Box 17.2: Pause for Reflection.

- What do you think are the peculiar skills that students need to face future issues of sustainability?
- Having identified some at least, how does your teaching at present address these needs?
- Do you think that teaching approaches and teaching styles need to change? If so, in which ways and how would your teaching style change?
- Can you identify any obstacles that may present themselves relative to those changes? How may it be possible to overcome these?

From Millennium Development Goals to Sustainable Development Goals

A key international initiative that has been an important focus for international partnerships in key aspects of sustainability has been the Millennium Development Goals (MDGs) (UNESCO 2005). In 2000, the MDGs were first published, and the eight goals, each with stated targets, were to directly address the issues of poverty, hunger, disease and inequality by 2015. The eight goals and the targets for each are given in Table 17.1.

After 15 years, while millions of people have undoubtedly moved out of extreme poverty, the relative success in moving towards achieving the MDGs remains contentious (Fehling et al. 2013) and the challenges of fighting extreme poverty in all countries and of achieving the other MDGs

Table 17.1 The MDGs

1. Eradicate extreme poverty and hunger
   a. Halve, between 1990 and 2015, the proportion of people living on less than $1.25 a day
   b. Achieve decent employment for women, men and young people
   c. Halve, between 1990 and 2015, the proportion of people who suffer from hunger
2. Achieve universal primary education
   a. By 2015, all children can complete a full course of primary schooling, girls and boys
3. Promote gender equality and empower women
   a. Eliminate gender disparity in primary and secondary education preferably by 2005, and at all levels by 2015
4. Reduce child mortality
   a. Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate
5. Improve maternal health
   a. Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio
   b. Achieve, by 2015, universal access to reproductive health
6. Combat HIV/AIDS, malaria and other diseases
   a. Have halted by 2015 and begun to reverse the spread of HIV/AIDS
   b. Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it
   c. Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases
7. Ensure environmental sustainability
   a. Integrate the principles of sustainable development into country policies and programmes; reverse loss of environmental resources
   b. Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss
   c. Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation
   d. By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers
8. Develop a global partnership for development

remain (Stijns et al. 2012). However, many countries have made some advancement towards most of the goals and it is widely accepted that the MDGs did provide a focus for discussions and policy planning at national and international levels. In education, they became the basis of educational programmes, both formal and informal, with the recognition that 'the increased inequality caused by differences in educational attainment adds to longstanding inequalities in other dimensions'. (Sachs 2012, p.2211). This framework and focus is now set to continue with the new Sustainable Development Goals (SDGs) (UN General Assembly 2015) (Table 17.2).

Table 17.2 The SDGs

1. End poverty in all its forms everywhere
2. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture
3. Ensure healthy lives and promote well-being for all at all ages
4. Ensure inclusive and equitable quality education and promote life-long learning opportunities for all
5. Achieve gender equality and empower all women and girls
6. Ensure availability and sustainable management of water and sanitation for all
7. Ensure access to affordable, reliable, sustainable, and modern energy for all
8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
10. Reduce inequality within and among countries
11. Make cities and human settlements inclusive, safe, resilient and sustainable
12. Ensure sustainable consumption and production patterns
13. Take urgent action to combat climate change and its impacts
14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
17. Strengthen the means of implementation and revitalize the global partnership for sustainable development

Box 17.3: Pause for Reflection.

- Read through the MDGs listed in Table 17.1. How far, if at all, did your teaching, or your role, help achieve any of these goals?
- How could you have contributed more?
- Which goals do you feel you did/could have contributed most effectively to?
- Now read through the SDGs
- What do you see as the primary difference between the MDGs and the SDGs?
- Identify which, if any, you could feasibly professionally contribute to.
- What form would/could those contributions take?

International Collaboration in Education and the Sustainable Development Goals

In the Pause for Reflection box, you were asked to consider the potential contribution that you could make to the implementation of the SDGs. This section looks at ways in which international collaboration, particularly in terms of the pedagogical approaches discussed in the first section, may be one way that such an objective may be achieved.

Perhaps one of the most important and poignant issues relating to the present state of the planet is that of health, particularly the provision of and equitable access to healthcare. If ESD has one key priority, perhaps the health of this and the next generation perhaps should be it. Reflecting this, both the MDGs had and the SDGs have priorities relating to health outcomes. Urgent improvements in healthcare formed the basis of MDGs 4, 5 and 6 and this is retained in goals 2, 3 and 4 of the SDGs. Improvements in the quality and inclusivity of education forms the basis of SDG 4, and although there is no explicit statement about the importance of education, it is clearly integral to a number of the other goals relating to social equity. The one goal that also remains is the commitment to international collaboration and perhaps in such partnerships in teaching and learning, the greatest potential opportunity for direct involvement resides.

In many African countries, University Health faculties will be a major, if not the sole, training providers in poor, rural areas. In 2013, there was a worldwide shortfall of 7.2 million health workers, and that this figure was predicted to rise to 13 million by 2035 (Campbell et al. 2013). One of the identified key causes for this worsening shortfall was that not enough young people were being adequately trained and that increasing demands are also being put on the sector from a growing world population exacerbating regional imbalances. In relation to education and training in the 47 countries of sub-Saharan Africa, only 168 medical schools exist. Of those countries, 11 have no medical schools, and 24 countries have only one. The report concluded that:

> One of the challenges for achieving universal health coverage is ensuring that everyone—especially people in vulnerable communities and remote areas—has access to well-trained, culturally-sensitive and competent health staff.

High-quality teaching and learning is therefore vital in production of effective practitioners who work in environments of extreme poverty and isolation.

While the health problems that countries and regions face are often uniquely contextualised (Maila 2010), in the last decade there has been something of a pedagogic divergence, in regard to the delivery of health-based courses, between teaching institutions in the higher-income countries (HICs) and those in the lower-income Countries (LICs). Delivery of health courses in HICs has moved increasingly to a PBL model (Tan 2004) and yet the pedagogical approaches adopted on programmes in LICs are often more didactic models (Weber 2011).

The call for new approaches in sustainability education is predicated upon a research literature that suggests that didacticism often fails to promote critical engagement, as well as critical reflection upon and the contextualisation of practice. Such approaches in the area of health would clearly not produce practitioners who are effective decision makers. Curricula based on more active learning approaches such as PBL however are recognised as bridging the gap between theory and practice, enabling the development of real-world competencies (Tan 2004; Cutting and Kelly 2015).

In a recent paper, Kiguli et al. (2011) have identified critical gaps in core competencies in nursing and medical programmes in Uganda and concluded graduate practice would be improved if teaching were better

contextualised and relevant to work settings. The development and implementation of elements of PBL in programmes in such African universities could eventually provide a significant improvement in the professional practice and subsequently the health of regional communities. It would help build the capacity of students specifically working in the areas such as paediatrics, infectious diseases and pre- and postnatal health to evaluate situations, make informed decisions and critically reflect on practice.

A Case Example of the Nature of Potential Collaboration

Mekelle University (MU) is situated in Tigray regional state, one of the largest regions in Ethiopia with a population of nearly five million, of which 18 % are under five years of age. The College of Health Sciences is the sole regional provider for child healthcare workers and is therefore a vital resource in building the capacity of health professionals. In many African countries, other University Health faculties will be the major (if not the sole) training providers in poor, rural areas. Such provision is then at the forefront of training and professional development of health workers in some of the poorest areas.

The recent and rapid expansion of higher education (HE) in Ethiopia has resulted in a significant shortage of HE staff (Jobson 2010). At MU, the shortfall is addressed by the employment of recent master's graduates as instructors. With little or no training, pedagogic approaches are predominantly didactic and foster an approach to teaching that often fails to promote critical engagement, as well as critical reflection on and contextualisation of practice. It is not producing graduates who are effective decision makers, who can operate in isolated environments with partial information and limited resources. At postgraduate level, MU offers a UNICEF-funded MSc in Child Health and Paediatrics that has undoubtedly made a significant contribution to the health of children in Tigray. The course is unique to MU and as such is identified as a priority provision. However, here again, the pedagogical approaches adopted on the programme are predominantly didactic, an approach that often fails to promote critical engagement, as well as critical reflection on and the contextualisation of practice. The recognised need here is to build the capacity of students specifically working in the areas of paediatrics,

infectious diseases and pre- and postnatal health to evaluate situations, make informed decisions and critically reflect on practice.

The key to realising the SDGs in this area is not only to develop the capacity of students to advance critical practices, a recognised priority, but also to increase the capacity of teaching staff. In the UK in the FE sector, we already adopt a wide range of research-led active learning approaches and the transfer of such experience is one way in which collaboration may be developed.

MU recently sought to develop student-centred PBL resources as this is well established as pedagogy in medical education. Yet, evidence suggests that the introduction of PBL is diminished without staff development and support; therefore, staff training is regarded as essential (Massaro et al. 2006). Staff development and assistance in the design of resources was the recognised need. The expertise of teaching staff in the UK provides a real opportunity across a range of subject areas to assist in the development of teaching and learning resources around professional practice.

Such collaborations need not necessarily involve the costs incurred by travel and physical meetings, for the last decade has also witnessed Web 2.0 technologies assisting in the generation of online learning (Dunlop and Lowenthal 2009) promoting appropriate interactions that help students learn through discussion and discourse (Wheeler 2009). PBL is well suited to online environments (Savin-Baden 2007) and the co-operative development of online PBL resources not only may play a significant role in the promotion of learning but also can promote highly effective international learning communities (Cutting and Garrett 2012a). The development of such communities between colleges would establish what Elton (1996) best described as the New Collegiality where learning transcends hierarchy and nationality, as students and staff from different institutions together become knowledge producers. Such international collaboration would provide pedagogic and professional approaches that would promote a model of learning that focuses not only on cognitive perspectives but also on the ontological. It would allow an international discourse that promotes criticality and reflective practice. In short, it would help facilitate the development of professionals better equipped to improve the health and well-being of children in some of the poorest areas.

Having established contact with Mekelle University, it was proposed that online workshops were run, for and with, MU staff in the College of Health Sciences, using the considerable experience of staff from the UK in the development, implementation and evaluation of student-centred

learning (Kelly and Finlayson 2007: Kelly and Cutting 2008) and in running staff development workshops and seminars. This programme would be essentially online, and on completion, participants would be recognised by MU as PBL advocates and would go on to implement an agreed staff development programme, supported again online, by pre-recorded video and live links by the Plymouth University team.

Online workshops would also be run by the team with MSc students focusing on the development of their research skills, delivered in a PBL format with MU advocates in attendance as co-facilitators.

Partnership Approaches to Learning and Sustainability

Promoting external partnership and internationalisation are often major strategic objectives of tertiary colleges and today international partnerships are not difficult to develop. Increasingly, the use of non-proprietary freely available software such as Skype or FaceTime may be utilised for collaborative online meetings and discussions with both staff and students. Social media may be utilised to form international co-operative and collaborative study groups (Cutting and Garrett 2012a). The development of online international partnerships provides a two-way learning environment. Members of staff from both institutions are able to develop effective and appropriately contextualised teaching and learning resources, in this case based around issues of health, and the students begin to genuinely recognise the complexity of both the issues and the constraints relative to possible responses. This in turn provides a different level of engagement in subsequent discussions about sustainability. Working at an international level also promotes sensitivity to, and a much greater appreciation of, the issues relating to health and development in Low-Income Countries (Cutting and Garrett 2012b). This also has particular benefit in Low-Income Countries, as an 'open source' approach requires minimal investment form the participants. Web 2.0 applications may help to promote a more global curriculum, support learning and improve student engagement, and particularly target contextualised real-life problems. Students have also informally reported that the international dimension of the project added a dynamic to the discussions. One based on an enhanced appreciation of cultural perspectives (Cutting and Garrett 2012b).

This approach may be seen as 'learning as participation' (Vare 2007) where students are involved in a method that promotes the development of deeper understanding to the extent that we may feel we can influence outcomes. (Scott and Vare 2007) These characteristics are exactly those of approaches that we require to adopt in ESD.

Conclusions

Of course calling for international collaboration on line or otherwise is one thing, carrying it out is another. Within FE Colleges, there is a constant tension between social and community purposes and contemporary economic pressures and staff often need to carefully negotiate and arbitrate these conflicting factors. However, undoubtedly, FE colleges need to be flexible multi-agencies if they are to meet the needs of their local communities and those of a global community (Hyland and Merrill 2001).

We have the technology in place and through social media and information technology, we have an unprecedented opportunity for inclusive, global-scale problem solving around the main sustainable development challenges.

The international collaborative development of contextualised active learning approaches presents a very real opportunity for staff in the FE sector across a range of professional disciplines to enhance the experience of their own students and that of students in other countries. It is also a mechanism by which the teachers in FE colleges can bring their professional skills to the forefront and actively promote and help in the implementation of strategies to help achieve the new SDGs. Sachs (2012) suggests that pathways to sustainability 'will not be identified through a top-down approach, but through a highly energised era of networked problem solving' (p.2211). Such networks may well be a way in which FE colleges could look beyond local provision and participate more fully in the future well-being of people in the wider global community.

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Further Reading

It is difficult to recommend specific reading around this area, but you could try a general search for international collaboration. The British Council website is often a good place to start to view some of the projects taking place and can be accessed at https://www.britishcouncil.org/education.

CHAPTER 18

Looking to the Future

Roger Cutting and Denise Summers

This is the final chapter in a book that initially resulted from a research project carried out by a team of initial teacher educators based at Somerset College in the southwest of the UK. They used a co-operative inquiry approach to develop their knowledge, skills, values and confidence to embed Education for Sustainable Development (ESD) in the Postgraduate Certificate in Education and Certificate in Education (PGCE/Cert Ed) programmes across the Plymouth University partnership of colleges for student teachers in the further education (FE) and skills sector. As well as the chapters directly linked to this project, our colleagues across the partnership and contacts further afield have contributed chapters which convey the way in which they have developed the sustainability agenda further as they supported their students in meeting the ESD outcome in their programmes. These chapters provide examples of research carried out since the project started; case studies; practical examples of teaching sessions and reflective questions to support you in developing your understanding of ESD and how to use this understanding to change your practice.

This conclusion pulls together some of the main themes of the chapters and the questions that you were asked to consider to help you develop a better understanding of ESD and how this might become a focus in your work.

The book has been divided into sections using the metaphor of growth to provide a structure and what follows will hopefully help you reflect on the chapters in each section.

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Inspiring Change in the Beginning

Chapter 2 gives the details of the context at Somerset College which inspired the original co-operative inquiry to embed ESD in our PGCE/Cert Ed. It gives suggestions for those who may be responsible for leading ESD developments in their organisations to carry out an audit of provision, identify good practice and provide opportunities for sharing the practice and supporting each other by developing communities of practice. A variety of research approaches and methods are shared which may inspire you to carry out research alongside your curriculum development. Also shared are various sustainability topics that were identified across the college provision, as well as activities which developed the College curriculum, community, campus and culture. You may like to consider which of these may be relevant to the various subject specialisms within your organisation.

Chapter 3 suggests you review your syllabus, identify whether sustainability is mentioned in it and if so, or if not, identify where there are opportunities to include it. Having benefited from using the co-operative inquiry approach in terms of providing a structure for a group of individuals to work together to support each other in their development, you may wish to consider whether it is an appropriate approach for you and think about who you could work with and what your first steps would be.

Chapter 4 focuses on the learning from a trip to India to attend a course on Gandhi and Globalisation. You are asked to reflect on Gandhi's philosophy and his profound belief in equality, fairness and justice and consider how you might use this to develop the way in which you address equality and diversity in your practice. Concern about the potential contradiction in the concept of 'sustainable development' led us to consider 'development' as being the flourishing of individuals and communities and so you may wish to consider how community projects could be developed with your students which focus on sustainability. Learning about Gandhi's principle of non-violent communication made us think about both the professional and personal implications of this and in terms of developing as an individual and as a community, it seems a very good principle to underpin the way in which we engage with our students, our work colleagues and managers, as well as our families.

Developing Our Practice and Preparing the Ground

Chapter 5 focuses on resources and the way in which consensus is achieved and the power structures masked by such consensus. It suggests you think about examples of consensus, the interest this consensus serves and

what alternatives there might be. There is an example of a session plan designed to encourage student teachers to consider the sustainability of the resources they use in teaching. This could be developed by you or, if more relevant, could be amended to consider resources in specific subject specialisms. Using an example of a particular resource, it explains how you could encourage your students to identify and explore sustainability issues with a group of students.

Chapter 6 explores sustainable assessment and the influence this can have on encourage lifelong learning. You are asked to consider how you currently prepare your students for lifelong learning. It describes a carbon footprint game developed and how we adapted this to include additional question cards to make it appropriate for student teachers. It provides details of this and shows how resources can be further developed to make the game relevant for different subject specialisms and contexts. It discusses how this can be used as an initial or formative assessment activity and then moves on to other aspects of sustainable assessment including self, peer assessment and assessment of, for and as learning approaches. Reflecting on how these approaches could be used to develop your own assessment approaches helps provide further opportunities to encourage lifelong learning.

Chapter 7 considers the teaching of values recognising that many of us can find this a difficult topic to approach. You are encouraged to reflect on how you can provide a safe space to discuss issues which may result in conflict. The chapter goes on to describe and evaluate a session designed to encourage the teaching of values and provides the guidance required to try out the session. The session can be developed to address the values relevant to different subject specialisms so, as well as using it to consider ESD values, it could also be used to address the values of students engaged in a health and social care course or those doing business studies, for example.

Sowing Seeds and Nurturing Growth

Chapter 8 challenges the traditional role of the teacher and introduces Apollonian and Dionysian approaches to teaching and three-stage models which can be used to introduce ESD in a way which move from the transmissive to a problem-solving approach which encourages critical and systems thinking. You are asked to reflect on your practice and consider it in relation to the different stages of the model and whether you can incorporate aspects of the other stages to encourage ESD.

Chapter 9 explores the award-winning Innovation, Creativity and Enterprise (ICE) house project (see https://www.cornwall.ac.uk/news/

ice-house-wins-top-award_developed by The Cornwall College Group and Plymouth University and explores the links made with the project to embed innovation, creativity and enterprise, along with sustainability into the PGCE/Cert Ed curriculum. The chapter explains the ICE principles and you are asked to reflect on these and how they may be incorporated into your practice to encourage student development.

Chapter 10 considers what can be learned from complexity theory in embedding ESD and gives a practical framework for doing this. You are encouraged to reflect on aspects of the theory and whether there is room for the unplanned messiness, interactions and emergence of new ideas that may occur. Various theories and models are referenced and you are encouraged to reflect on how these link with your practice or could be used to develop your practice. The chapter also describes a student-led module we introduced in which they worked together using a co-operative inquiry approach to support their learning about ESD in more depth.

Chapter 11 is taken from a paper published in the *Journal of Education for Sustainable Development* and explores the way in which our students and colleagues conceptualised ESD, the professional and personal effect of this and how this was influenced by the changes to our programme. You are encouraged to reflect on your students, subject specialisms and local communities and how this knowledge can help you introduce ESD to your students in a way which fosters a sense of purpose and hope for the future. This research showed how the embedding of ESD had encouraged Sterling's (2011), first (conformative) and second (reformative) levels of learning with some glimmers of the third (transformative) level demonstrating the original team member's roles as agents of change. You are encouraged to consider whether you can be agents of change and identify the steps you would take.

Respecting Our Roots Whilst Developing New Branches

Chapter 12 considers the way in which the PGCE/Cert Ed curriculum has changed over the last few years and uses the metaphor of 'grandfather's axe' to show how the values have been sustained through a period of major change. You are asked to reflect on our core values, how these relate to those of your colleagues and students, how their values affect your own practice and how your values may have changed

through your years of practice. You are also asked to consider how your values have been upheld by your school/college experiences, or whether they stem from your cultural background or your family. You are also introduced to the United Nations Educational, Scientific and Cultural Organization (UNESCO) core values and asked to consider how these relate to your own core values and how they can be developed in your practice.

Chapter 13 reflects on the contemporary issue of well-being and sustainability. Health and well-being are key aspects to the UNESCO sustainable development goals and are global priorities and as such are vital aspects of ESD. However, these issues are also relevant at a smaller scale and have direct implications for the FE sector. Not only are health-related programmes and courses typically part of a College's offer, but students in the FE sector are often subject themselves to the pressures of study and of course, the pressures of everyday life. This chapter guides the reader through some of the wider definitions of health and well-being and reflects on its importance in relation to both the wider sustainability agenda and to the students in our care. It provides some reflections on the promotion of well-being and gives examples of strategies that may be employed in the sector to promote these issues.

Chapter 14 argues that the current focus on student voice in the FE sector is tokenistic. It discusses the importance of transformative learning in encouraging democratic and collaborative relationships between students, teachers and managers which leads to active citizenship to meet the principles of ESD and secure a sustainable future. You are asked to reflect on various theories and models including the characteristics of transformative learning and models of citizen participation and consider whether these relate to your practice and your organisation and how you can encourage this if not.

Moving On and Finding New Pastures

Chapter 15 considers the effects of ESD in FE so far having carried out some preliminary research to find out the views of students, lectures and employers. It identifies the need for more systematic research to evaluate the impact of ESD in FE and encourages initiatives between schools, FE and HE and industry in order to develop a more effective ESD curriculum FE as well as nurturing social enterprises as part of a broader entrepreneurial initiative to embed sustainability into the economy.

Chapter 16 discusses the current focus on vocational programmes and the loss of non-vocational adult education courses and asks you to consider how to include the approaches required in your practice to develop the skills that a resilient and sustainable community need for the future. Examples are provided of successful initiatives developed between local businesses, charities and colleges and, although recognising the constraints, provides strategies to overcome these.

Chapter 17, the penultimate chapter, describes some collaborative work between Plymouth University (UK) and Mekelle University (Northern Ethiopia). This chapter questions whether our slowness to respond to the environmental crisis relates to Plato's Allegory of the Cave and the sense of safety in familiar contexts in comparison to the lifestyle changes required for a sustainable future. You are asked to consider the sustainability skills your students need, whether your practice encourages these and, if not, what the obstacles are, and then to do the same with the Millennium and Sustainable Development Goals (Sachs, 2012). A case study of a collaboration carried out with Mekelle University in Ethiopia is shared and you are encouraged to consider opportunities for such collaborative work to promote global learning which seeks to achieve the Sustainable Development Goals.

In a report commissioned by the Learning and Skills Improvement Services (LSIS 2013), entitled Embedding Sustainability into Teaching, Learning and Curriculum in the FE sector, there is a call for FE colleges to ensure 'there is an institutional mandate for embedding sustainability in the curriculum', to 'work with awarding bodies to change qualifications' and provide CPD opportunities on sustainability to enable teaching staff to 'effectively train and do research'. Hopefully, this review of chapters demonstrates that this book is an attempt to provide a good starting point to provide some of the underpinning knowledge required and introduces you to the relevant definitions and debates.

Fundamentally, this book aims to empower the teacher to critically analyse ESD through their own subject specialisms, engage in the debate and learn with their students. The democratic and participative approaches introduced help to question the traditional transmissive styles of teaching and learning and move on to consider the need for radical and transformative approaches. In this book, we have focused on the need for these methods in ESD, but of course there are wider calls for profound changes to take place in all areas of teaching and learning. Interestingly, when pedagogical approaches that call for critical and creative thinking,

participation and participatory learning, and the promotion of systemic thinking (Tilbury and Wortman, 2004) are interrogated, it is difficult to see why they should be uniquely associated with ESD. The new methods and outcomes called for in good and effective sustainability education are simply those required for good and effective education (Cook and Cutting, 2009; Cook et al. 2010).

Calling for profound changes in education is in some ways the easy part. Developing specific methodologies, along with their implementation and critical evaluation, is somewhat more problematic and well summed up by Sir Ken Robinson:

> One of the real challenges is to innovate fundamentally in education. Innovation is hard because it means doing something that people don't find very easy, for the most part. It means challenging what we take for granted, things that we think are obvious. The great problem for reform or transformation is the tyranny of common sense; things that people think, 'Well, it can't be done any other way because that's the way it's done.
>
> *Sir Ken Robinson. TED 2010 Ken Robinson: Bring on the learning revolution! (2010)*

In Ken Robinson's talk, he argues that there is little point in trying to improve education for it is a model that is fundamentally broken and that we need little less than a revolution in the way we approach education. Perhaps nowhere more than within the field of education for sustainability (EfS) is this ever-increasing call for such a revolution in teaching methods more keenly heard, particularly if we are to produce a generation capable and hopeful of meeting the problems that are presented to us in the twenty-first century (Orr 2004). However, in some ways, for those of us involved in teacher education, particularly in ESD, calling for a revolution is an irresistible sentiment, and of course it has been said before (Apple 2000; DeLeon 2006; Freire 1970; Giroux 1988, 2001) The intellectual predication and the academic predilection may be appealing; however, the difficulty lies in the expediency and reality of its implementation.

If we are as a profession and a sector to rise to this challenge of a new and appropriate praxis of pedagogy, teachers and lecturers will themselves need to be freethinking, adaptable and independent learners who are empowered to direct their own learning and practice.

At a time when there is a recognised need for innovation and creativity in both ESD and in education generally, our ability to produce innovative

and imaginative teachers who have the capacity to inspire and engage students of any age in the forms of learning that the future will require could be hindered by the implementation of educational structures and systems that in turn discourage experimentation and innovation particularly in the FE sector.

However, this book shows that this is actually not the case and that despite the difficulties that so-called 'forgotten sector' of FE faces, there are innovative projects, creative approaches and critical discussions taking place. The case examples, the reviews and the essays presented here are a testament to those educators who can be considered to have been agents of change in attempting to do things differently and responding positively to the recognised need for change.

Of course trying new things sometimes fails and when things go wrong, it can be difficult to accept, both professionally and personally. However, as educators, we need to remember that only through the dynamism of change so evident in the examples in this book, can we hope to provide teachers and students of the future with the assuredness that will be required to face the future. Our legacy must not be the problems that they will face, but rather the provision of skills and approaches that provide solutions.

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