Young Children and the Environment: Creating Sustainable Change through Early

Education

Chapter 9:

Creating 'deep and broad' change through research and systems approaches in early childhood education for sustainability

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EDITOR'S NOTE

In this final chapter, **Jo-Anne Ferreira** and **Julie Davis** raise two matters they consider essential for the future development of early childhood education for sustainability. The first is the necessity to create deep foundations based in research. At a time of rising practitioner interest, research in early childhood education for sustainability is meagre. A robust research community is crucial to support quality in curriculum and pedagogy and to promote learning and innovation in thinking and practice.

The second "essential" for the expansion and uptake of education for sustainability is systemic change. All levels within the early childhood education system – individual teachers and classrooms, whole centres and schools, professional associations and networks, accreditation and employing authorities and teacher educators – must work together to create and reinforce the cultural and educational changes required for sustainability. This chapter provides explanations and processes for engendering systemic change. It illustrates a systems approach with reference to a recent study focused on embedding EfS in to teacher education. This study emphasised the apparent contradiction that the answer to large-scale reform lies with small-scale reforms that builds capacity and make connections.

Introduction

Most education policymakers are unaware of the scale of change required if education is to help achieve a sustainable society. This is particularly so for early childhood education that has come late to the environmental and sustainability agenda (Sterling, 2006). This final chapter brings together themes and perspectives from the previous chapters with special emphasis on the necessity for change within the early childhood education sector – changes in the ways we think, learn, teach and act. Implicit in the discussions presented by all chapter authors is that replicating 'business as usual' in early childhood education will not help to achieve a sustainable society. Instead, there is a requirement to rethink daily practices, leadership approaches, ethics and reconciliation; to revalue Nature for both environmental and human health; to replace worn out, unengaging pedagogies with those that stimulate; and to reinforce the powerful role of young children as agents of change for sustainability. Early childhood educators contributing to the challenges of sustainability are working towards changes to curriculum and pedagogical practices. The authors of this text trust that they have presented readers with ideas and insights into how this might happen and have provoked them to create changes within their own classrooms, centres and schools.

While small-scale changes in individual classrooms and centres are important, they are not enough on their own. As has been observed, the "patches of green" identified within early childhood education ought to become more than "exemplary individuals, organisations and centres that share a passion and commitment" (New South Wales Environmental Protection Agency, 2003, p. 1). A new evolutionary point is required that

constitutes broad coverage across, and deep infiltration into, early childhood education. This calls for systemic change – as opposed to systematic change - within and across the field.

This chapter focuses, therefore, on how the early childhood education sector can leverage its current position to make a more significant contribution towards the deep and wide cultural and educational shifts that are necessary for sustainability to be realised. Two key ways are proposed. The first is the development of an evidence base (research) to help the field grow on solid foundations. The second is the application of systems theory for creating systemic change within early childhood education. Systems approaches to creating change are well known in some management and organisational change circles , but newly emerging in education. Results include both small-scale changes within individual centres *and* large-scale changes across the sector.

Creating change within ECE: The role of research

Ramping up research and research capabilities are essential elements in creating deep and effective engagement with early childhood education for sustainability (ECEfS). As this text shows, the early childhood education field *is* beginning to engage with education for sustainability. ECEfS research, however, is almost invisible with just a very small handful of researchers actively engaged in ECEfS research, a situation confirmed in Davis' recent overview of the status of ECEfS research (Davis, 2009). In this study, Davis mapped the state of public knowledge in the field of ECEfS, identifying studies concerned with early childhood environmental education/ education for sustainability

programs and issues that focused explicitly on young children and their education as

agents of change for the environment. The scan started with Davis' own knowledge of the

field, and was expanded by inviting members of electronic news groups to contribute,

with specific new leads followed up. Finally, after turning up several reports and studies

already known to the author or which did not fit the study parameters, Davis then

undertook a systematic survey of a number of peer-reviewed journals in the fields of

early childhood education and environmental education from 1996-2007.

Davis acknowledges that the survey was not exhaustive – it was unfunded, hence time

and resources were limited - and omitted journals not written in English. Nevertheless,

the survey revealed what was known anecdotally, that is, that there is very little research

related to environmental education/education for sustainability that focuses on the

theoretical, pedagogical, or broader educational issues specifically related to young

children in early learning settings such as childcare centres, kindergartens and preschools.

In Australia, for example, the first public discussions about the lack of research as an

issue in ECEE (as it was then) occurred as recently as 1999 in a symposium at the

national environmental education conference. The presenters identified, as matters of

concern, the intertwined issues of the virtually non-existent research base, the lack of

researchers, and the related problem of negligible research grant opportunities.

Regretfully, although there has been a slight increase in activity, this situation remains

much the same a decade later.

The 2003 International Implementation Scheme for the *United Nations Decade of*

Education for Sustainable Development (UNDESD) identifies research and innovation as one of seven strategies for the Decade (2005-2014). Specifically, the scheme called for national implementation task forces to "identify research issues in Education for Sustainable Development and plan cooperative research projects" (UNESCO, 2003, p.7)., The Australian Government Strategy for the UNDESD, *Caring for our Future* (2006), works from these broad principles, identifying that Australia's approach to education for sustainability should be based on sound research (Strategy 2). Specifically, the strategy calls for research priorities that include "identification of needs in different sectors, practical demonstrations or 'how to' studies, monitoring and evaluation guidelines and performance indicators to measure progress, and … comparative studies between countries" (p. 5). Research in early childhood education for sustainability is one of these areas of need, a gap to be addressed. The same point is made in the Australian Government's 2009 *National Action Plan for Education for Sustainability* that identifies research into 'the role of education for sustainability in early childhood education and appropriate models for its integration into this sector' (p.24) as a goal.

The focus on research is important for three reasons. First, as the field begins to engage with education for sustainability, practitioners are looking for exemplars of good practice. Without studies and reports of success in the conception and implementation of early childhood education for sustainability programs and strategies, practitioners are denied the benefits of learning from the work of others. This slows the process of turning the 'patches of green' into a 'patchwork quilt' (Elliott, 2006, p. 1) as success stories remain hidden. Second, without research, there is little program and practice review. Common

implementation mistakes, for example, are more likely to be replicated, thus limiting the field's evolution. Third, without a rich and growing source of studies, it is less likely that there will be discussion and critique around the wide range of topics and issues that are indicative, as Reid and Scott (2006) note, of a "healthy field of inquiry, brimming with ideas and perspectives on its past, present and future" (p.1). A robust research culture aids lively exchanges and rich collaborations within the field, across disciplines and around the world.

PROVOCATIONS 9.1

Identify areas of ECEFS that would you like to know more about. Conduct a literature search of one of these topics. What research papers or reports were you able to find? Assess their usefulness to you as an early childhood teacher.

Practical research strategies for ECEfS

To overcome the current lack of research in early childhood education for sustainability, Davis (2009) proposes three practical strategies:

- Explicitly include early childhood education within research funding sources targeted at formal education (too often, use of terminology such as 'school' or 'schooling' as a catchall phrase serves to perpetuate the marginalisation of the early childhood sector, even when this is not necessarily the intention);

- Specifically target new research projects in the early childhood sector, especially case studies of exemplary practice. These should then be

> disseminated broadly - in professional journals, academic publications,
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> published on the web and in print, and taken directly to practitioners
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> through 'road shows', conferences and the like; and

- Build research capacity for new and experienced researchers in the field of early childhood education for sustainability.

The development of a research base for early childhood education for sustainability will also enable the field to make the most of rising interest in interdisciplinary research, especially for addressing complex issues such as global warming and sustainability. As Sue Cooke (in Chapter 8) shows, there is potential for partnerships between early childhood education for sustainability practitioners and researchers, and with those in fields such as health promotion and urban design and planning. Environmental psychologists also offer perspectives on education and sustainability issues as shown by the Australian Psychological Society's (APS) recommendations for assisting young children to cope with global warming and climate change. Further, Melinda Miller (in Chapter 6), in exploring a post-colonialist standpoint on early childhood education for sustainability, also sees potential for collaborations with researchers and practitioners from non-Western and other contemporary theoretical positions and frames not normally utilised in education for sustainability or in early childhood education.

Another area of cross-cutting for early childhood education for sustainability research lies with the exploration and implementation of approaches arising out of systems theory and

complexity theory. The necessity and potential for 'whole of system' change within early

childhood education is discussed below.

Creating system-wide, sustainable change within ECE

We have a particular interest in the insights to be gained for ECEfS from organisational

change theory, complexity theory, and systems theory. These areas offer useful insights

about how to 'scale up' efforts to embed education for sustainability into early childhood

education, and are discussed here in general terms. They build on the perspectives and

strategies outlined in Chapter 3, in which Megan Gibson discussed processes of change

within a single early childhood setting. To illustrate systems theory in practice, we refer

to a 2008 pilot study that sought to embed EfS into pre-service teacher education in

Queensland, Australia (Ferreira, Ryan, Davis, Cavanagh, & Thomas, 2009). This study

showed that local changes within individual settings *and* systems-wide changes

involving, for example, government departments and accreditation authorities, are

realistic goals when systems approaches are understood and implemented. Ultimately,

this pilot project - while not targeted specifically at early childhood student teacher

education - will have an impact on hundreds, indeed thousands, of early childhood

teacher graduates into the future, with regard to education for sustainability.

Models of educational change: Engineering vs cultural change

Resistance to change is a characteristic of educational systems (Fullan, 1991; Hargreaves,

1997b; Stephan and Vogt, 2004; Tyack & Cuban, 1995). Many teachers are afraid to

explore issues outside their comfort areas, particularly if they are not adequately equipped to deal with "foreign" material (Thomas, 2004). Education for sustainability falls into this category for many early childhood teachers, with few having had exposure to the content and pedagogical processes of EfS in either their pre-service teaching qualification or through professional education in the field. Further, many attempts at creating change within organisations and systems have been failures due to the use of traditional, rationalist theories and practices for implementing educational change (Fullan; 1999). As Fullan comments, "wishing for, waiting for, and urging the system to be more rational is in itself irrational – it won't happen" (1999, p. 97). Hargreaves (1997a) also emphasises the failures of past and current educational reform movements, stressing that new ways and new values are required to underwrite change processes if they are to be successful. Complexity theory, organisational change theory and systems theory each have contributions to make in terms of framing these new ways for achieving educational change.

Hargreaves (1997b) has observed that customary wisdom and traditional management theories work from within a framework of rationality. This implies that decision-making and planning are simple, linear processes, applied methodically in purposeful and diligent ways, that they only follow those actions that are specifically tied to the goals of the organisation, and that thinking always precedes action. This conception, he suggests, is deeply embedded in our culture and stresses planning and orderly change. He argues, however, that:

> Sometimes, we are successful in following convention, but … the sensible
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> approach does not have a starry history within the organised anarchy and busy
>
> kitchen features of educational organisations. In addition, the usual approach,
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> given the hectic and fragmented pace of work, demands too much time and
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> information from decision-makers and assumes that most of them share the same
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> predominant goals. (p. 84)

The idea that systemic change can be brought about through systematic, linear processes is underpinned by the technocratic view of change that came into vogue in the 1970s and 1980s. This perspective is now challenged by some general educationalists (Fullan, 1999, 2006; Hargreaves, 1997b; Larson, 1999) as well as those within environmental education/education for sustainability (Elliott, 1991; Johnson and Mappin, 2005; Sterling, 2001, 2006). Elliott (1991) refers to the orthodox view of change as an "engineering model", equating it with an engineer designing a system to fulfil a particular function and then supervising its implementation. The plan enables engineers to control the process by communicating their requirements to the workforce and providing criteria for monitoring and supervising progress. This approach assumes a certain rationality of behaviour in following a 'good', orderly planning process. This view of change, though, does not take into account the complexities and social realities of human action and interaction.

Viewing change as rational and orderly also treats each educational setting as a unique organisation - more or less as an island - with only loose connections to other organisations. Change tends to stay within the organisation, not diffused more widely. It

does not perceive that individual settings are actually part of a larger, more complex organisational system. In order to achieve sustainability, the whole system, as well as individual sites, must change. Educational and social reformers, including those seeking sustainability on a global scale, cannot be satisfied with isolated, small-scale changes within individual educational settings. Rather, the real aim is for large-scale, systems-wide educational transformation. Large-scale reform, though, cannot be construed as monolithic social restructuring, because this form of change does not alter the set of expected patterns that have historically constructed the idea of education (Farrell, 2000; Fullan, 1999; Tyack & Cuban, 1995). Rather than changing a situation, 'engineering' reforms become assimilated to previous patterns that become even harder to change.

Successful large-scale, top-down educational reforms generally have been rare and idiosyncratic and have taken far longer to occur than originally anticipated (Farrell, 2000). Ideas about system-wide transformation, therefore, need to forgo notions of large-scale mandated reforms. Instead, ideas of complexity and diversity must be considered. This means looking for, and appreciating, the potential in small-scale change. The apparent contradiction is that the answer to large-scale reform lies with small-scale reform. The new wave of organisational change specialists argue that thousands of local, small-scale changes will lead to innovation and capacity building - built from the bottom up and emerging from events within local settings that cannot be readily planned for or forecast in advance. When efforts are made to 'join up' these small-scale changes, they become a major change in the overall educational effort that reaches across the system. As Farrell (2000) states, "under this conception, the task of the planner is not to invent

and/or implement the innovation or reform across the whole … territory, but, rather, to
develop and unleash a capacity to innovate throughout the system" (p. 95).

One of the real difficulties of the early childhood education (ECE) 'system' is that it is
highly complex and fragmented – there are multiple modes of service delivery and
multiple levels of governance. In addition, the ECE system has numerous stakeholders,
with interconnections between parts of the system, rules, interest groups with differing
agendas, and institutionalised hierarchies. In such a complex and uncertain organisational
environment, the conceptualisation and practice of sustainability requires a change
process that takes account of this fragmentation and complexity.

Cultural change through systemic thinking and practice

Systemic approaches to change emerged as a discipline as a result of the failure of
reductionist approaches to cope with the complexity and uncertainty inherent in
biological and social domains (Jackson 2003) and have developed sophisticated ways of
dealing with uncertainty and creating possible models for future action. Checkland and
Poulter's (2006) soft systems methodology (SSM), for example, is one of these strategies.
Systemic thinking offers a way of looking at the world, not as a range of disparate
problems, but as an interconnected set of factors situated within an environment. As
already noted, efforts to bring about change tend, traditionally, to focus on only a part of
a system, such as an individual early childhood centre or individual teachers. These
small-scale changes need to be connected into a large scale movement if an innovation
such as education for sustainability is to take hold.

We argue that change in the ECE sector is more likely to occur – and to be widespread – if we understand that all the various parts are connected together in a larger system. For example, teacher registration bodies, government education and welfare departments, and childcare accreditation authorities all impact on an early childhood setting and each has a role to play in bringing about change in the early childhood education system. Acknowledging an wholistic focus is the first step in understanding and applying a systems approach to change. This needs to be followed by working to define the system and the interactions amongst system elements, understanding the hierarchies between sub-systems, and identifying system hubs, those pivotal leverage points in the system that build capacity for change and innovation. These concepts are discussed below.

What is a system?

A system is made up of discrete elements that are interrelated. Systems are bounded, that is, there are features that are within a system and features that are outside of a system in the contextual environment surrounding the system. Systems can be hierarchical, that is, contain sub-systems within the system, as illustrated in Figure 9.1. It is important to note that a system is not a definite thing but a constructed entity. Its boundaries are defined by the participants, researchers and/or other stakeholders. Boundaries set the types of exchanges that occur between the system and its sub-systems and contextual environment. The participants' very act of defining and negotiating the system and sub-systems, and the boundaries and interactions, deepens mutual understandings of the forces at play and develops possibilities for action that have a more wholistic focus.

<Insert Figure 9.1>

Figure 9.1: A generic system model (from Ferreira, et. al, 2009)

Figure 9.1 shows that sub-systems are nested inside the larger system, which in turn is situated in a broad contextual environment. Each system has a permeable boundary through which information and resources can pass. For example, the sub-systems of the early childhood education system include early childhood centres, schools, childcare and teacher education institutions, accreditation organisations and professional associations. Each of these sub-systems is itself a system that contains additional sub-systems.

The benefits of a systemic approach to change include allowing those seeking to bring about a change within each system and sub-system to define the system from their own perspective. It is through the processes of interpretation, co-construction and development of shared understanding of the system's elements, interactions and drivers that system-wide change is brought about. Making a boundary judgement improves one's understanding of the system in which one is operating. It helps to clarify one's own role and the role of others in the processes of change. Additionally, making boundary judgements helps to identify and clarify feasible opportunities – or people - for intervention in the situation as it appears at that point in time. Identifying the system of interest and its sub-systems thus forms the first important step in efforts to think and work systemically.

PROVOCATIONS 9.2

Map out the system of an early childhood setting or service with which you are familiar.

Try to replicate Figure 9.1 by:

1) naming your system;

2) identifying the various participants in the system;

3) identifying individuals and organizations who may be sub-systems of your system; and

4) identifying individuals and organizations who sit in the environment surrounding your system.

Interactions among system elements

As stated, a systemic approach to change seeks to explore and better understand the whole system rather than acting on a part of the system in isolation of its larger context. Stakeholders from throughout the system explore the ways in which the parts of a system are interdependent, the nature of their connections, external influences, and the roles of others and oneself in the system. As a result of this inclusive process, members of the system develop their understandings of the larger system through appreciating the patterns of activity and their many influences that exist within the system. An wholistic systems focus, though, goes beyond incorporating information from multiple perspectives and disciplines. Rather, it involves a deliberate method of synthesizing distinct findings into a coherent whole (Gharajedaghi, 2006, p. 108).

Taking a wholistic view is important because the behaviour of a whole system emerges from the interactions among its parts. Trying to 'solve' a problem by reducing it to its parts and acting on them separately can produce unpredictable outcomes and even make a situation worse. The roles that individuals play within a system also influence the behaviour of a whole system. Thus, systemic thinking also focuses attention on relationships and roles (Flood, 2001, p. 115).

The focus of a systemic approach to change, therefore, is on the several layers of systems, the nature of their connections, and the relationships among the elements at each level of the system that the participants are trying to change or better understand. On this basis, a more wholistic perspective emerges, encompassing the patterns in the system and the broader contextual environment.

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PROVOCATIONS 9.3

Go back to your system diagram and map the *connections* between the sub-systems in your system. What relationships exist, and what is the nature of these relationships? Think about what opportunities there are to influence the various parts of the system. Make a note of these.

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Hierarchical levels

In systems theory, systems have properties of hierarchy and subsidiarity. It is generally useful to consider three hierarchical levels of a system: environment, system and sub-system. The labels of 'system' and 'sub-system' can change depending on what level you are considering at a particular point in time. There is a system of interest which is embedded within a contextual environment, and also contains within it sub-systems, as illustrated in Figure 9.1.

The properties of hierarchy and subsidiarity mean that a sub-system cannot control a larger system of which it is a part. In turn, the larger system has varying degrees of partial influence or incomplete control over a sub-system. For example, if a single early childhood centre or service is seen as a sub-system, then it is influenced by, but has no direct influence over, childcare accreditation bodies. Nevertheless, while a sub-system has no direct influence, changes within the sub-system can affect the larger system of which it is a part by increasing diversity and options that can be drawn upon by those within the system and other sub-systems. Collectively, these small scale changes *can* impact on the larger system causing it to change. This illustrates the paradox of large-scale change emerging out of small-scale change, and exemplifies the "butterfly effect" (Gleick, 1988), the concept of chaos/complexity theory that promises magnification of small changes and achievements beyond their initial impacts.

Hubs

Another important concept to emerge within systems thinking is the notion of "hubs" (Barabasi 2003). In a complex system, hubs are the nodes that link with a disproportionate number of other nodes – often hundreds of times more than other nodes. Hubs act as connectors and are a fundamental part of networks, 'present in very diverse complex systems, ranging from the economy to the cell' (Barabasi 2003, p. 56). Identifying and working with the hubs in a system is important for leveraging influence within that system. The idea of a hub is allied to the concept of a leverage point in systems dynamics - a place in a complex system where a small change in one area can bring a disproportionate change to a whole system (Hjorth and Bagheri, 2006; Flood, 1999). Key to bringing about change across a system such as the early childhood education system is locating those individuals who are crucial leverage points. These individuals often become clear during a systems mapping exercise that seeks to identify roles, requirements and interactions between members of a system of interest. In so doing, hubs of activity, and individuals who are acting as hubs are made visible.

Hubs are crucial in scaling up changes within a system or sub-system, because they build capacity and momentum for change. They do this by bringing more and more individuals and centres into the innovation and change processes. This is vital if a change is going to have longevity and become embedded within a system. As Fullan (1999) suggests, an important aspect of capacity building is the transferability of capabilities, rather than products, across a system. Therefore, creating change is not about appropriating someone else's successful program or policy and transplanting it to your own setting. For example,

Campus Kindergarten's *Sustainable Planet Project* (discussed in detail in Chapters 3 and

4) is a unique approach to ECEfS that has grown from the particular circumstances,

resources and people associated with this centre; it could not be replicated elsewhere –

though it does provide ideas and inspiration for others to implement in their own unique

contexts. As an exemplar, the centre itself and individuals within the centre are hubs who

help show the way, motivate and build capacity for education for sustainability across the

early childhood system through showcasing, networking and other important outreach

activities. They do not promote a 'model' of ECEfS, though, for other to follow. Rather,

they encourage others to create 'hybrids' suited to their own particular contexts (Tyack

and Cuban, 1995). With this in mind, therefore, policies and processes aimed at creating

change within a system are best stated as general aims and principles - instead of ready-

made plans - to be modified in light of local experiences and embodied into practices that

vary setting by setting, and even classroom by classroom.

In summary, creating widespread educational change - such as that suggested for the

implementation of education for sustainability across the early childhood sector - requires

both capacity building at the local early childhood setting or service level (as Campus

Kindergarten has illustrated), as well as changes to the multilevel systems of which these

services and settings belong. Only then can small changes resonate in significant ways

throughout the system and throughout society. Those committed to new ideas in

education need to think and act at both levels – to be reformers inside their educational

settings and activists in the infrastructures surrounding them. As Fullan (1999) indicates,

"transferability and large-scale reform urge all of us to pay attention to the big picture.

This is not the time for modest goals" (p. 75).

To help explain these ideas about a systems approach in action – including the not so

modest goal of seeking to embed education for sustainability into teacher education! - a

case study of a systems-wide change process is presented below (see Ferreira, et.al, 2009

for more on this trial research project).

BREAKOUT BOX 9.1

Case Study: Changing early childhood teacher education for sustainability

Implicit in creating cultural change for education for sustainability in early childhood is

the necessity to change teaching and teachers. There are two challenges – changing

teachers already in the early childhood education 'system' – fragmented though it is - and

creating pre-service teachers, the next generation of educators about to join the

profession. The Campus Kindergarten case (Chapters 3 and 4) illustrates the processes of

change amongst teachers already 'in the field'. The case study reported here relates to the

latter group.

Project background

This action research project involved participants (lecturers and student teachers) from

the Education faculties of five universities in Queensland that run teacher education

programs (including a number with early childhood teacher education courses). Each of

these is a sub-system of the larger education system. As well, the project involved

participants from other parts of the broader education system, specifically representatives

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from government education and environment departments, environmental education
centres, a state-level policy think tank, an environmental education consultant, a member
of a non-government organisation concerned with sustainability issues, and a change
management consultant.

The process

The project combined action research with a systems approach in order to create change
at both the small-scale level (within the Faculties of Education to include education for
sustainability in subjects and courses) and at the large-scale level (that is, seeking policy
changes such as the inclusion of education for sustainability as a teacher education
requirement).

Project leaders began the process by identifying their educational system and sub-
systems. This helped to name possible partners - organisations and individuals (hubs) - to
be brought into the project to leverage change. A change consultant (another 'hub') was
hired to help facilitate the process by drawing upon and introducing the participants to
organisational change management theory and approaches, in particular the work of
Kotter and Rathgeber's *8-Step Process of Successful Change* (2007). University
participants worked individually in their own institutions to raise knowledge about and to
profile EfS, while sharing, liaising and supporting each other's efforts through regular
meetings and electronic communications. These interactions strengthened the connections
between sub-systems. While focussed on changing their own immediate sub-system (their
faculty) through action research by running workshops, addressing staff in meetings and

forums, seeking support from Deans and others of influence, publicising their activities and reflecting on the processes in which they were engaged, they also met with and lobbied personnel within the broader teacher education system, including the Minister of Education and staff of the teacher registration authority (who approve teacher education courses).

Specific events/processes: The Student Teacher Forum and Charter

A key way that the project leaders sought to leverage support for education for sustainability to become part of teacher education courses was to organise for student teachers - a sub-system often ignored, paradoxically, from 'standard' approaches to creating change within teacher education - to also become advocates for change. To build their capacity, a forum was organised by student teachers from the five universities. Students invited the Minister of Education and the Director of the Office of Climate Change, and other high level stakeholders with influence within the wider teacher education system. At this forum a *Student Teacher Charter for Education for Sustainability* was presented to the Minister of Education, articulating student teacher concerns about sustainability and global warming issues and their aspiration for education for sustainability to be embedded within teacher education courses.

Students prepared the Charter using the social networking website, Facebook, as the students were located throughout the state – some lived 2000 kilometres away from the main student body. Through their collaborations and negotiations, and the strategic intervention of the academics involved in the project, a draft Charter was finalised at the

forum when the students met face to face. The draft Charter then was presented to the

Minister for consideration. It is now available (Appendix 1) to others to assist in further

lobbying and systems change processes.

Overall changes achieved through the project

Within the universities

- EfS is to be written into subjects and courses in all the universities.

- In one university, education for sustainability is to be mainstreamed as a cross-disciplinary theme in all teacher education courses (including early childhood courses).

- New academic partnerships and up-skilling around education for sustainability has occurred within all Faculties.

- Student teachers prepared and presented the Charter as a tool for advocacy around education for sustainability in teacher education courses.

- A body of committed, connected and engaged student teachers has been mobilised who have the potential to influence practising teachers when on field experience and later as practising teachers themselves in early childhood settings and schools.

Within the wider system

- New partnerships between the five universities have been formed with the intention of continuing to lobby for further systems change, developing joint research projects around education for sustainability in teacher education, presenting at conferences, and writing research papers.

> - New connections have been established with key people (hubs) in government with the potential to influence future policy directions related to education for sustainability, such as revising Teacher Standards so that they include EfS, and setting having education for sustainability as a curriculum requirement in all educational settings.

Conclusion

In this chapter we have argued that, for early childhood education for sustainability to 'take root', a flourishing research culture and research base is required to both underpin good practice and to help the field grow. We have also argued that strengthening the field can come from increased engagement in cross-disciplinary research, methods and approaches. In particular, engagement with literature and processes in organisational change, systems theory and complexity theory have much to offer in helping ECEfS to 'take off', especially as there is a growing sense of urgency around local and global sustainability issues. It is hoped that by the end of the *Decade of Education for Sustainable Development* (2014), ECEfS will be well on the way to being a part of the everyday culture of every early childhood educational setting – marginal no more.

> **REVIEW PROVOCATIONS**
> 1. Undertake a literature review of an area of ECEfS that interests you – this text has provided many potential starting points! What have you learnt from this review that will help inform your practice as an early childhood educator? What issues or topics are not discussed in the literature? What questions remain unanswered? How might you design and implement your own research study to help answer these questions – and how could you publish and share your findings so that they

add to the body of knowledge in ECEfS?

2. Map out the system, sub-systems and environment of an early childhood educational setting or service with which you are familiar. What and who are the key organisations and individuals in the system? What are their relationships with each other? In what ways could you work with these organizations and individuals to begin to leverage change for sustainability more broadly across and within this system?

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Appendix 1. *Preservice Teacher Charter for Sustainability* (2008)