14 Education for Sustainability – where do you go from here?

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Introduction

There have been a range of environmental projects and policies described in the chapters of this book, but there is no 'one-size-fits-all' solution as different countries have different social, cultural and environmental contexts (Chang & Wi, 2018). A successful action or strategy is not easily transferable across contexts. For instance, island states might favour resilience and adaptation to climate change over a focus on mitigation. Furthermore, we need to ask questions that connect the space, people and culture of a relevant issue at local, national and international levels (Adger, Arnell, & Tompkins, 2005; Massey, 2007).

In other words, we are interested in understanding EfS for whom, and EfS by whom, in addition to what an EfS curriculum looks like for these contexts. While this edited book volume has covered these various aspects, the chapters have also provided examples of how theory can be translated into practice and how some countries' schools and Higher Education Institutes (HEIs) are carrying out EfS.

Although the ontological differences in themes and contexts across the examples cited are apparent, there are some epistemological confluences to these discourses, as represented by the chapters. Indeed, the chapters almost always involved perspectives from multiple stakeholders, discourses on the economy, society and the environment and a notion of EfS for the future. The convergence of these ideas is aligned with the Brundtland Report's definition of sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Brundtland, 1987). By extension, EfS must equip learners 'with the knowledge and ways of thinking that' meet this aspiration about sustainable development (Cloud, 2004, 2010).

The United Nations Conference on Environment and Development held in Rio de Janeiro in 1992 recognised the critical role that education can play in sustainable development. But there is often an assumption that teaching about sustainability described within a well-designed curriculum is a necessary and sufficient condition to help our children engage

sustainability issues in the future. Just talking about something does not mean that the idea has been communicated effectively. Teaching as an act does not assure that students have learned. Considering what and how our students should learn will offer us a more viable plan to attain the goals of EfS. 'Learning: The Treasure Within', commonly referred to as the 'Delors Report' of 1996 to the United Nations Educational, Scientific and Cultural Organization (UNESCO), at the International Commission on Education for the 21st Century, was premised on a holistic and integrated vision of education based on the four pillars of learning including:

1 learning to know – a broad general knowledge but also depth in a few subjects;
2 learning to do – to acquire not only occupational skills but also the competence to deal with many situations;
3 learning to be – to develop one's personality and to be able to act with growing autonomy, judgement and personal responsibility;
4 learning to live together – by developing an understanding of other people and an appreciation of interdependence.

In 'Climate Change Begins at Home', Reay (2005) took the critical view that the person on the street has as much a role to play in mitigating climate change impacts as governments and industries. He demonstrated how small changes in modern day living can culminate in a substantial reduction in greenhouse gases (GHGs) and hence slow down or halt human induced climate change. Some suggested changes to lifestyle include changes to travelling habits, reduction in the purchase of imported food and changing the light bulb to an energy efficient model. In his book, Reay suggested ways to assess the situation before making changes to lifestyle. In one example, he discussed the various options to reducing car use, including alternatives like hybrid cars and solar powered cars, all in terms of greenhouse emissions savings in comparison to a 4-litre petrol-powered car. Although individuals need to do something about climate change, it is not through taking big radical steps, but taking on gradual and sustainable behaviour; such as changing one's driving habits. The question then is, 'How can we encourage individuals to take on gradual and sustainable behaviour?'

While the impact of any individual's personal behaviour makes a significant impact on the environment (Stern, 2000), research has shown that increased awareness does not necessarily lead to action (Chang, 2014; Collins, Thomas, Willis, & Wilsdon, 2003). Perhaps changing individuals' mindsets by educating and encouraging them to play their part in mitigating climate change is the first step for individuals to participate in activities to mitigate climate change. Therefore, it is important to revisit some of the key learning points from the chapters and how they contribute to the three themes of knowing, doing and being in EfS.

Knowing

There is an imperative for the school curriculum to play a vital role in educating children to respond to pressing global problems, such as environmental degradation, climate change, economic challenges and sustainable development (Chang & Wi, 2018). Knowledge about these issues is important for developing a new generation of critical thinkers. There should, however, not be an overdependence on developing an ideal curriculum that provides holistic and comprehensive knowledge about the issues (Kagawa & Selby, 2012), but also a need to equip teachers with pedagogical readiness and awareness on the complexities involved in the teaching and learning about EfS.

One critical theme of sustainability education deals with disaster risk reduction (DRR). Hazards and disasters have been known to devastate the ecologies and natural habitats of living things as well as disrupting local economies, rendering already vulnerable communities to a state of physical and financial insecurity. As such, DRR seeks to emphasise the importance of raising awareness and knowledge about the capacities for individuals and communities to adapt to present and projected calamities that could threaten the sustainability of development. However, educators have raised issues concerning the lack of coverage in the curriculum of specific subjects and issues-based discussions and a lack of efforts in addressing the knowledge-behaviour gap. Acknowledging these issues in Chapter 6, the author argues from a postcolonial perspective that as hazards and disasters are largely influenced by their context, DRR researchers and educators should be cognizant of the fundamental limitations in their respective disciplinary worldviews and be critical of mainstream epistemologies that create artificial knowledge compartments. At the same time, an increased emphasis should be placed on the specificities of a place, its geography and its people when constructing knowledge in DRR. The author acknowledges that the official knowledge developed in schools has been largely influenced by the dominant techno-scientific epistemology which has hindered the development of plural knowledge and the contribution of equally relevant epistemologies. It is important to develop an educational experience that empowers the learner, the teacher and their communities in adapting to hazards and disasters.

The forces of globalisation have also shaped some countries to undertake extensive educational reforms in regards to EfS. Vietnam, as elaborated in Chapter 11, is experiencing challenges concerning the mismatch between the skills taught in tertiary institutions and the skills required in the job market. This has inadvertently resulted in a large percentage of university graduates being unable to secure jobs in their area of specialisation. In turn, the Vietnamese Ministry of Education and Training (MOET) has adopted three main approaches to modernising their education system, namely: (1) outward-looking education; (2) socialisation of

education; and (3) job-hunting first approach. In particular, the job-hunting first approach seeks to address the existing mismatches in higher education in Vietnam that has caused high rates of unemployment in the country. In this approach, the Vietnamese policymakers and educators have initiated career orientations in high school activities to assist students in finalising their choices on specialisation that they will pursue at higher education institutions. At the same time, undergraduate students are encouraged to participate in practice-based modules so as to be acquainted to real work when entering the workplace. This rapid shift away from a liberal-arts education system towards a lucrative career-oriented education works to ensure that students' qualities are aligned neatly with the demands of the economy.

Infante and Jin (in Chapter 9) also stressed the importance of allowing learners to leverage on the practice with which they are familiar so as to foster a mindset of implementing sustainability in the decisions they make in their future careers. They explained that while EfS has been conceptualised and applied in different fields, it has not been explored thoroughly in power system markets taught in higher education (see Chapter 9) and they suggested that the concept of a process-based approach with the pillars of sustainability could be used to introduce Education for Sustainability in electrical engineering.

However, just because someone has knowledge does not mean their personal values or view of climate change can make them take action (Collins et al., 2003). Studies in the literature have shown that increased awareness does not lead to action (Collins et al., 2003), and having awareness about climate change is in itself not enough (Chang, 2014). Therefore, knowledge is not a necessary factor but an important pre-condition of EfS and ESD.

Doing

There is, however, a body of work that relates environmental awareness to students' attitude and behaviour (De Young et al., 1993; Hornik, Cherian, Madansky, & Narayana, 1995; Oskamp, 1995; Pelletier, Tuson, Green-Demers, Noels, & Beaton, 1998). Unfortunately, this empirical correlation does not explain how a large number of people remain indifferent to environmental action (Abrahamse, Steg, Vlek, & Rothengatter, 2007; Chang, 2008; De Young, 1988; Forester, 1988). This lack of consensus contributes to a continual search for ways to overcome the inconsistency of an individual's intentions and the resultant actions (Boyce & Geller, 2001; Darnton, 2004; Norgaard, 2009). So how do we get people to take the first step? How do we encourage people to even want to do something about the environment?

In Chapter 7, Yembuu and Getsel underscore the importance of fostering climate change awareness and understanding it from a young age as being the best strategy of altering behaviours and attitudes. Reflecting on

the case of Mongolia, their analysis of the school curriculum reveals that a limited exposure to climate-related issues at the primary, secondary and tertiary levels has led to a lack of basic understanding and skills relevant to climate change adaptation. In the Mongolian system, climate-related issues are typically taught under geography and the natural sciences, therefore students who do not take these subjects/courses will have a limited knowledge of the importance of climate-related issues. Yembuu and Getsel also highlight that teacher knowledge and skills have been limited in teaching climate change adaptation, and cross-curricular activities are very limited in the national curriculum of education. They also point out that teachers' methodology is theoretically-oriented and recommend that teachers need more teaching aids to help them efficiently transfer their knowledge to students. Moving forward, they argue that climate change education should be taught more extensively across all levels and should be inclusive rather than discriminatory. An increased level of awareness, in turn, could lead to more environmentally conscious initiatives by students. Beyond just an argument for effective pedagogies, this chapter highlights the need for EfS to be well resourced and well designed. The same argument as highlighted in Chapter 6 on DRR can be applied here. In the absence of information, whether it is as complex as providing plural knowledges about DRR or having sufficient resources or a well-designed curriculum to teach about environmental issues, students are denied the agency to learn and subsequently do anything about what they have learned. Of course, an argument can be made that having sufficient resources is only a necessary but not sufficient condition. Echoing this view, Casinader & Kidman (in Chapter 8) recommend that curriculum needs to go beyond simply the teaching of facts but also on how to then use their knowledge to prepare for a sustainable future. They suggest fieldwork inquiry because it encourages participatory engagement in sustainability education by giving students the opportunity to go outdoors and safely explore their surroundings. To do so, they advocate for the employment of a *sustainability Education Fieldwork* that would stimulate the development of: (1) inquiry-based skills that foster a habit of being mindful of ones' surroundings; (2) affective skills of exploring the world by doing, and (3) personal skills and a sense of responsibility.

Fieldwork is a form of place-responsive pedagogy as it involves explicit efforts to teach in an environment of an environment, with the aim of understanding and improving that environment and its human-environment relations (Mannion, Fenwick & Lynch, 2013). How field inquiry can lead to action can be grounded in experimental and cooperative learning, involving the clarification of student values and a critical reflection that would enable the envisaging of a sustainable future. During the fieldwork inquiry, the teacher needs to facilitate the students' movement towards this goal. Subsequently, students should be encouraged to go beyond producing a written report, to take practical action to improve the

situation. Indeed it is important for the student to act upon the short or long-term implications of the inquiry. This will help the learners develop inquiry-based skills, and be mindful of one's surroundings. Consequently, we also help students develop affective skills of exploring the world by doing, and cultivate a sense of responsibility.

Likewise, Likitswat (in Chapter 4) shared their experience on using built environmental modules to incorporate sustainable learning as well as active-learning for big classes at the tertiary level. These programmes were run by the teaching team including faculty members and teaching assistants, mostly graduated architecture students.

The ability to reflect is considered an essential element of EfS. Despite this, little is known about how reflective thinking can be identified, influenced or encouraged in the classroom. Chapter 10 described a study on how educators in a high school and in a HEI diagnosed their students' reflective thinking performance and facilitated reflection about sustainability. The chapter suggests that for reflection to work, it is important to establish links to the student's everyday life whenever possible, in order to increase reflective thinking performance. It is also imperative to confront students with the complexity inherent in many issues of sustainability and challenge them to deal with uncertainty.

Besides students, Wi (in Chapter 5) argues that the government should also be involved in EfS and ESD as climate change education policy is an important factor in garnering people to do something for the environment. His Grassroots Approach (GRA) suggests that there should be interaction between the top-down (government) and bottom-up (people), in terms of policy planning, information and implementation, public consultations, involvement, feedback and advisory. For the GRA to be effective, the author argues that it is essential that the government provides information during the implementation stage. Following which, the government should consult its citizens for an evaluation of their policy implementation. The author advocates that perhaps to get people to take action, the government (policy) should lead by example and have more communication and support for the people. Through the feedback stage, the information is then channelled to the advisory whose role is to assess the feedback and reformulate state policy accordingly. Although hypothetical, the author acknowledges that in order for this workflow to be effective, the government has to provide adequate direction and support systems through Grassroots Organizations (GROs) to incentivise people to adopt pro-environmental behaviour. People are motivated to learn new forms of knowledge only when they know that they can apply what they have learned to improve their local community (Schunk, Meece, & Pintrich, 2012). Therefore, it is important to provide meaningful learning to learners.

Being

Most governments tend to provide as much information about climate change as possible with the hope that in doing so, people might adopt sustainable behaviour. While most climate change education policy has been successful in creating awareness, it does not encourage people to behave sustainably. The reason is that people need to make sense and construct meaning from the information given before they can be empowered to take action.

Through a survey of students from the Nanyang Technological University (NTU) on Chinese New Year celebrations in Singapore, Islam (in Chapter 13) argues that the conception of state-led Ecological Modernisation in which the state adopts initiatives to induce capitalism towards green practices through policies and legislation should not be dominated by state institutions but should also account for bottom-up approaches. Specifically, Islam notes that individuals have great potential to exercise sustainable practices within their daily lives thus highlighting the importance of education in raising awareness among Singaporeans. His findings suggest that rather than having corporations and the state implement various policies and campaigns, bottom-up initiatives through family members and friends can influence an individual's consumption patterns and everyday practices to adhere to environmental sustainability. By contrast, Brendel (in Chapter 10) suggests confronting students with the complexity inherent in many issues of sustainability and challenge them to deal with uncertainty.

While research and reports have shown that environmental campaigns/events are effective in creating awareness and encouraging participants to take action, there is no information on whether the actions and behaviours are sustained or repeated. The literature on psychological studies shows that most people react to situations they consider personally relevant or when it affects their own livelihood (Moser & Dilling, 2004).

In addition, there is no 'magic bullet' in EfS and the effectiveness of education differs across countries. Research has shown that bottom-up or community-based approaches in sustaining the environment are important aspects in promoting EfS and sustainable behaviour (in Chapters 5 and 12). However, climate change mitigation remains mostly confined to education and awareness building, because many economic and especially regulatory instruments do not work effectively without enforcement and compliance.

Wi (in Chapter 5) notes that for nationwide climate change initiatives to succeed, it is critical to understand the public's perspective, social processes and human-environment interactions (Jordan, Hungerford, & Tomera, 1986). Therefore, he argues that a good EfS approach requires mutual interaction between the government and the people. Islam (in Chapter 13) also highlights that the bottom-up approach or civil engagement is as

important as the top-down state or institutional approach in promoting environmental awareness in the production and consumption chain. Having this interaction will bring information from the government to the people and at the same time inform policy formulation at the national level.

Beyond state-society relations, collaborative programmes can also transcend national boundaries linking multiple institutions and organisations across the world for the exchange of efficient practices, policies, systems and knowledge. In Chapter 12, Qi highlights the International Training Program (ITP) in China which shows the cooperation between not only the government and its people but also experts from other countries. Supported by the Swedish International Development Agency (SIDA), and in partnership with NIRAS (a Swedish consultancy company), Environmental Education Centre in East China Normal University (EEC ECNU), Southern African Development Community Regional EE Program (SADC-REEP) and several other organisations in Sweden and China, the ITP has involved more than 180 environmental education practitioners and their organisations in Chinese formal education at different levels, including educational decision makers, curriculum developers, teaching researchers, school principals and teachers. By the end of the programme, each participant would finalise his or her EE and ESD CHANGE project based on the institutional context. Participants were expected to implement their projects in their workplaces to effect real changes. In addition, participants also stressed three important learning values which are *learning from doing, theory in practice* and *assessment as learning*. The result was a decentralised, outcomes-based curriculum which gave more responsibility and freedom to local educational authorities, individual schools and subject teachers. This provided teachers and educators with opportunities to develop their own curricula and work towards the expected outcomes. Nonetheless, the participants also expressed a few shortcomings in the programme. Some of these challenges include: (i) managing change; (ii) application of the lessons learned from the course to the local Chinese context; and (iii) EE and ESD evaluation and assessment in formal education. Moreover, the language barrier also makes it difficult for Chinese EE and ESD practitioners to communicate with the international community. The author notes that although these challenges were attended to by the organisers, the response of the organisers has been limited.

Conclusion

UNESCO defines curriculum as 'a systematic and intended packaging of competencies (i.e. knowledge, skills and attitudes that are underpinned by values) that learners should acquire through organised learning experiences both in formal and non-formal settings' (UNESCO, 2016). Moving forward, it is undeniable that a school's curriculum will be an integral tool

in empowering the next generation of experts and leaders in devising innovative solutions to the world's most pressing problems, such as climate change and sustainable development. In a rapidly evolving world steeped in uncertainty and complexity, curriculum planning should not only be about each of the constituent outcomes of knowledge, skills and attitudes, but should also be a synergy of these outcomes that will enable the child to discern 'tested beliefs from mere assertions, guesses, and opinions' (Dewey, 1997).

Pedagogical and technological innovations at the global scale will certainly draw the boundaries on what can be done with the learning of EfS. However, there are developments beyond the sphere of formal teaching and learning spaces that we need to consider. The world is facing a range of global issues such as uneven access to education, social issues as a result of economic disparity across regions, and unprecedented environmental changes such as climate change. These issues will surely impact the learning environment of the rapidly evolving world. More importantly these are issues that are of relevance to the child that we are educating.

The 'quality of an education system cannot exceed the quality of its teachers' (Barber & Mourshed, 2007). Indeed, Casinader and Kidman (see Chapter 8) suggest that curriculum planning needs to go beyond simply the teaching of facts and reflecting the priorities of today's society. We now need to teach children to think critically about the nature of knowledge and to then use their knowledge to prepare for a sustainable future. Moreover, a discussion on the development of sustainability curricula would be incomplete without considering the changing roles of the important key stakeholders parents, teachers, curriculum planners and policymakers, as well. Teachers play a critical role in guiding students to think about the information that they come into contact with. As educators, we should first have a good understanding of the subject matter before we can even influence the learners' attitude and encourage them to take action (Chang & Wi, 2018).

This book has built on the previous book *Education and Sustainability: Paradigms, Policies and Practices in Asia* by the EfS Asia community. We have examined what EfS is, its applicability and its implementation around the world. The chapters have also discussed what an EfS curriculum looks like and we have given examples and strategies on developing a sustainability curriculum. Examples of how countries translate 'sustainability strategies' from theory to practice at the local, national and global scale were also described. In all, we have argued that the schema for understanding what EfS is all about does not detract from the four pillars of the UNESCO Delors report – learning to know, learning to do, learning to be and learning to live together. We seek to advance a deeper understanding of issues in teaching and learning in both education and sustainability, with a view to empowering our learners of tomorrow with the knowledge, skills, attitudes and agency to engage the issues in sustainability that they will face.

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