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‘More than scaling up’: A critical and practical inquiry into operationalising sustainability competencies

Societies everywhere are undergoing deep transformation, and this calls for new forms of education to foster the competencies that societies and economies need, today and tomorrow. This means moving beyond literacy and numeracy, to focus on learning environments and on new approaches to learning for greater justice, social equity and global solidarity. – Irina Bokova, 2015, p. 3

1 Introduction

This chapter goes to the heart of a critical issue that has affected and limited the power and reach of environmental and sustainability education (ESE) for decades: although ESE purposively explores and supports transformative social change, it operates as a subsystem within a much wider educational complex which is essentially socially reproductive and conservative. The challenges for the ESE community therefore are twofold and considerable: first to engage and educate a broad spectrum of participating learners directly; and second, to work effectively to change mainstream educational policy and practice – so the latter can be an agentive part of the sustainability transition rather than a barrier to its realisation.

This is not new of course. The struggle to achieve progress on both these interrelated fronts is now decades old, and disappointingly, the mainstream is slow to change. The challenge of manifesting – on a global scale – a paradigm of educational philosophy, policy and practice which is much more aligned and responsive to the complex social-ecological trends and risks now manifest within our Anthropocene times remains daunting.

Yet the rhetoric around the need for vision and re-direction in education has grown stronger in recent times. For example, UNESCO’s exhortations for reorientation and renewal exemplified by its Global Action Programme (GAP) (UNESCO 2014a) testify to a sense of both possibility and urgency, reinforced in 2015 by the launch of the Sustainable Development Goals (SDGs) (UN 2015). Specifically, as authors, we are inspired by the assertion in UNESCO’s end of the UN ESD Decade report *Shaping the Future We Want* that, in relation to Higher Education (HE), ‘...more than the alignment or scaling-up of existing good practice will be needed—with greater attention to systemic approaches to curriculum change and capacity-building for leaders’ (UNESCO 2014b, p.31). This bold statement suggests that strategies of gradual adoption and accretion simply will not suffice if education is to play a significant role in shaping a liveable future, because as UNESCO states: ‘Although progress has been made, the global transformation of higher education towards sustainable development has yet to occur’ (UNESCO 2014b, p.31). So ESE needs to generate transformational change in education to precipitate transformative societal change. The challenge here is to generate second order learning and change in both educational systems and learners, which can shift conventional perspectives and practises sufficiently. As Glasser and Hirsh (2016, p.126) state:

The existing, decontextualized formal education system is built on creating first-order change, essentially doing more or less of different forms of what we are already doing. However, in order to engender deep meaning and a contextualized understanding of the interconnected sustainability challenges facing humanity, second-order change must also be enacted...this requires transformative system structure changes, which entail reimagining formal education so that it creates a robust foundation for improving quality of life for all.

This chapter describes the first phase in an international collaborative research pilot project “Meeting the Call for Transformative Societal Change: A Cross-cultural Exploration of the Promise and Possibility of Learning for Sustainability Competencies”, undertaken by researchers at Plymouth University, UK, Western Michigan University, USA, and Vechta University, Germany, that seeks to explore a route and strategy that is intended to help address the issues outlined above and respond to the call to go beyond ‘scaling-up’. It focusses on *competencies*, which Rieckmann (2012, p.129) describes as an ‘interplay of knowledge, capacities and skills, motives and affective dispositions’ which facilitate self-organised action, in two critical respects: First as a vehicle for pedagogic change and developing transformative learning experiences (Rieckmann 2012), and second as a catalyst through which institutional learning and structural changes supportive of sustainability might be better and more speedily progressed.

We see sustainability competencies – ‘the organizational, participatory, collaborative, interdisciplinary, and reflection competencies necessary for sustainable development’ (Barth *et al.* 2007 p.419) – as a potential way of addressing the two challenges outlined in the introductory paragraph above, not least given increasing interest in sustainability competencies (see section 3 below) and rising interest in higher education (HE) in the notion of ‘graduate attributes’. This research project is an attempt to test the validity and practicability of this approach. The matter is not at all simple however, and the rest of the chapter discusses and outlines work to date.

Challenge

Environmental and sustainability education (ESE) is inextricably linked to *context* – in contrast to the orientation of much mainstream educational thinking and practice. ESE is purposed by, and seeks betterment in, the contemporary realities that are defining present lives and will influence the course of future lives. The most powerful current mandate for ESE policy and practice came with the advent of the United Nations SDGs. Launched in September 2015, they describe a global agenda which the UN sees as ‘a supremely ambitious and transformational vision’ (UN 2015, p. 3) launched ‘at a time of immense challenges to sustainable development....The survival of many societies, and of the biological support systems of the planet, is at risk’ (UN 2015, p.5).

This is an historic initiative, (the inevitably rhetorical style of the launch document aside), not only because it is attempting a profound shift in the trajectory of the human story, but because it lays down a specific time scale. The UN will, it says, work ‘tirelessly for the full implementation of this Agenda by 2030’ (UN 2015, p. 3). The brevity of this stipulated period says something about the immediacy of the complex of systemic issues facing humanity and the planet.

Beyond the SDGs, sustainable development discourse centres on both the need to adapt to current conditions of uncertainty and instability – political, economic, social and ecological – and to anticipate future contingencies. At the same time, there is a strong movement that goes

beyond the need for risk mitigation and avoidance (nominal sustainability) and rather, stresses the constructive possibility of developing more robust sustainable ‘everything’ – structures, technologies, systems, economies, settlements, societies, worldviews, and so on – that might usher in positive conditions more conducive to stability, security and wellbeing for all (Glasser 2016).

Response

Clearly, the role of learning is – or should be – central to any major societal transition towards a more sustainable state (Sterling 2001, Vare and Scott 2007). Given the global context represented by the SDGs, the role, purpose and nature of formal education (which is our concern here) is called into question. But two problems arise immediately. The first is the standing of education in the sustainable development community; the second is the standing of sustainability in the education community. Both are characterised by significant shortfalls.

The constrained view of education largely afforded by the sustainable development community is demonstrated in the high level reports associated with the post-2015 development agenda, where its potential role in contributing towards more sustainable modes of development is almost invariably underplayed (see Sterling 2014 for detail). Rather the emphasis is on basic literacy and education for all (EFA). Whilst access to education is clearly very important, the SDGs similarly do not recognise education as a vehicle for helping achieve the Goals’ global agenda. Specifically, Education – which is SDG Goal 4:

currently emphasises education in terms of its potential economic and social benefits – there is no recognition that education through awareness raising, training and capacity building can help protect environmental quality and lead to wiser resource use (Sterling 2015, 27).

Measures that are seen as necessary to achieve the SDGs are referred to as ‘means of implementation’ (MoI), but mention of ‘education’ as a MoI is largely absent or seen as having least importance in reports and literature on this topic (Olsen *et al.* 2014). Moreover, in the SDGs themselves, a ‘narrative of change’ is missing as regards how pursuit of these goals ‘would lead to broader outcomes of social change, and in terms of how this change actually takes place’ (ICSU, ISSC 2015, p. 8).

At the same time, the status of sustainable development and associated issues is still on the margins of mainstream policy and practice in formal education – a quarter of a century since chapter 36 of Agenda 21 called for the reorientation of education towards sustainable development. Key policy papers, debates and conferences on the future and purposes of education, whether national or international, often miss *any* reference to the wider and critical socio-economic and ecological context that will directly affect the lives of both this generation and of those to come, and reflect ‘business as usual’ assumptions. This reality calls into question a strategy for change amongst ESE protagonists that is limited simply to introducing ESE programmes and does not address the paradigmatic and structural issues that prevent deeper change.

In this light, it is interesting that UNESCO has, for some time, reflected a dual approach which advocates the embedding of education for sustainable development (ESD) within existing systems, but increasingly, also refers to the need for transformation in educational

thinking and practice as a whole. Hence, UNESCO's Director General, Irina Bokova, quoted at the head of this chapter calls for re-visioning education in a UNESCO publication *Rethinking Education* which argues for a holistic and humanistic renewal of education globally as 'a common good'. One of the questions this think-piece book poses is 'how can education better respond to the challenges of achieving economic, social and environmental sustainability through educational policies and practices'? (UNESCO 2015, p. 84).

As stated above, we see a re-examination of competencies as a promising avenue through which the response of educational policy and practice can be approached and potentially influenced. The present project is designed to test and advance this idea.

2 Competencies research project – rationale and aims

The first part of our rationale arises from the challenges discussed above; the second part proceeds from the unsatisfactory state of the sustainability competencies field, characterised by a sea of labels, terminological confusion, lacking in consensus as to what constitutes a comprehensive and non-overlapping representative set of sustainability competencies, and relative lack of attention to pedagogic and institutional change implications. Glasser and Hirsch (2016, p.132) argue that:

Beyond a few of these core competencies (systems and anticipatory thinking, for instance) little work has been done to delineate what constitutes broadly acceptable, detailed descriptions of these ESD/ LfS core competencies that can provide suitable guidance for program and curriculum development or major re-organization of academic institutions.

In sum, the competencies that need to be fostered, the ways in which they are to be fostered, and the ways in which competency development is to be assessed all remain unclear despite growing work in this area.

With these points in mind the current project aims to:

- identify and problematise the key issues by examining the relationship between global contexts and the limited response of HE to date, with the purpose of unlocking the potential for innovative, replicable efforts to develop sustainability competencies.
- develop a method of inquiry and a robust advisory framework that will help and encourage others to pursue such inquiry in their own institutional contexts.

through exploring such questions as:

- is the current debate on and understanding of sustainability competencies sufficient and appropriate in light of the proposed SDGs and UNESCO's Global Action Plan? What additional key questions persist and how can these best be addressed systematically on national and local scales, while still retaining a global perspective?
- how far does HE education policy accommodate and reflect the need for sustainability competencies? How can capacity for teaching for competency be built and supported through new policies?
- how can curricula and pedagogy be better aligned to facilitate the building of sustainability competencies in learners and teachers?

- what effect and influence does education for sustainability competencies have in terms of facilitating transformative social learning, supporting systems structure change, and cultivating informed responsibility (in terms of policy and everyday decision making)? (Glasser 2007)

Clearly, this is an expansive research agenda, and one that ideally would form the basis of a much larger international research programme in the future. Meanwhile, we are aware of and welcome the fact that an increasing number of HE researchers in ESE have similar concerns. The first part of the current project has been an overview of the field and some of this work is briefly summarised below.

3 Competencies research – state of play

A shift can be observed in educational discourse in recent years: from an input orientation (what knowledge has to be acquired?) to an outcome orientation (what competencies should be developed?) (Klieme *et al.* 2008, Kouwenhoven 2009). In the context of the challenges of sustainable development, it is argued that education should enable individuals to reflect on their own actions by taking into account their current and future social and environmental effects – from a global perspective – and to intervene productively in shaping them in a more sustainable manner; and that individuals should be empowered to act in complex situations, which may require the individual to strike out in new directions. We suggest that a competencies-based approach can help bridge the gap between knowledge and action. Against this background, environmental and sustainability education (ESE) aims at developing competencies that enable individuals to participate in socio-political processes and hence to move their societies towards sustainable development (Rieckmann 2012; Wiek *et al.* 2011). Vare and Scott (2007, p.194) argue that instead of promoting certain behaviours and ways of thinking (an ‘ESD 1’; ‘instrumental’ approach, Wals 2011), this competence-oriented concept of ESE focuses in particular on both ‘building capacity to think critically about [and beyond] what experts say and to test sustainable development ideas’ and ‘exploring the contradictions inherent in sustainable living’ (an ‘ESD 2’, ‘emancipatory’ approach, Wals 2011). In approaching ESE from a competence point of view, key areas can be explored that appear to be required to succeed in the area of sustainability.

Accordingly, UNESCO formulates in its GAP:

ESD allows every human being to acquire the knowledge, skills, values and attitudes that empower them to contribute to sustainable development and take informed decisions and responsible actions for environmental integrity, economic viability, and a just society for present and future generations. [...] ESD promotes skills like critical thinking, understanding complex systems, imagining future scenarios, and making decisions in a participatory and collaborative way. (UNESCO 2014a, p. 33)

At the same time, Goal 4 of the SDGs, ‘Ensure inclusive and quality education for all and promote lifelong learning’, includes a target to ensure that by 2030, ‘all learners acquire the knowledge and skills needed to promote sustainable development’.

(<http://www.un.org/sustainabledevelopment/education/>)

There are a growing number of researchers who have been examining the many interconnecting aspects of ESE and associated competencies (e.g. de Haan 2010, Frisk and Larson 2011, Glasser and Hirsh 2016, Mogensen and Schnack 2010, Rieckmann 2012, Wiek

et al. 2016, 2011). The work of Wiek *et al.* (2011) has been important in drawing together many of these aspects, and in providing a structure for helping discussion about the competencies that are considered critical for sustainability. The five sustainability key competencies provided by Wiek *et al.* (2011) (systems thinking, anticipatory, normative, strategic, and interpersonal) are specific to the higher education sector, in particular study programmes in sustainability sciences, although much of the information presented in their study comes from the consideration of competencies in a range of sectors. Although some consensus exists about some of the key aspects that need to be addressed, the discussion of ESE learning outcomes shows a broad variety of concepts such as skills, literacy, competencies, or capabilities.

Against this background, a literature review – conducted jointly by researchers from Australia and Germany¹ – has analysed the ways in which sustainability competencies have been identified and discussed to date, and specifically how they are presented for the range of educational sectors and disciplines. The review aims to analyse the work that has been done to articulate sustainability competencies and to provide robust data to identify general trends and assumptions in the discourse as well as specific approaches in particular world regions, educational sectors or disciplines – and last but not least, inconsistencies and gaps.

The literature review includes all peer reviewed and in English available articles referenced in the major data bases for educational and sustainability sciences (SCOPUS, Web of Science, ERIC, Sustainability Abstracts). Only articles which show theoretical reflections on and concepts of ESE competencies have been included in the sample. For searching the databases, the following key words have been used: (a) sustainability education, education for sustainable development, education for sustainability (EfS); (b) competencies, competency, competence, capabilities, skills, literacy, abilities, attributes, learning outcomes. The sample of 60 articles has been coded by five researchers (each article has been analysed simultaneously by at least two researchers) using categories such as home country and affiliation of the author(s), name of the journal, terms used (competencies, skills, capabilities, attributes,), number and definition of competencies, and educational area, for instance.

The review shows that quite a variety of terms is used when describing sustainability ‘competencies’ (Table 1): The term ‘competencies’ features prominently with almost half of all publications using this term – followed by ‘skills’ (20%), ‘literacy’ (10%), and ‘capabilities’ (7%). About 10% of the articles use different terms.

Table 1: Terms used when describing sustainability ‘competencies’

Used terms	n	%
Competencies	27	45.0
Skills	12	20.0
Different terms used	7	11.7
Literacy	6	10.0
Capabilities	4	6.7
Attributes	2	3.3
Learning outcomes	2	3.3

¹ Sarah Holdsworth, Ian Thomas (RMIT University, Australia), Thorsten Kosler, Jana Timm (Leuphana University of Lüneburg, Germany), Marco Rieckmann (University of Vechta, Germany).

While ‘competencies’ is used mainly in Germany, The Netherlands, Japan, and the US, authors from Australia prefer the terms ‘skills’ and ‘capabilities’, and authors from the UK ‘skills’ and ‘literacy’. Surprisingly, more than half of the articles (57%) give no definition of the terms used. Where definitions are given, no significant differences in denotation are given that can be used to systematically differentiate among them. All terms refer to the ability to understand certain phenomena and to act in specific contexts, although literacy is linked more to understanding, while competencies and skills are seen as more action-oriented.

Most of the articles reviewed describe whole lists of sustainability competencies, only a few (12%) focus on one particular competence, such as systems thinking, critical thinking, or decision-making competence. The vast majority of articles are referring to sustainability competencies in higher education (80%), only few publications deal with school education, teacher education or preschool education.

The global distribution of authorship represents an Anglo-American dominance. While most authors come from the US (14%), the Netherlands (9%) and the UK (9%), there are only a few authors from Asia (3%) and Latin America (1%), with no authors identified from Africa². This clearly shows that while the focus on sustainability competencies is said to be global and in policy statements action around the globe is called for, the academic discourse is mostly dominated by the Global North.

The results of the systematic literature review show that:

- Different terms are used, although they often mean similar things. The use of different terms is linked to different regional or national discourses (cf. Winterton 2009). Terminological clarification is needed.
- Many long lists of sustainability competencies are presented, but sometimes they are very superficial and general (“the literature is still dominated by ‘laundry lists’ of competencies rather than conceptually embedded sets of interlinked competencies”, Wiek et al. 2011, p. 204). There is a lack of modelling/operationalising particular competencies (cf. Gardiner and Rieckmann 2015).
- There is a strong focus on higher education. More research is needed on the specific particularities of different areas of education.
- Africa, Latin America and Asia are almost totally absent in the discourse on sustainability competencies in peer reviewed and in English available journal articles. More research from countries in the Global South, an increased visibility of ongoing research in this area from the Global South in leading ESE journals, and, thus, a more global discourse is needed.

In addition to the above research, a literature review undertaken by researchers at Plymouth University, looked at sustainability competencies in the wider context of calls for student engagement, and innovative pedagogy, as an exploration of how far an interest in sustainability competencies is, or could be, linked into research on transformative and deeper learning experiences and also on institutional change conducive to such approaches.

As noted earlier, the global literature on ESE and sustainability competencies is characterised by multiple labels and a lack of consensus. While there does appear to be a lot of common ground, it tends to be at a very abstract level. Little work has been done to delineate what

² Subsequent research identified one African author, Kibwika (2006), that focused on ‘innovation competence’.

constitutes broadly acceptable, detailed descriptions of the sustainability competencies that could provide suitable guidance for programme and curriculum development or major re-organisation of academic institutions (Glasser and Hirsh 2016). More research for modelling particular competencies is needed. In short, the competencies that need to be fostered, the ways in which they are to be fostered, and the ways in which competency development is to be assessed all remain unclear. This challenge needs to be taken on globally and in a culturally diverse manner through international research collaboration if UNESCO's call for transformational change is to be realised.

This would involve developing practical frameworks that can guide and help national and local education policy makers and education leaders adapt these sustainability competencies to the particular needs, challenges, and opportunities that they face; identifying and elaborating pedagogical approaches to facilitate rapid and effective engagement with and development of these sustainability competencies; and creating innovative and reliable instruments for measuring the development of sustainability competencies.

The current project is an initial contribution to this global effort, which we acknowledge is already being taken forward in different ways by groups of engaged academics and researchers (e.g. Wiek *et al.* 2016).

4 Research project – next steps

The first stages of the project, addressing the questions outlined above, are well on the way. However, we envisage the next stage – which involves facilitated workshops with academics – will add a good deal of richness to this exploration, and help us move towards one of the key project outputs, which is a set of draft guidelines on sustainability competencies.

Planning the next stage has led inevitably, to discussion of an appropriate methodology guiding our project. Aware of the often invisible tension in ESE between the more deterministic and realist perspectives on the one hand, and the constructivist and idealist view on the other, we are elaborating and will enact a 'middle way' methodology to engaging teachers and learners in HE with sustainability competencies. By taking this path between a delivery/instrumental approach, and a participative/emergent approach, we hope to harness the strengths of both modes whilst countering the drawbacks of each. We will also seek to take the same approach to discussion of the second challenge outlined earlier, which is how to effect systemic change and learning in institutions so that educational policy and practice might be sufficiently transformed towards supporting sustainability and the development of competencies (the 'more than scaling up' advocated by UNESCO).

The project is being taken forward through parallel and complementary research exercises undertaken by colleagues at Plymouth University, UK, Western Michigan University, USA, and Vechta University, Germany. At Plymouth, the emphasis is on *systemic or relational thinking* as a core competency (Sterling 2009), at Western Michigan the focus is on *state of the planet knowledge* and *wise decision-making* as core competencies (Glasser and Hirsh 2016), whilst at Vechta research is focusing on *anticipatory thinking* as a core competency (Gardiner and Rieckmann 2015) and the promotion of *psychological resources* as part of competency development in ESE. At each institution, it is intended to hold workshops with invited academic colleagues to deliberate on the competencies in question, on the issues they raise, and on the institutional changes that support teaching and learning policy and practice supportive of such competencies. This chimes with UNESCO's call for 'greater attention to

systemic approaches to curriculum change and capacity-building for leaders' (UNESCO 2014b, p. 31).

The pre-workshop inputs will be a distillation of key theories, ideas and principles pertaining to each of the sustainability competencies in question, as stimulus material. However, our approach is to relate to fellow educators as 'critical creatives'; not dictating the ESE teaching and learning practice they are to adopt or consume, or take to students. Rather, we will provide collaborative space for colleagues to interpret the ESE competencies for themselves, engage reflexively with their own unique educational change processes, and invent practice that is apt for their own contexts. This very much supports a participatory paradigm of professional development that stems from a relational and ecological perspective and is underpinned by a strong empowerment ethic. Such participatory processes of inquiry and practice are epitomised by dialogic research informed approaches to educational change such as co-operative inquiry (Heron and Reason 2001), and participatory action research (Kemmis and McTaggart 2005), whilst modelling transformative pedagogical approaches appropriate to learning and internalising competencies. At the same time, we anticipate that both the form and the outcomes of the workshops will provide insights that can inform the development of generic guidelines that will be made available as a sought outcome of this research project.

The challenge of 'scaling up'

Essentially, the UNESCO GAP challenge which spurred this research initiative is to better align two realities: the reality of higher education systems and the reality of the planetary state. In this project, we hope to help articulate a robust and re-imagined vision of education — sufficiently close to where Higher Education Institutions are now — for people to see its feasibility, at individual and institutional levels. By delineating which competencies are crucial for sustainable development, defining and describing them more in detail, analysing the ways in which the competencies can be developed and the ways in which competence development can be assessed, and, last but not least, exploring how to effect systemic change and learning in institutions, this project aims to explore pathways that can contribute to meeting UNESCO's radical call regarding the need to go beyond scaling up responses to global issues, and initiate more fundamental change in personal and organisational learning. This is work that is relevant to all higher education institutions that seek to contribute to the shaping of a more sustainable and just world, and we invite all concerned actors in HE to undertake and share parallel 'research for change' in their institutions.

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