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Sustainability, Systems Thinking and Professional Practice

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This article explores the impact of the new sustainability agenda on the occupational and professional needs of those who have taken educational and training programmes in the environmental field either at undergraduate or postgraduate level or through relevant professional institutions' continuing professional development programmes. It also describes a one-day workshop for the professionals on sustainable development, based on systems thinking and practice. The workshop provides a model for developing greater understanding and effective action in professional practice, by using dialogue and interprofessional learning to explore approaches to sustainability in a variety of business and professional contexts. It introduces the principles underpinning the concept of sustainability and provides tools to support the integration of sustainable development into professional practice and organisational change.

1. INTRODUCTION

In the UK the current policy framework for sustainable development is being influenced by a number of recent policy papers on energy, sustainable communities, proposals for substantial reforms of agriculture and planning regulations. More recently, a sustainable development action plan for education and skills has been published by the Department for Education and Skills (2003).

All of these policy changes will have a substantial impact on the education, training and employment of professionals. Indeed, amongst the 5.5 million people in the UK who call themselves professionals there is already a growing realisation that they need help in understanding how to put the principles of sustainability into practice (Martin & Hall, 2002). Professionals in all sorts of roles increasingly have

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to demonstrate their competence in complying with complex sets of environmental, social and ethical parameters.

2. ISSUES FOR THE PROFESSIONS

Some of the issues and implications of the new sustainable development policy framework and its impact on professional practice (and by implication the undergraduate curriculum) are summarised below (Essence, 2001).

(i) So far there have been relatively few attempts to relate environmental higher education to the changing needs of the labour market, but this will change.

(ii) The qualifications required for many jobs in the emerging labour market are very different to those that have previously characterised the environmental professions in Europe.

(iii) New kinds of competencies in business, economics, law, politics and public administration, sociology, communications, ethics, human ecology, environmental management as well as more traditional natural sciences are being sought by employers.

(iv) There is a need for people with an interdisciplinary problem-solving capability, rather than a traditional and often overly-specialised scientific competence.

(v) Graduates from existing environmental programmes are finding employment difficult, largely because their curriculum is insufficiently differentiated to meet the needs of employers. Differentiated as indicated in (i)–(iv) above and (viii) below. Handling interdisciplinary practice in an economic, environmental and social context is an essential requirement (see The Egan Review, 2004 and Martin *et al*., 2004)

(vi) The issue of academic quality is closely connected to the more general issue of professional competence in the new and emerging environmental labour market.

(vii) Many of the tasks of company/organisation environment officers and managers are often company or brand specific, hence general education programmes are difficult to devise.

(viii) The skills most often required by employers are of the softer kind—communication, leadership, organisational, etc. These are notoriously difficult to teach in a formalised university setting.

(ix) Future qualifications will need to include conflict management and an understanding of cultural differences in an international context.

Professional bodies are increasingly being asked to review their traditions and practices—radically and urgently—with far reaching implications for those higher education courses they control or the curricula they influence. The challenge

of sustainable development has potentially profound implications for professions across a range of disciplines—whether engineering, geography, urban design and planning, environmental, accounting, manufacturing or whatever profession— in both the practice and the role of the professionals. Engineers, for example, in designing solutions to meet modern needs, are responsible not only for the safety, technical and economic performance of their activities, but they also have responsibilities to use resources sustainably; to minimise the environmental impact of projects, wastes and emissions; and to use their influence to ensure that their work brings social benefits which are equitably distributed.

3. PROFESSIONAL PRACTICE FOR SUSTAINABLE DEVELOPMENT (PP4SD)

It was in this context that a new initiative, Professional Practice for Sustainable Development (PP4SD; see www.pp4sd.org.uk), was launched in 1999 (Martin & Hall, 2002). This initiative set out to work in partnership with fourteen professional institutions to create a common curriculum framework for sustainable development from which to test and publish training materials. The materials developed were aimed at professionals from varying backgrounds, including business, academia and consultancy. Whilst the primary focus was on those professionals in work, we were also mindful of those 'future' professionals coming through the university system. Hence, the PP4SD process also sought to find solutions as to how sustainability might be taught in undergraduate and postgraduate programmes.

The next section of this paper describes the design and delivery of a one-day workshop in sustainable development (Baines *et al*., 2001).

4. THE WORKSHOP STRUCTURE

The workshop structure is based on five overlapping themes:

1. The principles of sustainability
2. An introduction to systems thinking and practice
3. Tools and techniques for taking a future perspective
4. The business benefits of sustainable development
5. Action planning

5. PRINCIPLES OF SUSTAINABILITY—A SYSTEMS PERSPECTIVE

It was Tolstoy who wrote that the greatest threat to life is habit. Habit, he argued, destroys everything around us, because it familiarises us to the point that we no longer really see things. We become incapable of bringing the familiar

furniture of our lives into focus. A similar argument can be made about ideas and concepts, and about the intellectual frameworks that shape ideas and concepts. Concepts such as the environment, nature and civil society are familiar and we often take them for granted. Yet they are often difficult to define, partly because they carry with them a variety of implicit assumptions, which influence the way we think about them.

Professionals are no different. Their beliefs and values are largely defined by their long education and training in their basic discipline. Consequently, one of the first steps in designing the workshop was to create with the representatives of the professions an agreed intellectual framework within which to explore the concept of sustainability. The framework (Martin & Hall, 2002) has a number of key characteristics:

- The earth as a sustainable system is dependent on the activities of a number of well-defined bio-geo-chemical cycles
- The earth as a sustainable system is open to flows of energy and closed to matter (based on the first and second laws of thermodynamics)
- There are four principal ways of undermining the bio-geo-chemical cycles (Porritt, 2000)
- The framework is set in a future perspective

By setting the sustainability agenda in an 'earth as a system' context, it became much easier for professionals to engage with what needs to be done, rather than focusing on measuring, managing and mitigating downstream environmental impact, as environmental scientists tend to do (Martin, 2002). The framework provides a mental model for defining what a sustainable world might look like (Table 1). Thus it critically supports the process of inter-professional dialogue and reflection about the issues and solutions.

Table I. The PP4SD Framework for Sustainability

In a sustainable society:	
1	Any materials mined from the earth should not exceed the environment's capacity to disperse, absorb, recycle or otherwise neutralise their harmful effects to humans and the environment.
2	The same principles should apply to synthetic substances.
3	The biological diversity and productivity of ecosystems should not be endangered.
4	A healthy economy should be maintained, which accurately represents the value of natural, human, social and manufactured capital.
5	Individual human skills, knowledge and health should be developed and deployed to optimum effect.
6	Social progress and justice should recognise the needs of everyone.
7	There must be equity for future generations.
8	Structures and institutions should promote stewardship of natural resources and the development of people.

The framework was derived from a number of key sources, including: The Rio Declaration, World Business Council on Sustainable Development (see Sigma, 2003).

6. SYSTEMS THINKING AND PRACTICE

The workshop begins by asking participants to draw what they understand by sustainable development. Using the drawings as an icebreaker has been an invaluable technique for promoting and facilitating inter-professional dialogue and learning on which the course depends. It avoids the superficial and often sterile debate on definitions of sustainable development.

Drawings provide useful ways of gathering information about complex situations and are a key element of the approach to systems thinking and practice developed by Checkland (1999). Using pictures as a way of thinking about issues is common to several problem-solving methods because our intuitive consciousness communicates more easily in impressions and symbols than words. These pictures attempt to capture the real situation through an entirely freehand, cartoon representation of all the ideas, relationships, influences, causes and effects relevant to sustainable development.

An additional dimension to this approach widely used by systems practitioners is the use of diagrams to explore the relationships or boundaries between systems of interest such as sustainability and sustainable development. Whilst these terms are often used interchangeably, they mean different things. In simple terms, sustainability means the capacity for continuance into the long-term future. Sustainable development is the journey or means of achieving the goal of sustainability. In systems thinking, both represent separate but connected systems of interest. To an individual or an organisation sustainable development represents a 'sphere' of influence and action over which they have some control and direction, whereas sustainability represents a 'sphere' of concern, over which an individual or organisation only exerts some limited impact indirectly through their sphere of influence. Identifying a professional's sphere(s) of influence facilitates a much more focused and productive dialogue on achievable actions and outcomes.

7. TOOLS AND TECHNIQUES FOR TAKING A FUTURE PERSPECTIVE

The workshop also applies a number of techniques to help participants to think in a future perspective because one of the challenges of sustainable development is developing resilient and adaptive decision-making tools that can cope with risk and uncertainty. These techniques include simple scenarios that exemplify the two different approaches we can take to the future and, importantly, how these approaches influence how we act. The usual way of approaching the future is

through forecasting by starting from where we are and projecting trends over relatively short time intervals, e.g. 1–3 years. Planning based on such trends tend to lead to short-term and incremental changes. A major limitation of forecasting is that many present trends are clearly unsustainable! The alternative approach is "backcasting" which starts by taking a 20–30 year perspective based on scenarios or based on the sustainability framework outlined earlier (Ison & Blackmore, 1998). The idea is to think imaginatively about the business or organisation to which you belong and seek to explore a range of fundamental changes that will make it more closely fit the sustainability framework. From each alternative future created, you then work your way backwards from the future towards the present in stages, asking such questions as—what barriers did we overcome; who helped us; who did we need to persuade?

The differences between forecasting and backcasting are critical to how we act in response to the issues of sustainability. Forecasting at best offers a short-term future, but if these trends fail us, then prediction fails us. History teaches us that sooner or later trends fail because change creates deeper, more fundamental issues. In contrast, backcasting starts from your anticipated destination (most sensible climbers start planning from the summit that they wish to conquer and work backwards!) and seek to plot a course of action towards it.

8. BUSINESS BENEFITS

The next phase of the workshop uses case studies from business and industry to illustrate how sustainable development principles have been applied and to provide an opportunity for participants to develop their own thinking around practical examples. The case studies are based on ongoing businesses such as banking, (The Co-operative Bank, www.cooperativebank.co.uk), construction (Carillion plc, www.carillion.co.uk) textiles (Interface, www.interfaceinc.com). They all feature the business benefits of taking a more sustainable approach to business practice.

The project is also currently working on other case studies in land-use such as farming and horticulture (www.growingforthefuture.com/start.htm). Case studies ground the systems theory of the course in real-world examples allowing participants to reflect on the progress made by some substantial businesses, and also highlight the issues surrounding organisational change. They emphasise that organisational change based on the principles of sustainability is not a steady state process, but a dynamic and complex state of affairs.

9. ACTION PLANNING

Throughout the workshop an emphasis is placed on putting sustainability into practice. The final section of the workshop re-emphasises this aspect through

a short action planning session. All participants are asked to prioritise a set of organisational and personal actions that they can set in train or influence within the next month of their work.

It is often the case that organisations are willing to consider an approach to sustainable development, but search for immediate benefits that are both visible and provide financial gain. Yet the true benefits of sustainable development may not be seen in the lifetime of the majority of professionals although tracking would doubtless identify significant movement and change over time.

10. CONCLUSION

This paper attempts to set out some of the major issues facing professionals as they engage with and put into practice the challenging and crucial sustainability agenda. It also provides some insights into the sustainability learning needs of existing and future professionals in the workplace.

It is becoming increasingly evident from this work and contemporary experience that any approach to sustainability needs to be different from the traditional forms of education and training that are currently delivered through schools, colleges, universities and continuing professional development (CPD) (Jucker, 2002; Sterling, 2001). As many commentators are now articulating, the emphasis is more on action learning, dialogue, inquiry, participation and interprofessional partnership (Scott and Gough, 2003). Hence, the approach should not be based solely on teaching and the transmission of knowledge or just working to a national syllabus or curriculum, but allowing exploration of issues and problems through open-ended enquiry and learning, as part of an ongoing process. Consequently, effective sustainability change systems must themselves be innovative learning models aimed at changing organisational culture and behaviour.

Since the term organisational learning became popular in the 1990s, organisations have become aware of the need to develop their human capital to manage change and remain competitive. The PP4SD approach recognises this as one of the principal ways in which it can engage in the process of partnership and influence behaviour and attitudes within organisations. It recognises that many organisations in transforming the way they work, will also have to transform they way they learn in order to sustain their competitive advantage.

The PP4SD has developed and successfully tried a number of new ways of exploring how sustainable development can be a vehicle for influencing the existing cultures of organisations and the professionals who are employed in them. The PP4SD workshops demonstrate what can be done by challenging existing beliefs and values in a process based on appreciative inquiry. This in essence is a process which focuses not on what is wrong with an organisation but rather on how using the principles of sustainability we can develop new and positive ways of organising its activities sustainably. It is based on the starting point that

doubt and negation undermine constructive intent. Appreciative inquiry recognises that inquiry and change are not separate elements but simultaneous. Inquiry is intervention. The seeds of change—the things people think and talk about, the things they discover and learn, and the things that inform dialogue and inspire action—are implicit in the very first question asked. Hence, rather than pursuing an organisation's existing activities in a critical way, the PP4SD workshops set about questioning in a positive light new ways of doing things, by replacing existing (and reified) patterns of behaviour and discourse and creating space for new ideas and activities.

Hence the PP4SD process influences organisational culture and behaviour through interventions and facilitated conversations between professionals. It recognises that culture is not a static thing but something that is constantly being created, affirmed and expressed within an organisation as a result of all the conversations and negotiations that go on between its members. These discussions involve a continuous process of agreeing, sometimes explicitly, usually tacitly, about the 'proper' way to do things and how to interpret the events of the world around them. In order to change a culture we have to change all of these conversations, or at least the majority of them (Isaacs, 1999). And changing conversations is not the focus of most change programmes, which tend to concentrate on organisational structures or reward systems or other large-scale interventions.

The PP4SD process has a number of implications for undergraduate and postgraduate environmental programmes. The most significant is to offer more opportunities to develop the skills of dialogue and inquiry in an interdisciplinary and participatory way. Few can argue with the goals of sustainability, but many should contest and explore how sustainability can be achieved. Hence, it is critical that environmental programmes accommodate approaches to dialogue, systems thinking and practice, principles of sustainability, values and ethics in a professional and personal context and above all they should emphasise the importance of achieving systemic change.

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