Implementing Education for Sustainable Development (ESD): A Policy Ethnography of Taiwan's Environmental Education Act

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Abstract

The United Nations announced the 2005 to 2014 as the Decade of Education for Sustainable Development. Central to this declaration was the idea that the goal of attaining a sustainable future can never be achieved without education and learning for sustainable development. This idea has been widely accepted and supported by governments worldwide. To this date, most of the United Nations member states have national plans for integrating the framework of Education for Sustainable Development (ESD) into their education and sustainability policies. As ESD implementation has emerged as a political priority around the world, there is a growing need to critically examine the potential impact of ESD in bringing about the desirable changes for a sustainable future. With an attempt to contribute to this body of literature, this doctoral study seeks to understand in what ways and to what extent a nationwide education policy can (or have the potential to) contribute to global sustainable development.

The goal of this doctoral study was to explore the lessons that can be learned from the Taiwanese experience of mainstreaming ESD into national education and sustainable development policies. To this end, this study examined the development and implementation of Taiwan's ESD policies, with a particular focus on the Environmental Education Act—a nationwide environmental and sustainability education policy that emerged during the United Nations Decade of Education for Sustainable Development. The methodological framework of policy ethnography (Ball, 2016) was used to follow the Environmental Education Act across various contexts from the standpoint of policy actors, including lawmakers, policy implementers, school principals and administrators, and teachers (Griffiths, 2003). Sources of data included official texts (e.g., national sustainable development action plans, policy guidelines, official announcements, curricular, evaluation documents), two-round of semi-structured interviews with

30 policy implementers of the Environmental Education Act, and approximately 70 hours of ethnographic observation with four policy implementers. Data were analyzed using a hybrid process of inductive and deductive thematic analysis (Fereday & Muir-Cochrane, 2006) in which both data-driven and theory-driven codes were used to interpret multiple sources of data.

This dissertation follows a manuscript-based format. The first manuscript focuses on the governmentality of the Taiwan government and policy implementers. The second manuscript explores the historical and political traditions that have shaped the ESD policies in Taiwan. In particular, Chinese Legalism was used as an analytical lens to understand how the state's values are reflected in the Environmental Education Act. The third manuscript presents an ethnographic exploration of the work of policy implementers on the ground. This exploration generates important lessons about the role of education in achieving UN's Sustainable Development Goals.

Important findings from this study include: (a) the government of Taiwan seems to have a strong political interest in ensuring the proper implementation of the Environmental Education Act in the Taiwanese society; (b) Taiwan's Environmental Education Act appears to have realized UNESCO's strategy of introducing and promoting ESD through multiple formal, non-formal and informal educational programs; (c) Chinese Legalism (a political philosophy of governance in ancient China) provided a useful framework to explore the historical and political traditions that seem to have shaped Taiwan's ESD policies; and (d) current ESD activities have failed to meaningfully engage action that address the underlying drivers of our climate breakdown, and the policy implementers of the Environmental Education Act have come to see through this green-washing exercise. Drawing on the findings and analysis of this study, this doctoral research sheds light on the potential and the limitations of adopting UNESCO's ESD framework to enable a sustainable future. First, this study highlights that, without critically

reflecting on what to change, the impact of ESD can be limited in bringing about the necessary changes for creating sustainable societies. It also adds to the discussion on what types of social learning and education are necessary for achieving United Nations' sustainable development goals. Additionally, this doctoral research contributes to the scholarly discussion of different political traditions, governing structures, and policy tools for ESD implementation in various political contexts. These discussions will have important implications for future education and sustainable development policies and practices.

Résumé

Les Nations Unies ont annoncé que la période de 2005 à 2014 serait la Décennie de l'éducation pour le développement durable. Au cœur de cette déclaration, il y avait l'idée que l'objectif d'un avenir durable ne peut être atteint sans éducation et apprentissage pour le développement durable. Cette idée a été largement acceptée et soutenue par les gouvernements du monde entier. À ce jour, la plupart des États membres des Nations Unies ont mis au point des plans nationaux pour intégrer le cadre de l'éducation au développement durable dans leurs politiques d'éducation et de développement durable. La mise en œuvre de l'EDD étant devenue une priorité politique dans le monde, il est de plus en plus nécessaire d'examiner de manière critique l'impact potentiel de l'EDD sur les changements souhaitables pour un avenir durable. Dans le but de contribuer à ce corpus de littérature, cette étude doctorale cherche à comprendre de quelle manière et dans quelle mesure une politique éducative nationale peut (ou peut potentiellement) contribuer au développement durable mondial.

L'objectif de cette étude doctorale était d'explorer les leçons pouvant être tirées de l'expérience taïwanaise d'intégration de l'EDD dans les politiques nationales d'éducation et de développement durable. À cette fin, cette étude a examiné l'élaboration et la mise en œuvre des politiques taïwanaises en matière d'éducation au développement durable, en particulier la loi sur l'éducation environnementale (Environmental Education Act), une politique nationale en matière d'éducation environnementale et durable qui a été élaborée au cours de la Décennie des Nations Unies pour l'éducation en vue du développement durable. Le cadre méthodologique de l'ethnographie des politiques (Ball, 2016) a été utilisé pour suivre la Loi sur l'éducation à l'environnement dans différents contextes du point de vue des acteurs politiques, notamment les législateurs, les responsables de la mise en œuvre des politiques, les directeurs et administrateurs

d'école et les enseignants (Griffiths, 2003). Les sources de données comprenaient des textes officiels (plans d'action nationaux pour le développement durable, directives, annonces officielles, programmes officiels, documents d'évaluation, etc.), deux entretiens semi-structurés avec 30 responsables de l'application de la loi sur l'éducation environnementale observation ethnographiques avec quatre responsables de la mise en œuvre des politiques. Les données ont été analysées à l'aide d'un processus hybride d'analyse thématique inductive et déductive (Fereday et Muir-Cochrane, 2006), dans lequel des codes basés sur les données et sur la théorie ont été utilisés pour interpréter de multiples sources de données.

Cette thèse suit un format basé sur un manuscrit. Le premier manuscrit porte sur la gouvernementalité du gouvernement de Taiwan et sur les responsables de la mise en œuvre des politiques. Le deuxième manuscrit explore les traditions historiques et politiques qui ont façonné les politiques d'EDD à Taiwan. En particulier, le légalisme chinois a été utilisé comme une lentille analytique pour comprendre comment les valeurs de l'État sont reflétées dans la loi sur l'éducation relative à l'environnement. Le troisième manuscrit présente une exploration ethnographique du travail des responsables de la mise en œuvre des politiques sur le terrain. Cette exploration génère des enseignements importants sur le rôle de l'éducation dans la réalisation des objectifs de développement durable de l'ONU.

Les principales conclusions de cette étude sont notamment les suivantes: a) le gouvernement taïwanais semble avoir un fort intérêt politique à veiller à la bonne application de la loi sur l'éducation relative à l'environnement dans la société taïwanaise; b) La loi taïwanaise sur l'éducation relative à l'environnement semble avoir concrétisé la stratégie de l'UNESCO consistant à introduire et à promouvoir l'EDD au moyen de multiples programmes éducatifs formels, non formels et informels; c) Le légalisme chinois (philosophie politique de la

gouvernance dans la Chine ancienne) constituait un cadre utile pour explorer les traditions historiques et politiques qui semblaient avoir façonné les politiques de Taiwan en matière de DSE; et d) les activités actuelles d'EDD n'ont pas permis d'engager de manière significative des actions pour remédier aux facteurs sous-jacents de notre rupture du climat, et les responsables de la mise en œuvre de la politique sont parvenus à mener à bien cet exercice de blanchiment. S'appuyant sur les conclusions et l'analyse de cette étude, cette thèse de doctorat met en lumière le potentiel et les limites de l'adoption du cadre de l'UNESCO pour l'EDD afin de permettre un avenir durable. Premièrement, cette étude souligne que, sans réfléchir de manière critique sur ce qu'il faut changer, l'impact de l'EDD peut être limité pour amener les changements nécessaires à la création de sociétés durables. Elle ajoute également à la discussion sur les types d'apprentissage et d'éducation sociaux nécessaires pour atteindre les objectifs de développement durable des Nations Unies. En outre, cette recherche doctorale contribue à la discussion savante de différentes traditions politiques, structures de gouvernement et outils politiques pour la mise en œuvre de l'EDD dans divers contextes politiques. Ces discussions auront des implications importantes pour les futures politiques et pratiques en matière d'éducation et de développement durable.

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Contribution to Original Knowledge

Overall, this doctoral study sheds light on the fundamental disjuncture between UNESCO's framework of Education for Sustainable Development (ESD) and the larger systemic dynamics that have caused environmental damage. In particular, UNESCO's ESD (as well as the policy, documents and declarations generated by UN and its subsidiaries) operates under the assumption that educating people about sustainable actions is the locus of social change. However, this fundamental orientation of environmental and sustainability education based on individual behavioral change is directly at odds with the systemic change that would need to happen in order to effect actual environmental change. The discourse of educating people to care more about sustainable development has thus became a superficial intervention that has drawn our attention away from addressing the influential, *deep* leverage points—places at which interventions are difficult but likely to yield truly transformative change (Fischer & Riechers, 2019; Meadows, 1999). The ethnographic analysis of this dissertation thus provides empirical evidences that contribute to current discussion about the limitations of UNESCO's ESD agenda. Beside the empirical contribution, this dissertation also makes a theoretical contribution to the demonstration of the contemporary relevance of Chinese Legalism in Taiwan's policymaking process. This not only adds to the growing body of scholarship on ESD governance, but also provides other policy analysts with analytical heuristics in understanding the policy tools, political traditions, and philosophy of government in East Asian contexts.

There are two methodological contributions of this dissertation. This work is one of the few attempts to use policy ethnography (Ball, 2016) as an emerging methodological framework for examining multi-level governance through education policies. In particular, the Methodology Chapter of this dissertation presents a detailed exemplar of the staged process of data collection,

analysis and identification of themes for other policy ethnographers to consider. It specifically describes the design of this study and demonstrates how analysis of raw data from policy texts, interview transcripts, and participant observations progressed toward the identification of overarching themes. The intention was to show that research design and methodological choices can have broad effects on the trustworthiness of a study. Another methodological contribution is the application of critical realism as a research paradigm for interdisciplinary work, such as ESD. As Khazem (2018) pointed out, critical realism "may help to mitigate the quantitative/qualitative dualism and bolster research evidence in global learning for policy consideration" (p. 125). This dissertation takes on this challenge and demonstrates empirically that critical realism indeed can be an appropriate research paradigm for interdisciplinary or trans-disciplinary studies.

Contributions of Co-Authors and Remarks on Style

This dissertation follows a manuscript-based format. As is expected in this format, there is some repetition in the text. The work presented in Chapter 3-5 consists of three manuscripts under review. As primary author of every chapter, I conceptualized and carried out all aspects of the research, including development of research questions, research design, data collection, and analyzing all data in the three manuscripts. I also wrote the current dissertation in its entirety. Chapter 3 is co-authored with Drs. Anila Asghar and Naomi Nichols, and was submitted to *Educational Research for Policy and Practice* in March 2019. Chapter 4 is co-authored with Dr. Anila Asghar and was submitted to *Policy Futures in Education* in June 2019. Chapter 5 is co-authored with Drs. Anila Asghar and Blane Harvey. It was submitted to *Journal of Education Policy* in June 2019. As my doctoral supervisor, Dr. Anila Asghar provided feedback and critique throughout the research process. As my doctoral research committee member, Dr. Naomi Nichols provided guidance on the research design and participated in manuscript writing in Chapter 3. Dr. Blane Harvey participated in the interpretation of data and contributed to the final draft of Chapter 5.

Chapter 1: General Introduction

Five thousand years ago, when Confucius was frustrated at the war among rival and divided states, he turned to education, hoping that his students would ultimately actualize his vision of a harmonious and peaceful society (Li & Ni, 2014; Tucker, 2017). For Confucius, education not only helps people understand the social and political issues and resolve them, but also cultivates the value of *Ren* (benevolence) in individuals so that we would live in harmony with "the natural world, the social worlds, and the inner world of self" (Sun, 2004, p. 88). In the current phase of human history, environmental crises abound in several aspects of our life—climate change, habitat loss, and changes in the chemical composition of the atmosphere, oceans and soil. In order to respond to these catastrophic crises, many of us have also turned to education, believing that education is "the primary agent of transformation" (United Nations Educational, Scientific and Cultural Organization [UNESCO], 1997, p. 36) towards sustainable and resilient societies. *Informing the public and educating future generations* have become a prevalent response for addressing many of our environmental and societal ills at national and international forums. It is in this backdrop that the discourse of Education for Sustainable Development began to emanate.

Education for Sustainable Development (ESD) is a framework that emerged from United Nations (UN) conferences and summits of the past two decades. It emphasizes the role of education in empowering individuals to create a sustainable society for all (UNESCO, 2002). That is, the ESD framework upholds that education is a "powerful instrument" (Rischard, 2002, section 4) for empowering women and youth with the knowledge and skills to improve their socio-economic and health situations, which are considered as the basis of sustainable

development[1]. ESD also seeks to prepare the next generations for the uncertain future and engage them in actively looking for solutions to the world's environmental challenges (UNESCO, 2002; 2005). The overall goals of ESD are to develop a sense of shared global values and build capacity among individuals, communities and societies to empower people to make informed judgements and choices that are in favour of sustainable development (UNESCO, 2002; 2005).

ESD emerged as a broader framework to include traditional environmental education as well as other social and developmental challenges, such as extreme poverty of more than 1 billion people and increasing income inequality within and among many countries (UN, 2015). The United Nations Educational, Scientific and Cultural Organization (UNESCO) promotes ESD as a balanced and integrated approach to the key pillars of sustainable development—economic, social, cultural, and environmental dimensions. ESD holds that environmental conservation cannot be achieved without improving the quality of living conditions of hundreds of millions of disadvantaged people (World Commission on Environment and Development, 1987). Peace, justice, and poverty reduction have thus been recognized as the basis for sustainable development. As a result, the content of ESD focuses on the interrelationship between poverty alleviation, social responsibilities, and environmental protection. It also stresses the importance of sustainable economic growth as the basis for creating a just and flourishing society in the long

[1] A widely known definition of *sustainable development* was given in the Brundtland Commission report, *Our Common Future* (also known as the Brundtland Report), released in 1987 by the UN-sponsored World Commission on Environment and Development (WCED). According to *Our Common Future*, "Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987 p. 41). Lélé (1991) has unpacked the concepts of *sustainability* and *development* through a semantic analysis to challenge the ambiguity of the term *sustainable development*. Additionally, numerous academic articles and books have looked at the dichotomy and tension between sustainable *development* and sustainable *growth* (for further discussion, please see Daly, 1996; Ulhoi & Madsen, 1999; Vilches et al., 2012).

term. Importantly, the pedagogical approach of ESD is value-oriented[2] and action-based, as it seeks to cultivate individuals' sense of environmental responsibility to challenge unsustainable practices and to actively participate in changing them (e.g., avoiding overconsumption and engaging in political discussions that could produce legislation promoting sustainable living[3]) (Gough, 2006; Stevenson, 1987; UNESCO, 2012). According to UNESCO (2012), realizing the vision for a sustainable future requires fundamental changes in the way we think and act, and it is impossible to achieve it "by technological solutions, political regulation or financial instruments alone" (p. 13). Therefore, ESD was presented as a "new vision" to encourage concerted actions by "many sectors of society" and to develop "the next generation of leaders and citizens to find solutions" to the challenges concerning sustainable development (UNESCO, 2005, Annex I: 3).

In the past few decades, ESD has gained notable popularity among governments worldwide. Through multilateral meetings and international conferences organized by UN and UNESCO, the discourse of ESD began to have varying degrees of influence on local policymaking processes related to environmental and sustainability education. In particular, ESD was propelled forward by the 1992 Rio Earth Summit and became the focus of attention at 2002's World Summit on Sustainable Development in Johannesburg. In December 2002, the UN passed Resolution 57/254 and declared a Decade of ESD from 2005 to 2014. Throughout and since that period, more initiatives have been launched by community partners, private sectors,

[2] Some scholars have criticized the approach of education *for* sustainable development. In their view, education must not be an instrumental tool for promoting a certain view of the future. For more discussion, please refer to Foster (2001), Jickling (1992), Stevenson (2006), and Jickling & Wals (2012).

[3] Tilbury and Janousek (2007) summarized two sets of principles that were highlighted as central to living sustainably: *ecological sustainability* (the responsibility to care for nature) and *social sustainability* (social justice, the stewardship to care for each other). In particular, *ecological sustainability* emphasizes the influence of human activities on ecological conditions and the wise use of renewable resources without disturbing the biophysical environment, such as sustainable agricultural and fish farming. *Social sustainability* focuses on local participation, social justice, gender equality, and cultural diversity to create harmonious societies. I have detailed the two sets of principles in Appendix 1.

and nongovernmental organizations (NGOs) to collaboratively promote ESD (Kevany, 2007). The UN also called on all countries to reorient their K–12 and teacher education towards an ESD framework by 2014. In response, many countries have enacted environmental or sustainability education policies to demonstrate their participation in UN's Decade of ESD. According to a 2007 report by UNESCO, less than 30% of the world's countries had national action plans for environmental or sustainability education in their K–12 curricula. By 2010, this number had increased, and 63% of all UN member countries had such plans for promoting ESD (UNESCO, 2014).

Despite the growing involvement of governments in environmental and sustainability education, several scholars have criticized UNESCO's framework of ESD for its practicability at K–12 level. For example, Dale and Newman (2005) argued that ESD was a combination of existing and yet-to-be-identified guiding principles, knowledge, skills, perspectives, and values organized around sustainability issues. While we are still debating on what sustainable societies would look like in "a multi-national world of nine plus billion people demanding more and more from a stripped and stressed planet", expecting teachers to integrate economic, social, and environmental concerns into their teaching is only adding further pressure on an already crowded curriculum (Weaver, 2011, p. 173). At the same time, it is challenging to provide teachers with a practical guideline for teaching ESD because connecting environmental issues with human and social development concepts, such as climate justice and social equality, requires multiple voices from diverse cultural settings (Stevenson, 2007). Although some scholars support the framework of ESD (Colucci-Gray, Camino, Barbiero, & Gray, 2006; Sauvé, 1996; Tilbury, 1995), many argue that documents related to ESD remain unclear about how teachers can help students understand the complexity of sustainability related issues (Bentham, 2013; Jickling & Wals,

2008; Stern, Powell, & Hill, 2014). In particular, Stevenson (2007) highlighted that the expected learning outcomes of UNESCO's ESD framework were vague and ambiguous because the essence of sustainability issues is complex and involved various competing or conflicting values, priorities, ideologies, and worldviews. Jickling and Wals (2008) also pointed out that most advocates of ESD have been shying away from its practical aspect in terms of developing tangible learning outcomes. Without providing specific learning objectives and appropriate teacher education programs, as Jickling and Wals (2008) argued, it seems overly optimistic to assume that teachers and educators would integrate all dimensions of ESD comprehensively into their curriculum.

In addressing the concerns about the vagueness and ambiguity of ESD, UNESCO has recently published several documents to provide some concrete guidelines for implementing ESD in practice, such as the *Roadmap for Implementing the Global Action Programme on ESD* (UNESCO, 2014), the *Education for Sustainable Development Goals, Learning Objectives* (UNESCO, 2017), and the *Green Technical and Vocational Education and Training, A Practical Guide for Institutions* (UNESCO, 2017). These documents focus on accelerating the process of institutionalizing ESD to ensure strong political support for implementing ESD on a systemic level. Specifically, five priority action areas were identified in the *Global Action Programme on ESD*, which are (a) advancing national and international policies on ESD, (b) transforming learning and training environments to enable the ESD implementation, (c) building capacities of educators and trainers for ESD, (d) empowering and mobilizing youth to support their ESD actions, and (e) accelerating and scaling up local solutions to sustainability issues (UNESCO, 2014). At present time, about 90 multilevel stakeholders worldwide are part of the UNESCO

Partner Networks, contributing to the action areas outlined in UNESCO's *Global Action Programme on ESD*.

As ESD implementation has emerged as a political priority around the world, there is a growing interest in understanding how different states have drawn upon a variety of policy tools and traditions to implement ESD, in order to better understand the potential impact of ESD in bringing about the desirable changes in society (Bieler, Haluza-Delay, Dale, & Mckenzie, 2017; Bormann & Nikel, 2017; LæssøE & MoChizuki, 2015; Leal Filho, 2010; Paden & Chhokar, 2007; Sung, 2015; Trajber & Mochizuki, 2015). This is also the very intention of my dissertation research presented here. In this study, I explored how the Taiwan[4] government has taken up, adapted, and approached the global discourse of ESD by examining the development and implementation of a nationwide environmental and sustainability education policy that emerged during the Decade of ESD.

In Taiwan, the government began the process of mainstreaming environmental education for promoting sustainable development even before the UN's Decade of ESD (2005-2014) was announced. The preparation work started when Taiwan's National Council of Sustainable Development (NCSD) was formed in 1997. Since then, a number of legislations have been made to establish the foundation of Taiwan's ESD implementation. For example, the Basic Environmental Law was passed in 2002 to grant the NCSD a legal status to promulgate national action plans and policies related to sustainable development. Alongside, the National Environmental Education Fund was established to secure national budget allocations for promoting environmental sustainability within the country. The Taiwan government also

[4] In this dissertation, I follow the convention of Taiwan Studies and describe the government of Taiwan as "the *Taiwan* government", rather than the *Taiwanese* government. In doing so, I hope to avoid misinterpretation of people's identity as Taiwanese, Chinese, Chinese Mainlanders, or Taiwan's Mainlanders. For more discussion on this issue, please see Chu (2000), Corcuff (2002), Huang (2015), and Wachman (2016).

published several national action plans aligned with the UN's vision for sustainable development, such as the *Global Trends and Sustainable Development Action Plan* (NCSD, 2002) and *Taiwan Agenda 21: Vision and Strategies for National Sustainable Development*[5] (NCSD, 2004). Similar to UN's *Agenda 21* (United Nations Sustainable Development [UNSD], 1992), Taiwan's sustainable development action plans emphasize the critical role of education in improving public environmental awareness and encouraging responsible behaviour towards a sustainable path (NCSD, 2004). Drawing on the analysis of Taiwan's official policy texts, in Appendix 2, I present a comparison between UNESCO's ESD and Taiwan's education and sustainable development policies to illustrate the similarities between the UNESCO's framework and Taiwan's environmental education programs since the 2000s.

Influenced by the global discourse of ESD, the Taiwan government also enshrined environmental education in law to demonstrate the country's commitment to sustainable development. In 2011, the Environmental Education Act was enacted. Aligned with UNESCO's vision for ESD, the goal of Taiwan's Environmental Education Act is to enhance citizens' understanding and awareness of the world's environmental challenges, as well as to encourage active participation in environmental protection and sustainable development (Environmental Protection Administration, Taiwan, 2014). With the enactment of the Environmental Education Act in 2012, all government employees (including the President), public school administrators and teachers, and K–12 students are now required to complete at least four hours of coursework in environmental sustainability each year. At K–12 level, various topics centred on ESD, such as

[5] In *Taiwan Agenda 21* (NCSD, 2004), several local environmental and development concerns were raised, including (a) the fragile and isolated island ecosystem, (b) high population density with heavy traffic and concentrated industrial and energy-producing plants, (c) the need to provide for the disposal of municipal and industrial waste, (d) the overuse of limited natural resources (e.g., land and fresh water), (e) a high frequency of natural disasters (i.e., typhoons, floods, and earthquakes), and (f) Taiwan's unique international political status that led to its active participation in the complex global economy with dynamic commercial, industrial, and consumption patterns.

climate change, sustainable energy, gender equality, and human rights, are also highlighted as essential cross-curricular issues (Ministry of Education, Taiwan, 2009; 2017). Thus, UNESCO's conceptualization of the ESD framework, which takes into account all formal, informal, and non-formal learning contexts (UNSD, 1992), is reflected in Taiwan's Environmental Education Act. The ESD initiatives spearheaded by the political leadership in Taiwan therefore created an interesting context for exploring the role of education in promoting sustainable development. I will further discuss the study context and these ESD related policies in detail in Chapters 3-5. In this dissertation, I use the term ESD policies to refer to a number of laws related to the government's initiatives on promoting sustainable development through education, such as the Environmental Education Act, the Basic Environmental Law, *Taiwan Agenda 21*, and school-based regulations (e.g., the ban on using disposable tableware on campus).

The goal of this study is to examine the development and implementation of Taiwan's ESD policies, with a particular focus on a nationwide environmental and sustainability education law—the Environmental Education Act. The following make up the overarching questions. Which governance structures and mechanisms have the Taiwan government established to implement the Environmental Education Act? In what ways and to what extent can a nationwide education policy contribute to the desired outcomes of the Act? Importantly, what lessons can be learned from the Taiwanese experience of developing and implementing UNESCO's framework of ESD? The following are the specific research questions guiding this inquiry:

<u>Questions focusing on Taiwan's Environmental Education Act:</u>

1. What are the global discourses, led by the UN and UNESCO, on environmental and sustainability education? How are Taiwan's ESD policies, government initiatives, and teacher-development initiatives situated within these global discourses?

2. What are the visions of the Environmental Education Act in Taiwan? What are the rationales underpinning this Act?
3. What mechanisms/technologies have been employed by the Taiwan government to achieve the policy objectives? In what ways have these mechanisms/technologies facilitated or undermined the outcomes of ESD initiatives in practice?

Questions focusing on the policy implementers:

4. What are the policy implementers' visions of Taiwan's Environmental Education Act?
5. In what ways do they interpret the policy framework and objectives of the Act?
6. What are their roles and responsibilities in the process of ESD implementation? What challenges have they experienced in their work as policy implementers?
7. What lessons can we learned from their experience about the contribution of education in addressing environmental and sustainability issues?

Overall Structure of the Dissertation

This dissertation follows a manuscript-based format. As is expected in this format, there will be some repetition in the text. The subsequent chapters of this dissertation are organized as follows:

In Chapter 2, I begin by explaining the philosophical and epistemological stance that has shaped my thinking for this research. This chapter also presents the general methodological framework for this study. I describe the framework of policy ethnography and how I used it to design this study. Moreover, I present the data collection procedures and discuss the data analysis process for this study. Additionally, the techniques I used to address trustworthiness of this work are presented at the end of this chapter.

Three manuscripts based on this research are presented in Chapters 3 to 5. Specifically, Chapter 3 focuses on the rationalities and mechanisms of the Taiwan government as well as the policy implementers of the Environmental Education Act. Drawing on Foucault's framework of governmentality, I examined the modalities of the Taiwan government. I also explored the underlying motivation of and technologies used by policy implementers when implementing the Act. The findings present in this chapter would provide my readers with an overview of the visions and rationales underpinning Taiwan's ESD policies. It also discusses the goals of the policy implementers and the strategies that they have used to enact the Environmental Education Act in practice.

As I noted above, Chapter 3 highlights specific policy mechanisms that have been developed and employed by the government to implement the Environmental Education Act. In Chapter 4, I explore the historical and political traditions that have shaped the ESD policies in Taiwan. I delve into Chinese Legalism, a political philosophy of governance in ancient China, to explore how such traditions many have influenced the development of the governing structures that support ESD implementation in Taiwan. In particular, I used Chinese Legalism as a lens to understand how the state's values are reflected in the Environmental Education Act. I found that the Legalist approach was a useful framework to analyze the principles and practical tools used by the Taiwanese lawmakers for ensuring effective implementation of the Act.

Chapter 5 presents an ethnographic exploration of the work of policy implementers on the ground. This chapter focuses on the voices of the policy implementers, in order to understand the challenges that they have experienced when implementing ESD policies in Taiwan. I also present my observation of various settings in which the Environmental Education Act was being implemented, such as public schools, private sector organizations, national parks, and

sustainability education facilities. A number of critical, hitherto unexplored, issues emerged from the analysis of this work. This exploration then generates important lessons about the role of education in achieving UN's Sustainable Development Goals.

Chapter 6, as the closing chapter of this dissertation, encompasses a summary and discussion of key findings. I also include limitations, implications, and future directions for research in this area.

Chapter 2: General Methodology and Methods

In pursing this study, I situate myself within the paradigm of critical realism. To explain my position further, I begin this chapter by explaining the central tenets (i.e., ontological realism, epistemological relativism, and judgemental rationality) of critical realism as a research paradigm. I also illustrate how a critical realist stance has shaped my thinking and practices for this research. Afterwards, I turn to policy ethnography which is the general methodological framework for this study. I introduce the philosophy of policy ethnography as an emerging qualitative research methodology. I then elucidate how policy ethnography has allowed me to explore the development and implementation of Taiwan's ESD policies by following these policies as well as the policy implementers and their stories related to their work. Subsequently, I present the data collection procedures and discuss the data analysis process for this study, which are then followed by considerations of research ethics such as trustworthiness and creditability.

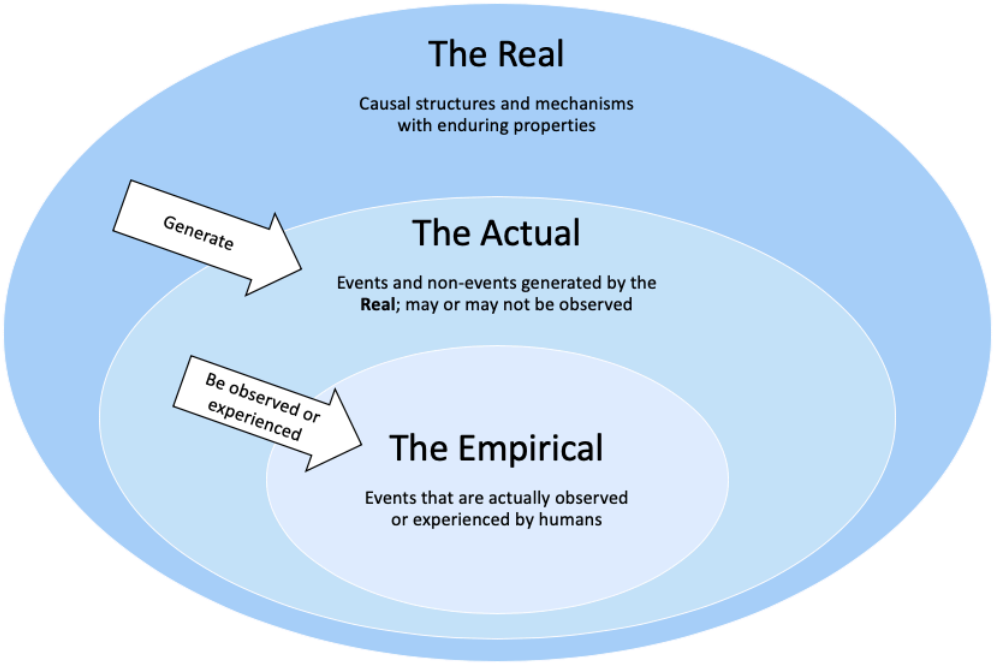
Critical Realism as Philosophical Stance

Critical realism is a meta-theory (a theory of the foundations, structure, or analysis of other theories) that is concerned with the "quantitative and qualitative divide that plagues social science" research (Khazem, 2018, p. 125). It was developed by Roy Bhaskar, an English philosopher, who argued for a "new ontology" (a philosophical study of being) to "realis[e] an adequate realist philosophy of science, of social science, and of explanatory critique" (Bhaskar, n.d.). To this end, Bhaskar (1975; 1993) proposed three philosophical principles for social science researchers, which are ontological realism, epistemological relativism, and judgemental rationality. In the following sections, I briefly explain these three central tenets of critical realism to illustrate how they guided my thinking for this study.

Ontological realism.

First and foremost, critical realism holds that an external reality exists, and this reality consists of structures of interconnected objects and mechanisms through which those objects interact (Bhaskar, 1975; Miles & Huberman, 1994; Sayer, 1999). This proposition is grounded in a philosophical consideration of a structured and layered ontology, or what Bhaskar termed *ontological stratification* (Fleetwood, 2005). That is, Bhaskar (1975) proposed that our reality encompasses three overlapping domains, *the real*, *the actual*, and *the empirical*. I illustrate this structured ontology as described by Bhaskar (1975) in Figure 1.

Figure 1. Critical realist stratified ontology



This figure was adapted from Saunders, Lewis, & Thornhill (2009, p. 138)

In Bhaskar's (1975; 1993) view, the domain of *the real* contains causal structures and mechanisms with enduring properties which exist independently of how people think of them, label them, or even are aware of them. The domain of the real is "external and independent", but

not directly accessible through human "observation and knowledge of it" (Saunders, Lewis, & Thornhill, 2009, p. 139). Furthermore, the structures and mechanisms in *the real* generate events in the domain of *the actual*, but these events may or may not be experienced or observed by humans. As such, the events that we observe and experience in life fall within the domain of *the empirical*. These observed events are the manifestations of things in *the actual*. Therefore, what we see are sensations, which are "partially representations" of what is real (Saunders, Lewis, & Thornhill, 2009, p. 139). In other words, human perception allows us to access only the domain of *the real* indirectly. This feature distinguishes critical realism from the more extreme form of realism that underpins positivist philosophy, which Saunders and colleagues (2009) and Reed (2005) have described as positivist direct realism. In contrast to positing that the social world operates according to general laws like the physical world does (Comte, 1975), critical realists focus on "explaining what we see and experience, in terms of the underlying structures of reality that shape the observable events" (Saunders, Lewis, & Thornhill, 2009, p. 138).

The postulation of a stratified ontology in critical realism is particularly appropriate for this study, as it places the causal structures and mechanisms through which the natural environment operates in the domain of *the real*, the phenomena in the natural environment in the realm of *the actual*, and our experiences and understanding of the natural world in the domain of *the empirical*. In doing so, I consider the scientific mechanisms of human-caused global warming are ontologically real, and therefore are independent of people's beliefs about or experience of them (Bhaskar, 1993). The argument can be laid out as follows: the greenhouse effect is a natural process that makes the Earth much warmer than it would be without an atmosphere. In the domain of the real, a mechanism of *atoms absorbing energy* exists before our awareness or knowledge of it. This mechanism governs the phenomenon of *carbon dioxide*

absorbing and re-radiating the sun's energy, which is also independent of human thought or beliefs about it and has an enduring effect. At the same time, the interconnected mechanisms between atoms and energy are part of a causal structure that cannot be directly observed or experienced through human sensations. Subsequently, in the domain of the actual, the mechanism of *atoms absorbing energy* becomes manifest as events, such as *the sun's heat is trapped within the Earth's atmosphere*. This event may have gone unnoticed by people because *heat being trapped within the atmosphere* is not directly observable through our perceptions. Therefore, in the domain of the empirical, people may or may not know that *the atmosphere is trapping heat*, but we may become aware that *it feels warmer when staying inside a greenhouse* (empirical sensation), *the moon is more affected by extreme temperature than the Earth* (empirical evidence), and *there seems to be a strong correlation between rising atmospheric carbon dioxide and rising global temperature* (a posteriori—statements and arguments depending on empirical evidence). Based on a stratified ontological reality, I thus consider the mechanisms of climate change as a real thing (in the domain of *the real*), and as something that exists independent of our beliefs about or interpretations of it. Such mechanism has generated various extreme weather events in the domain of *the actual*, such as severe heat waves and drought, heavy downpours and flooding, and increasing intensity and frequency of tornadoes, hurricanes, and damaging thunderstorm winds. Through decades of observation and accumulating evidence (*the empirical*), we now have an adequate understanding that the mechanisms of human-caused global warming (*the real*) have been driving these extreme weather events (*the actual*). As a result, although some climate change skeptics may interpret the causes of these extreme weather events differently, their beliefs about or lived experience of these events (*the empirical*) are independent of the mechanism of human-caused global warming

which is in the realm of *the real*. I will explain the implications of this ontological stance for my study in the succeeding sections.

It is important to note that the three domains of reality are dependent on each other. Nonetheless, events may occur without being noticed by people. It is also possible for mechanisms to be possessed without being exercised in the actual domain but becoming noticeable as a sensory experience of humans (Guba & Lincoln, 1994; Merriam, 1988; Saunders, Lewis, & Thornhill, 2009). Critical realists thus believe that there is a "real" world "out there" to discover (Sobh & Perry, 2006, p. 1200). However, this external reality is indirectly accessible to human perceptions, so it is "probabilistically apprehensible" (Sobh & Perry, 2006, p. 1200). Therefore, what it means to say that we know some things became an important discussion in the critical realism. I explain the critical realist stance on epistemological relativism as follows:

Epistemological relativism.

Bhaskar (2016) defines epistemic relativism[6] as the proposition that our knowledge of the world "is of (or about) things and structures that are existentially independent of us, and relatively or absolutely independent causally" (Bhaskar, 2016, p. 26). That is, given that humans define the criteria or rules to justify what counts as knowledge (epistemic norms), different criteria or rules are operated relatively in time and place. Following this reasoning, critical realists embrace "a mildly subjectivist approach to knowledge" and emphasize that human knowledge (or *justified beliefs* as narrowly defined in philosophy) is historically situated and socially produced (Saunders, Lewis, & Thornhill, 2009, p. 139). Knowledge is therefore "changeable and fallible" because social facts are socially constructed and agreed upon by

[6] In a restricted way, Sankey (2012) defined epistemic relativism as "the thesis that there are no epistemic norms over and above the variable epistemic norms operative in different (local) cultural settings or contexts, where these local contexts are defined as always including at least a system of beliefs and a set of norms" (p. 187). For Sankey (2012), epistemic norm is "a criterion or rule that may be employed to justify a belief" (p. 187).

people based on different contexts (Khazem, 2018, p. 126;). As such, critical realist researchers view scientific inquiry as "an ongoing social activity in a continuing process of transformation" (Khazem, 2018, p. 129).

An epistemological relativist stance is, in fact, similar to hermeneutic, post-structural, and other idealist stances which argue that people interpret their social worlds differently, and so create and experience different social realities. However, critical realism differs from relativism by insisting on detaching the epistemic justification from truth. This difference allows critical realist researchers to make conclusions with more certainty than offered by relativism because our knowledge about reality is deemed independent of the ontological reality of the phenomena under study (Bhaskar, 2016; Khazem, 2018; Riege, 2003). In practice, critical realist researchers seek contextual truth, rather than claiming for a universal law (as positivists do) or multiple realities (as postmodernists do).

An epistemological relativist stance is especially helpful when I consider the scientific uncertainties and the related debates on what sustainable development means for different people. By taking an epistemological relativist stance, I acknowledge that different people know, interpret, and experience the social worlds in different ways. This philosophical position is important for interdisciplinary research like ESD because sustainability issues are not simply phenomena occurring in nature. Climate change, for example, is largely attributed to human activities, and its catastrophic outcomes would also have a profound impact on how we individually and collectively conceptualize human rights i.e., the right of clean water, affordable renewable energy, and climate migration (Center for International Environmental Law, 2011). As a result, the findings of an ESD study must, in some ways, be grounded in people's subjective meanings and interpretations (Khazem, 2018; Schutz, 1967). At the same time, actions to

mitigate and adapt to climate change require intertwined ecological, physical, political, social, economic, and psychological dimensions of knowledge. Therefore, these types of actionable knowledge must be based on scientific evidence while still being recognizable, relatable, and understood by people (Schutz, 1967). As an epistemological relativist, I thus value each individual's point of view, as they have valuable insight into human experiences of both physical and social phenomena in the world. Other than the principles of ontological realism and epistemological relativism, critical realism suggests a third methodological pillar—judgemental rationality—for social science researchers to consider. The following section explains this principle.

Judgemental rationality.

Judgemental rationality is our ability to adjudicate among competing constructions of reality, implying that our constructions of reality are not equally warranted; some are epistemically superior to others (Porpora, 2015). Specifically, as mentioned earlier, critical realists hold an alethic view that separates truth from knowledge. This alethic account of truth is ontologically real and exists in the external reality. Humans are only able to "approximate the truth" through our understandings of some of the causal structures and mechanisms that operate autonomously in external reality (Khazem, 2018, p. 130). This proposition has significant methodological implications, as it implies that critical realist notions of causality cannot be reduced to solely statistical correlations or laboratory experiments. Therefore, using a range of methods or collecting a variety sources of data to triangulate the evidence is a salient practice for critical realist researchers (Reed, 2005). In doing so, one may then wonder: at which stage can critical realist researchers make causal claims of a studied phenomenon?

Critical realism responds to this concern by proposing that reasoning and testimony of others are essential in the pursing of an approximated truth. In particular, critical realism rejects the proposition of direct (or naïve) realism that our human senses allow us to directly perceive or experience objects as they really are (Saunders, Lewis, & Thornhill, 2009). Critical realists argue that the mental processing that goes on after our sensations or experience of events is pivotal in our understanding of the world (Reed, 2005). As such, critical realists favour the use of abductive reasoning over solely induction or deduction that are associated with hermeneutics and positivism respectively (Danermark, 2002). Abduction, also known as retroduction, is a form of logical inferences that starts with a set of observations, "reason backwards" from the observation to the underlying reality that might have caused them, and seek the most likely explanation (Saunders, Lewis, & Thornhill, 2009, p. 139). Following the principle of judgemental rationality, critical realist researchers thus offer the most reasonable explanations for the observed events by persistently searching for the underlying causes and mechanisms through which deep social structures shape our everyday life (Saunders, Lewis, & Thornhill, 2009). This principle is particular helpful in terms of resolving the potentially competing claims among my participants. Using the previous example of climate change skeptics, as a critical realist researcher, I can then situate their subjective experiences of climate change within their social, historical, and political contexts to search for the most likely explanation about the factors that have led to their understandings and interpretations of the phenomena of extreme weather events. While doing so, I shall strive to follow Schutz's (1967) postulate of logical consistency in a research process and endeavour to "establish the highest degree of clarity of the conceptual framework and method applied" to ensure that my proposed explanations are logical (p. 43).

Taken together, critical realism, as a meta-theory, offers the following helpful conceptual, epistemological, and methodological considerations. With the principle of ontological realism, I hold that natural phenomena and climate change are real, rather than socially constructed. This view lends strength to the argument for restricting human activities that can harm our planet and its inhabitants. The principle of epistemological relativism is important in considering that the development and implementation of sustainability and education policies are human activities. They involve many individuals and groups in complex interaction to shape the reality of what a sustainable society stands for and how our views can have a direct impact on our future. Importantly, people's perspectives are relative to their time and space. This philosophical stance reminds me to consider the contexts when listening to and interpreting my participants' narratives and actions. Last but not least, the principle of judgemental rationality holds that, as a critical realist researcher, I must search for a shared understanding of the common reality of the social world in which many people operate inter-dependently. Therefore, my methodological orientation focuses on providing the most likely explanation for the observed social events by paying attention to the connections and interrelations arising from the underlying social structures. This philosophical stance encourages me to seek for contextual explanations and causal structures of a social phenomenon, rather than claiming for absolute truth of a cause-and-effect relationship. Based on the philosophical stance of critical realism, I now turn to the methodological approach to this study.

Policy Ethnography as Methodological Approach

Policy ethnography is an emerging methodological approach to policy studies in social science (Ball, 2016). This approach was developed with an understanding that policymaking is not a linear, technical, or rational process (Ball, 1994; Eastwood, 2013; Vidovich, 2007).

Policymaking is a human activity in which actors negotiate and interact formally or informally at various stages of a policy process, including agenda setting, policy development, legitimation, implementation, and evaluation (Howlett, Ramesh, & Perl, 2009). As such, policy analysts ought to not only examine the official texts of a policy, but also study the associated contexts that have shaped different stages of policymaking (Ball, 1990; 2016). The focus of policy ethnography is thus to gain an in-depth understanding of the "messy realities" of the contexts in which policy texts are produced, reproduced, interpreted, and implemented in practice (Ball, 1990, p. 9).

The framework of policy ethnography also holds that policy is always in a state of "becoming" and "not quite" (Ball, 1993, p. 11). Particularly in the field of education, official policy texts, including curriculum guidelines and evaluation matrices, are constructed for various groups of people, such as school principals, teachers, parents, and politicians (Ball, 1993). Each reader of the official documents would understand the texts within his or her personal constructions, and thus none can claim a tangible policy reality (Ball, 1990; 1993; Codd, 1988; Guba, 1984). For this reason, in this study I also did not intend to focus on a search for a single authorial intention of policy texts. Instead, I focused on the multiple meanings and effects of ESD policies among the people "on the ground" (Nader, 1972; cite in Stepputat & Larsen, 2015, p. 4). That is, I sought to study Taiwan's Environmental Education Act and related ESD policies from the standpoints of those who made, unmade, mobilized, translated, and enacted them (Latour, 1986). My goal was to understand how assemblages of knowledge, tools, social norms, and policy practice have come together, transformed, and fallen apart at different educational settings (e.g., government institutions, public schools, outdoor ESD centres). This approach to policy analysis, as Lingard and Ozga (2007) suggested, helps to illuminate "the politics involved

in the production and implementation of a policy and in the actual purposes and language of the policy text" (p. 2).

In practice, policy ethnographers focus on the iterative relations amongst policy actors to comprehend the policy that is studied. Policy actors are individuals or groups that are formally or informally, directly or indirectly, affiliated with or affected by the policy process at any stage (Cahn, 2012). *Following policies*, as Marcus (1995) puts it, is therefore at the core of policy ethnography. Following a policy, for policy ethnographers, means following policy actors (e.g., lawmakers, lobbyists, policy implementers), their ideas, stories, lives, and conflicts (Verger & Curran, 2014), in addition to following resources, money, and power relations involved in different stages of policymaking (Ball, Junemann, & Santori, 2017). To this end, policy ethnography is often "multi-sited" and "not bounded physically" by being there (Yanow, 2009, p. 34). In contrast to an anthropological approach to ethnography, policy ethnographers do not confine themselves to singular locations where they know everybody (McCann & Ward, 2012). The goal of multi-sited fieldwork in policy ethnography is to get into the dispersed networks, making extensive use of documents, and being present in particular sites at particular moments. Therefore, policy ethnography has emerged as a developing method (Ball, 2016, described it is as an assemblage of research tactics and techniques) for qualitative policy analysts who conduct fieldwork in physical space (e.g., conference halls, corporate offices, protest rallies, cafés, minibuses, and hotel bars) as well as in the virtual world (e.g., on social media or in online discussion groups).

In the field of educational research, policy ethnography has emerged as a response to the formation of global policy agendas in education, such as ESD and 'Education For All' (Ball, 2016). Using India's education reform movement as an example, Ball (2016) demonstrated how

the mobilization of policy actors created new "policy spaces" (p. 554) where problems are highlighted, and solutions are validated at national and international networking events. In this work, Ball (2016) observed NGOs at several networking events and followed them on social media. He analyzed the ways in which a coherent narrative emerged online (e.g., on Twitter, blogs, Facebook) and how these virtual interactions informed official discussions in national and international forums. In other words, the policy actors jointly framed the problems in India's educational system through these interactions. The legitimisation and the discursive coherence of such institutional networks then stimulated India's education reform movement towards the global discourse of 'Education For All'.

In my doctoral research study, policy ethnography was used as a methodological approach to *follow* Taiwan's Environmental Education Act. As a policy ethnographer, I examined policy texts (e.g., official documents, curricular) and interviewed 30 policy actors to gain "conceptual access" to the unwritten customs and tacit knowledge of the "operating manual" of the Taiwan government (Yanow, 2009, p. 34). Specifically, I followed policy texts as they travel among diverse and interconnected communities of practices to trace how the government's ideology enters communities in different forms through policy (Ball, 2016; Cobb, McClain, de Silva Lamberg, & Dean, 2003; Emad & Roth, 2009; McKenzie, Bieler, & McNeil, 2015). I view these policy texts as serving a brokering or mediating function and providing a shared context among the government institutions, private sector entities, and civil society organizations. Moreover, I followed a unique group of policy actors who are tasked with the important responsibility to implement the Environmental Education Act in Taiwan. They were certified by Taiwan's Environmental Protection Administration (EPA) as the ESD personnel. Their role as certified staff encourages them to navigate between educational settings to promote

ESD in accordance with the Environmental Education Act. These policy actors are, among others, government officers, university professors, school teachers, public school administrators, principals, and members of NGOs. Some of them therefore have first-hand experience in the policy process of the Environmental Education Act, such as mainstreaming ESD and policy evaluation. As a result, their perspectives on policy vision, personal goals of ESD, and understanding of global and local environmental issues are key to the success, or lack thereof, of the implementation of Taiwan's environmental education and sustainability policies. Henceforth I refer this unique group of policy actors as 'policy implementers' in this dissertation, as they are given the responsibility to implement the Environmental Education Act at various educational settings. Given that they refer themselves as 'certified staff (認證人員)' during my interactions with them, I also introduce them as 'certified staff members' or 'certified ESD personnel' when describing the findings and analysis of this study.

Data collection.

Data collection was carried out between 2017 to 2018 in three concurrent parts. The first part consisted of a desk-based review of Taiwan's environmental education and sustainability policies. The primary documents were sourced from the government website, using the search terms 'sustainable development', 'sustainability', 'environmental education', and 'sustainability education'. Exemplar documents of the search results included *Taiwan Agenda 21* (National Council for Sustainable Development, 2004), the Environmental Education Act (Legislative Yuan, 2011), the official records of parliamentary meeting notes on this Act (Legislative Yuan, 2010a, 2010b, 2010c, 2010d), and *National Environmental Education Action Plan* (EPA, 2014). Moreover, relevant curriculum guidelines, such as the Education Basic Act, *Environmental Regulations Applicable to Schools* (Ministry of Education, 2012), and the curricula for grades 1

to 12, were also examined to understand the topics as well as the pedagogical strategies included in Taiwan's ESD program. Additionally, relevant certification guidelines were reviewed to explore the EPA's criteria for selecting qualified policy implementers. UN documents, such as *Agenda 21* (UNSD, 1992) and *Our Common Future* (World Commission on Environment and Development, 1987), that were cited in the policy texts were reviewed to understand the inspiration for Taiwan's ESD initiatives. As I entered the field and began to immerse myself in these policy documents, I identified and collected more relevant texts (e.g., official memos, guidelines for developing a sustainable campus, internal evaluation forms and reports, etc.). Appendix 3 lists all the official documents that I gathered and reviewed for this study.

The second part of data collection included face-to-face interviews with 30 participants who are the policy implementers of Taiwan's Environmental Education Act. In particular, following the proposed procedure approved by McGill's Research Ethic Board (see appendix 4), I sent out invitation emails to potential participants (see appendix 5) using publicly available information listed on the government website.[7] The selection criteria for the potential participants included: (a) certified ESD personnel who provided full names and contact information on the government website , (b) ESD personnel whose certificates were valid throughout the study period, (c) ESD personnel whose expertise included 'schools and education in society'[8], and (d) ESD personnel who have been carrying out this work since the initial stages of this policy. The EPA website includes over 675 certified staff with expertise in 'schools and

[7] https://eecs.epa.gov.tw/front/_cert/lecturer_qry.aspx

[8] Other areas of expertise include: 'risk and disaster prevention', 'climate change', 'environmental conservation', 'public pollution control and prevention', 'environmental resource management', 'cultural preservation', and 'community engagement'. There is no limitation for a certified staff member to include the areas of their expertise. For example, a certified staff member may choose to include 'schools and education in society', 'climate change', and 'community engagement' as her or his areas of expertise on the EPA website. I became aware that their selected areas of expertise actually have no restriction in terms of the topics or types of environmental and sustainability courses that they can teach after I entered the field.

education in society' (data retrieved on April 20, 2019). The list on the government website was displayed sequentially based on the staff's certification numbers. These numbers imply a time sequence of the certifications obtained by the ESD personnel (hereafter certified staff or policy implementer). Therefore, I used this information to contact the first 100 certified staff who met the three criteria. This step allowed me to contact the policy implementers who had obtained their certifications in the early stage of the implementation of the Environmental Education Act. This means that all participants in this study had at least four years of experience as certified staff because I was interested in learning from experienced official policy implementers—the Environmental Education Act had been in place for 4-5 years at the time of the study. In response to my invitation, 25 certified staff agreed to participate in this study. Another five participants, who also met the same selection criteria, were recruited through snowballing method. Detailed demographic information of the participants is outlined in Table 1.

Table 1. Demographic information of certified staff (study participants)

	Pseudonym	Geographic location in Taiwan	Primary profession, position, or role	Target audience when teaching ESD courses or promoting ESD activities* as certified staff
1	Hao-ting	Central	Lecturer and guide at a national park; community college lecturer	General public
2	Fen-shou	Central	Kindergarten school consultant; college lecturer	Kindergarten teachers
3	Shan-yu	Central	Elementary school teacher; consultant at a compulsory education consulting group (CECG)	Elementary teachers and students
4	Ying-li	Northern	Retired secondary teacher and school administration officer; executive secretary at a CECG	Secondary teachers
5	Tian-fang	Southern	Government official at a national park	General public
6	Hong-bo	Eastern	Elementary school teacher; member at a CECG	Elementary teachers and students
7	Zheng-qing	Central	Elementary school teacher	Elementary students

8	Sheng-hua	Northern	Government official at a national park	General public
9	An-li	Eastern	Director of a local community-based NGO	Other certified staff; general public
10	Mei-sheng	Central	Community college lecturer	General public
11	Fu-long	Southern	Teacher at a public vocational high school; college lecturer; volunteer at an ESD centre	General public; college students
12	Jing-da	Southern	Assistant professor at a university	Other certified staff; college students; outdoor facilities
13	Shao-wen	Southern	Elementary school teacher; volunteer at an ESD Centre	Elementary students; general public
14	Li-mei	Southern	Elementary school administrator	None
15	De-wen	Northern	Director of an ESD consulting company	Other certified staff; outdoor facilities
16	Yun-ru	Northern	Director of a national museum	General public
17	Mei-juan	Central	University lecturer	College students
18	Shu-yu	Central	Volunteer at an ESD centre	General public
19	Liang-wei	Eastern	Volunteer at an ESD centre	General public
20	Ning-li	Northern	Elementary school administrator	Elementary teachers and students
21	Qing-lin	Northern	Consultant at an ESD consulting company	Other certified staff; outdoor facilities
22	Bou-jie	Southern	University assistant; consultant at an ESD consulting company	Other certified staff; outdoor facilities
23	Qing-geng	Eastern	Secondary school administrator; Consultant at a local sustainability education centre	Secondary teachers and students; general public
24	Li-zhao	Central	University administrative assistant	None
25	Syuan-zhen	Northern	Secondary teacher; member of a CECG	Secondary students and teachers
26	Qi-shu	Eastern	Retired high school teacher; volunteer at an ESD centre	General public
27	Wei-jie	Eastern	Government officer of a local EPA	Other certified staff; outdoor facilities; general public
28	Yu-yuan	Southern	Volunteer at an ESD centre	General public
29	Zhao-hua	Northern	Secondary school principal	Secondary teachers and students
30	Zheng-li	Northern	Secondary school administrator	Secondary teachers and students

**The ESD activities may include, but not limited to, designing school-based sustainability projects, publishing online articles to promote sustainable actions, and offering courses on environmental and sustainability education at community centres or universities. More information will be discussed in Chapters 3-5 when I present the findings and analysis of the study.*

I conducted two rounds of qualitative semi-structured interviews with 30 participants (see interview guide in Appendix 6), as this method helped to deeply explore the ESD policy process from the perspectives of the participants (Schensul, Schensul, & LeCompte, 1999). For this study, the goal of the first-round of interviews (approximately 60 minutes) was to gain a sense of my participants' background, responsibilities as certified staff/policy implementers, understanding of the policy, and professional vision. The conversation centred on how they were certified and trained by the Environmental Protection Administration, what they actually did for policy implementation, how they were funded, with whom and where they were working, how they were evaluated and with what metrics, what they were accountable for, and what tools and processes they used in their work. Afterwards, participants were invited to a second-round of interviews which lasted from 90 to 120 minutes. The second interview explored participants' personal experience, teaching philosophy, and professional practice in environmental education and/or sustainable development. I often referred back to the activities or events that the participants had mentioned in the previous interview to elicit additional details and reflections on their experiences. I invited the participants to talk about the environmental and sustainability issues that most concerned them. They were also invited to share with me their perspectives on Taiwan's education and sustainability policies. During the interviews, I paid special attention to my participants' professional relationships with different policy actors, such as government officers, university researchers, their colleagues, school administrators, teachers, students, and parents. In doing so, I hoped to learn, from the standpoint of the certified staff/policy implementers, about the influence, challenges and potential impact of Taiwan's Environmental Education Act on society. All interview conversations were audio-recorded and transcribed

verbatim in Mandarin, Transcriptions were then sent back to the participants for review and approval before I began data analysis.

The third part of data collection included participant observation and *following* the participants online. The goals were to gain further insights into the frontline work related to the Environmental Education Act from their vantage point, and to obtain a thorough understanding of the complex, but hitherto, unexplored challenges that policy implementers had confronted during the implementation process. I conducted ethnographic observation with four participants who had agreed to take part in this process. I accompanied them on school visits, meetings, and professional development and information sessions. I also attended the environmental courses that they taught in various settings, such as public schools, universities and colleges, museums, or outdoor ESD centres. When in the field, I took extensive notes, including key words and phrases about what I had observed, as well as verbatim comments from the participants. My fieldnotes focused on the work of certified staff and how this work connects to issues of local and global environmental sustainability. I also tried to debrief with my participants during their break or after the observation. Over the course of three months in Fall/Winter 2018, I completed approximately 70 hours of ethnographic observation. I also conducted follow-up interviews with these four participants. In these conversations (90-120 minutes), I discussed my fieldnotes, verified my interpretations of the observed events, and invited the participants to offer me any thoughts, recommendations, or reflections on the research process.

Aside from my ethnographic observation with four people, I *followed* other participants' professional networks online by visiting the websites and social media discussion forums that they had pointed to me (Ball, Junemann, & Santori, 2017). In this way I came to understand their professional connections (e.g., professional memberships, information updates, blogs, and social

media networks) as well as other online information sources (e.g., news articles, government reports) that they consulted and shared with me. I read the posts and online discussions to explore my participants' sources of information on the updated policies, guidelines, and curriculum, and to see the discursive environment that might have affected the way they thought and talked about ESD. I was also able to identify and collect the scientific reports, news, and online articles that my participants had produced or mentioned in the interviews. I recorded my observation of these online discussions in my research journal. These materials are important, as they helped me, as a critical realist, to understand how and why my participants talked about the policy texts and interpreted their experiences as they did. A detailed inventory of the artifacts (e.g., journal articles, reports) is outlined in Appendix 7.

Data analysis.

I used a "hybrid process of inductive and deductive thematic analysis" for this study (Fereday & Muir-Cochrane, 2006, p. 80). Thematic analysis, as a widely used qualitative data analysis method, is a search for patterns (or themes) across data sets that are important to the description of a phenomenon (Boyatzis, 1998; Daly, Kellehear, & Gliksman, 1997). Thematic analysis emphasizes "careful reading and re-reading of the data" to notice patterns within the data; emerging themes are then developed to capture the findings (Rice & Ezzy, 1999, p. 258). This process is often considered inductive analysis, as "the researcher begins with an area of study" and follows the themes that emerge from the data" (Strauss & Corbin, 1998, p. 12). In contract, in deductive thematic analysis, the investigator develops or identifies codes and coding schemes based on prior theories or models (Braun & Clarke, 2006; Nowell, Norris, White, & Moules, 2017). Incorporating the two strategies, Fereday and Muir-Cochrane (2006) adopted a hybrid approach to thematic analysis to increase the rigor of qualitative data analysis. They

merged the data-driven inductive approach of Boyatzis (1998) with the theory-driven deductive approach by Crabtree and Miller (1999). A hybrid approach thus accepts the use of theory-driven coding system while allowing data-driven themes to emerge inductively from the meaning-making of participants (Fereday & Muir-Cochrane, 2006; Kawulich, 2004; Niemeijer, 2002). This approach complements the principles of critical realism, as the goal of critical realist researchers is to extend and "nestle" the findings of a study within theories (Sobh & Perry, 2006, p. 1195). In the next sections I describe the thematic analysis process that I used for this study. The analytical process was iterative and reflexive although for the sake of clarity I present it as a linear, step-by-step procedure.

Stage 1. Organizing data. In order to manage data from multiple sources, I set up separate folders to organize the interview transcripts, policy texts, and fieldnotes. These data were arranged using the main topics (or domains) arising from the research questions (see Chapter 1), such as discursive influences of Taiwan's ESD policies, government's goals and implementation mechanisms related to ESD, policy implementers' vision and understanding of ESD, policy implementers' responsibilities and actions, and challenges encountered by the policy implementers. This system was set up before I began the data collection process.

Stage 2. Memoing key points and noticing initial patterns. After two rounds of interviews, all audio-recordings were transcribed word for word into Mandarin. I then listened to the audio-recordings again to capture additional features of participants' remarks, such as pauses, laughter, or sighing, and I recorded them in the interview transcripts to remind me of the tone of their speech. I did not use the real names of participants, non-governmental organizations, or institutions, to protect their privacy. I then sent the de-identified interview transcripts to the participants, giving them an opportunity to eliminate anything that they preferred not to be used

as research data. After this, I re-read and re-organized the transcripts based on the topics described above. While doing so, I wrote reflective memos to record and summarize some key points that I began to notice in the interviews while transcribing and organizing them.

Stage 3: Identifying salient concepts in the data. I then read and re-read the interview transcripts and policy documents to identify salient concepts that emerged from these data by paraphrasing or summarizing each segment of raw information. After this inductive process, I went back to the literature to explore relevant theoretical frameworks, i.e., Foucault's governmentality concept and Chinese Legalism, to develop theory-driven codes (these theoretical lenses are discussed in Chapters 3 and 4). This process helped me to identify and integrate patterns of participants' talk into substantive categories. I could also determine which of the theoretical concepts could serve as a framework for further analysis. I then revisited the key points in my memos in light of the theoretical constructs. At the same time, I kept a research journal to reflect on my thoughts and questions regarding the data.

Stage 4. Developing a codebook. I developed a codebook to include both theory- and data-driven codes emerged from the previous stage. Some data-drive codes were directly from participants' words (e.g., 'the Chief's expectation', 'developing people's sensitivity towards the environment'), and others emerged from the process of paraphrasing segments of raw information (e.g., 'lacking policies for action', 'difficult to measure the outcomes'). During this process, related codes were also grouped into categories. Examples of inductive data-driven categories include the environmental and sustainability issues emphasized by the government, outcomes highlighted by the government, implementers' perspectives on the policy, their personal goals and teaching philosophies, their relationships with other actors, and ESD activities carried out in practice. Examples of inductive data-driven codes in the category of *implementers'*

perspectives on the policy included, 'no long-term plan for sustainable development', 'the Act being ineffective', and 'disappointed with the ways in which the Act was implemented'. Drawing from the Chinese Legalism framework, I developed six theory-driven categories, such as technique of policy development, technique of legitimation, technique of managing government officials. Another three theory-driven categories were developed based on the framework of governmentality, which included the rationales, technologies, and evaluation matrix used by the government.

Stage 5: Checking the applicability of the codes and categories. According to Boyatzis (1998), an essential step in developing an analytical framework is to determine the applicability of the codes to the raw information. Therefore, I shared two coded interview transcripts and the codebook with a group of scholars in Taiwan studies and requested them to critically examine whether or not the meaning and ideas of the coded segments represented the descriptions of the codes and categories. After our discussion, I modified some descriptions of the codes and categories to interpret the data more accurately. For example, I divided the category *implementers' perspectives on the policy* into their 'perspectives on the content of the policy and the government', 'perspectives on the implementation mechanism', 'perspectives on the policy outcomes', and experience of the certification process'. An example of data-driven categories with their definitions is shown in Table 2.

Table 2. Examples of data-driven categories with description

Name of the Category	Description of the Category
1. Participants' description of policy implementation in practice	This category includes information about the four-hour environmental education (EE) activities carried out at public schools and governmental institutions. I also included participants' opinions about the effectiveness and the ways in which these activities are carried out in practice.

2. Perspectives on the implementation mechanism	This category is about participants' perspectives on the effectiveness of certifying systems in promoting environmental sustainability. In this category, I also included participants' understanding and their opinions about funding systems that are set up to support the four-hour EE implementation.
3. Perspectives on the content of the policy and the government	This category is about participants' perspectives on Taiwan's EE and sustainability policies and the governmental agencies (e.g., EPA, MOE) that are responsible for implementing the policies.
4. Perspectives on the policy outcomes	This category focuses on how participants perceived the outcomes of Taiwan's Environmental Education Act thus far (after 6 years of implementation). I also included their observation of the social norms and progress related to environmental sustainability.
5. Personal goals and teaching philosophy	In this category, I included participants' responses to the interview questions: (1) As a certified staff member, what goals would you like to achieve when engaging in EE?; (2) In what ways would you consider that you have met these goals?; and (3) Where do you see yourself in five years as a certified staff? I also included their teaching principles and philosophy.
6. Understanding of the policy goals	This category includes participants' responses to the interview question, "In your view, what do you think is the goal of the Environmental Education Act in Taiwan?" I did not include the responses of those who didn't know or didn't feel comfortable answering this question.
7. ESD activities in practice	This category includes information about the work of certified staff. For example, it includes the ESD activities they carried out in schools, description of the lesson plans they developed, the events they've participated at local Sustainability Education Centers, and the consulting activities for the government.
8. Knowledge of environmental science or environmental issues	This category includes the environmental issues that concerned the certified staff.
9. Challenges encountered	This category is about the challenges that the certified staff have encountered when they tried to implement the Environmental Education Act.
10. Perspectives on their colleagues, collaborators, other actors	This category includes information about participants' working relationship with their colleagues, school administrators, consulting firms, certified ESD centers, and/or governmental agencies.
11. Sources of information, Professional communities	This category is about participants' physical and virtual sources of information.
12. Perspectives on ESD	This category includes participants' opinions about environmental education, sustainable development, or local culture in relation to sustainability.
13. Experience of certification process	In this category, I included participants' personal experience of getting the certification and renewing the certification as certified staff. This category also includes the experience of those who assisted and/or participated in the development of a certification system.

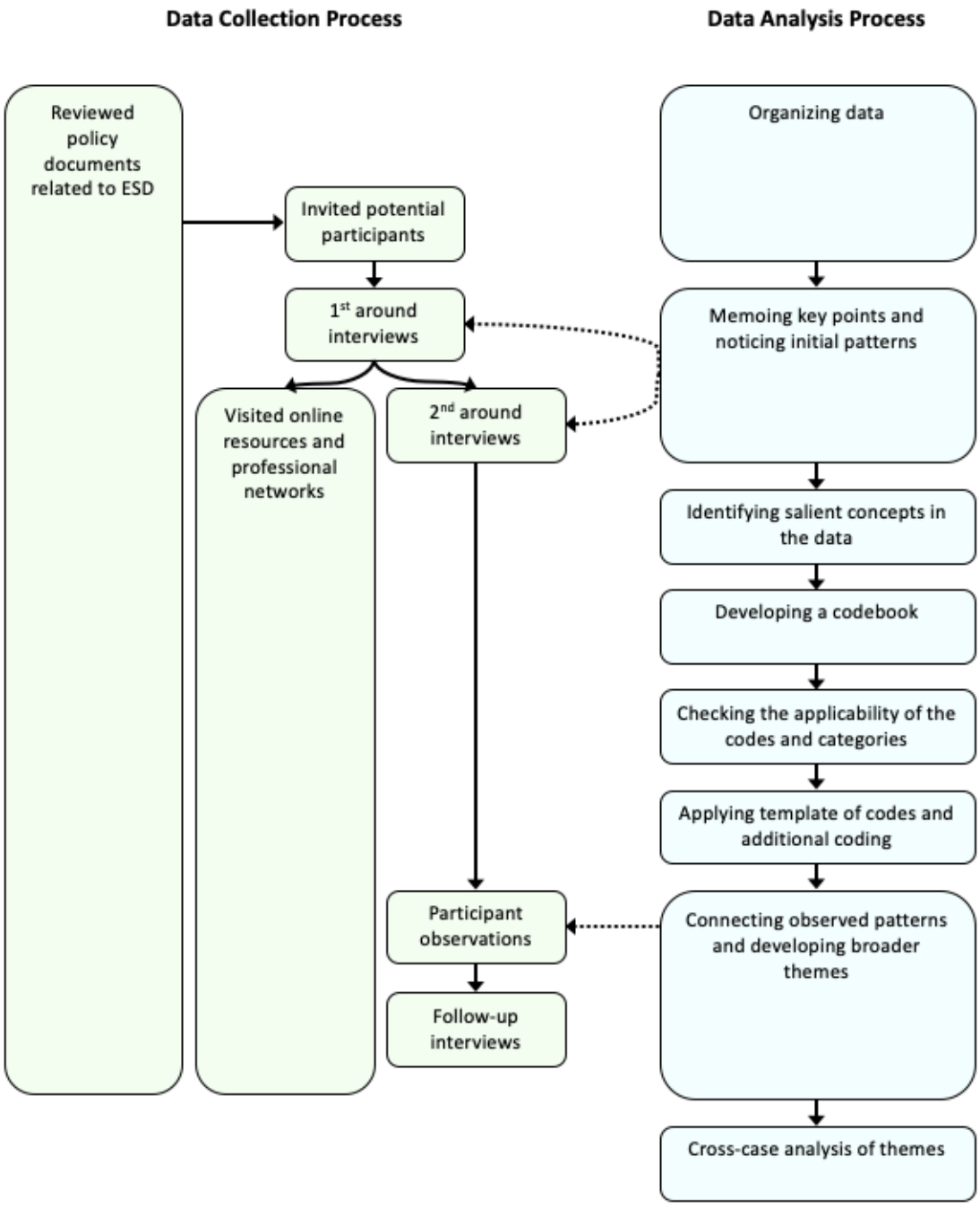
14. Background and experience (by cases)	This category includes information about participants' educational background, research interests, and working experiences before obtaining the certificate. I also included their childhood memories related to EE.

***Stage 6: Applying template of codes and additional coding*.** Analysis of interviews and policy texts was a highly iterative process which involved a constant comparison of codes and categories across various segments of the data. I colour-coded the text (i.e., policy documents, interview transcripts). Afterwards, I reread the text to make sure that the description of the categories captured the meaning and ideas of the segmented text. After the coding, I sorted the segments of the text with the same categories in one document. In this process, I constantly compared and reviewed the text and the description of the categories. After this stage of data analysis, I returned to Taiwan for the third phase of data collection: participant observation (see Figure 2).

***Stage 7: Connecting observed patterns and developing broader themes*.** After coding all the interview transcripts and policy documents, I reviewed the coded data and reread the texts. This process allowed me to enter information into my unconscious while consciously processing the information (Boyatzis, 1998). By repeatedly reading and summarizing the segmented text, broader themes began to emerge (Elliott & Gillie, 1998). For example, many participants described the policy implementation as 'only meant for paper work' and 'only doing things to show performance'. I also began to notice some clusters of related categories, such as 'feeling helpless' and 'facing resistance from colleagues and students', and 'implementation as ineffective' and 'top-down evaluation'. Connecting these categories was a critical step for me to discover and construct themes in the data (Crabtree & Miller, 1999). Important themes began to

emerge, such as ‘top-down approach to ESD governance’, ‘bureaucratic culture’, and ‘emphasis of performance and media attention’.

Figure 2. Process of data collection and analysis for this study



Stage 8: Cross-case analysis of themes. According to Crabtree and Miller (1999), unintentionally fabricating evidence can be a common problem when interpreting data. This often constitutes the unintentional, unconscious "seeing" of data that researchers expect to find (p. 170). The process of corroboration is thus a crucial step in tracing the key themes across the interview transcripts and policy texts. To practice this step, I developed a document outlining all the themes that emerged, and sorted the coded text based on the themes in a new document. By reading the raw data segmented by themes, I examined it closely to ensure that the clustered themes accurately represented the meaning and ideas of the text. I was also consciously searching for elements of the data that either did not support or appeared to contradict the prevalent patterns that were emerging from this data analysis. During this cross-case analysis, I counted the number of participants to identify the common themes across the majority of cases (over one third of the participants). After doing so, I mapped the relationships among the key themes to identify the main findings to be presented in the three findings chapters. Examples of the key themes include: 'implementation as a bureaucratic exercise', 'implementation as public relation', and ESD policy implementation as ineffective in solving environmental challenges' (see Chapters 3 and 5). Some of the data-driven themes (e.g., certified staff's goals and their technologies for promoting ESD) were integrated with the theory-driven themes (e.g., government's rationality for environmental diplomacy, top-down deliberative approach to ESD governance) to interpret the motivations of the government and the policy implementers regarding the ESD movement (see Chapter 3). It is important to note that participant observation took place during Stages 7 and Stage 8. This process enabled me to discuss my preliminary findings from the interview and policy data with the participants whom I was observing. It allowed me to discuss my interpretations of the policy texts and interview data with the

participants. I was also able to triangulate the collected data with the follow-up conversations during this process.

Credibility and Trustworthiness

I used the strategies proposed by Lincoln and Guba (1990) to establish the creditability and confirmability of this research. I conducted face-to-face interviews because I deeply value the development of rapport and trusting relationships with the participants. I visited the participants wherever they were most comfortable, such as their offices, home, or favourite café. When scheduling interviews, I made sure to plan enough time for my participants to get to know me, ask questions, and fully understand the intention of this study. During the visit, I was often offered a tour of their workplace (e.g., schools, ESD centres) and invited to go for a ride or share a meal with their colleagues or family. These in-person visits not only helped me to form relationships with the participants, but also allowed me to understand and experience their social settings. Moreover, participant observation was a way for me to immerse myself again in these settings, to speak with different groups of people informally, and to observe various aspects of my participants' work. During the observation period, I tried to find time to debrief the participants and ask them follow-up questions. In doing so, I could resolve any inconsistencies that arose between their thoughts and practice during these informal conversations and observation. When possible, I presented my preliminary findings from the interview data to the participants and invited them to challenge my interpretations or observation. Towards the end of the data analysis process, I conducted formal member-checking sessions with three participants to discuss the preliminary results of this study.

To increase the confirmability of the study, I carried out two external audits (Lincoln & Guba, 1990) with a group of five social science researchers, including faculty members and

graduate students, who examined the translated data and the constructed themes. The five researchers were my colleagues at McGill University, and had no role in the research process. The external audits were conducted in Stage 8 of data analysis. To begin the external audits, I asked these researchers to examine whether or not the raw data supported my interpretations and findings. I also presented part of my memos, research log, and research journal so that they could review my research process.

Aside from the external audits, I used triangulation to establish the confirmability of this study. I triangulated the perspectives of different groups of certified staff/policy implementers (e.g., school teachers, school administrators, principals) during data analysis, to ensure the consistency of different data sources from the same interview procedure (Lincoln & Guba, 1990). Additionally, I listened to the interview recordings before the second round of the interviews so that I would be sensitive to changes in a participant's point of view over time. When it happened, I politely mentioned the previous interviews and invited the participants to clarify their thoughts and verify my understandings of their responses. Moreover, I compared different sources of data (e.g., policy documents, interviews, observation notes) to check the consistency of my interpretations of the findings. I also kept a research journal throughout data collection and analysis to record my reflexive relationship with the study.

In this chapter, I discussed my philosophical stance as a critical realist researcher and introduced policy ethnography as a methodological framework for this study. I then detailed the processes of data collection and analysis to offer my readers an overview of the study methods. I also explained the qualitative research methods tools that I used to ensure trustworthiness of this work, including prolonged engagement, persistent observation, member-checking, triangulation, and audit trail. I now turn to the first manuscript of this dissertation.

Chapter 3: Implementing a National Policy Initiative to Support Education for Sustainable Development: Lessons from Taiwan's Environmental Education Act

Abstract

This policy ethnography focuses on a nationwide environmental and sustainability education policy that was developed and enacted in response to United Nations' call for mainstreaming Education for Sustainable Development (ESD) into national plans. The framework of governmentality was used as a heuristic tool to explore the modalities of the Taiwan government and their effects on ESD policymaking. It was also used to understand the underlying motivation of and technologies used by policy implementers when implementing this nationwide ESD policy—Taiwan's Environmental Education Act. Data include official documents and two semi-structured interviews with 30 policy implementers. All data were analyzed using thematic analysis. The findings suggest that participating in the ESD movement has allowed the Taiwan government to work toward its desire for international recognition as an independent country. However, a lack of policy negotiation and dialogue has contributed to a superficial engagement with and uptake of the ESD policy ideas and directives in Taiwan. Drawing on the study results, recommendations on ESD governance are proposed.

Introduction

Since the release of *Agenda 21* (United Nations Sustainable Development [UNSD], 1992), education has been at the core of countless intergovernmental meetings and policy documents on sustainable development. The term *Education for Sustainable Development* (ESD) was introduced to highlight the role of education as a catalyst for building a sustainable future for

all (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2018). The United Nations (UN) also named 2005 to 2014 the Decade of Education for Sustainable Development to advocate for reorienting teacher education and K–12 curricula towards an ESD framework. The UN's vision is to create "a world where everybody has the opportunity to benefit from education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation" (UNESCO, 2017, p. 28).

In an attempt to achieve the vision put forward by the UN Decade of ESD, UNESCO endorsed the *Global Action Programme on ESD* in 2013. Priority action areas include advancing national and international policies on ESD, transforming learning environments to enable the implementation of ESD, and accelerating and expanding local solutions to sustainability issues (UNESCO, 2017). Currently, about 90 multilevel stakeholders worldwide are part of the UNESCO Partner Networks, contributing to the action areas outlined in the program. Examples presented on the UNESCO website include curriculum reforms in Kenya and Costa Rica, where the ministries of education have mainstreamed ESD into the countries' education systems (UNESCO, n.d.). By working directly with their governments, UNESCO's conceptualization for a quality education was manifested in newly developed national standards for teachers and training institutions that the UN member countries can incorporate in their education systems.

It appears that UNESCO's approach is to work with decision-makers and political leaders to enhance the integration of ESD concepts into mainstream education systems worldwide. Thus, rather than being a bottom-up call for educational change from the education community, as it is commonly perceived, the ESD movement is largely spearheaded and engineered by states to participate in an UN-led discourse on ESD. As a result, regional trends and national policy

initiatives have been shaped by the ideologies, values, and standards that are embodied in the UN policies, programs, and action plans on education and sustainable development.

However, we argue that a state-engineered ESD movement endorsed by influential international agencies can leave local schools particularly vulnerable to global forces dominated by powerful political actors and lobbyists. While schools and curricula are typically under the control of state institutions in many countries and are more likely to transmit the state's values (Apple, 2004; Spring, 1998), it is especially important for education researchers to pay attention to the claims and evidence used for legitimizing and justifying educational change efforts that are largely led by the governments.

The present article examines the underlying motivation and political framing of an ESD movement in Taiwan. As learning about sustainable development became compulsory within government institutions in Taiwan since the implementation of the legislation around environmental education in 2011, issues affecting the practical implementation of this program acquired a new significance. Therefore, we also discuss the state's strategies for implementing an ESD framework and the challenges faced by the policy implementers. The research questions we have attempted to answer are these: 1. How have the policy intentions related to ESD been realized in practice? and 2. What lessons can we learn from Taiwan's ESD initiatives when attempting to actualize UNESCO's vision of ESD in practice? Instead of a theoretical examination, we offer empirical insights from a policy analysis of a major national environmental sustainability education initiative, the Environmental Education Act, which was developed and implemented by Taiwan's Environmental Protection Administration (EPA). In pursuit of this objective, we begin by clarifying key theoretical constructs used in this article. In subsequent sections, we turn to the study context where a policy framework of ESD was

pledged, planned, and policed by the Taiwan government. Afterwards, we share the voices of the policy implementers—the staff members certified by the EPA to implement Environmental Education Act in Taiwan (Legislative Yuan, 2010a).

Theoretical Constructs: Discourse, Power, and Governmentality

Drawing on Foucault's (1972) conceptualization, in this article we use *discourse* to refer to a set of ideas, social norms, and actions that individuals perform consciously or unconsciously, as well as the power relations embedded in these social practices. Foucault (1972) defined discourse as "a practice that has its own forms of sequence and succession" (p. 169). This conceptualization of discourse is helpful in understanding how the UN's conception of sustainable development has emerged as a mainstream discourse and has gained its status of legitimacy to shape education related to environmental sustainability worldwide. For example, the Taiwan government has responded to the UNESCO's call by integrating ESD concepts and practices into all government funded institutions including the government departments, community organizations, museums, K-12 public schools, colleges and universities.

Discourses, in Foucault's view, "are ways of constituting knowledge, together with the social practices, forms of subjectivity and *power relations* [emphasis added] which inhere in such knowledges and relations between them" (as cited in Weedon, 1987, p. 108). That is, the production and circulation of discourses are simultaneously mechanisms of social power and practices for constituting subjects (Foucault, 1972). Such discourse determines who has the right to speak; what can be legitimately said; and which actions are reasonable, sane, and appropriate and which are not (Foucault, 1979).

It is important to note that, in Foucault's (1972) view, the production of discourse—and by extension the production of knowledge—is not necessarily negative. There is a difference

between power and domination (Foucault, 1979). Domination is based on unequal power relations in which one of the parties is weak and defenseless because its "margin of liberty is extremely limited" (Fendler, 2010, p. 115). Power, on the other hand, enables all parties to act, respond, or react "even if the only options for action are extreme" (Fendler, 2010, p. 115). In other words, power does not simply apply to individual actors, but operates through a complex relationship between rules, policies, the production of knowledge, and the circulation of discourses. Such power space allows certain thinking, beliefs, and actions to be normalized. Moreover, Foucault argued that the mechanisms of power evolve as a society progresses. This historical dimension of power has therefore motivated much work of Foucault as well as those of researchers interested in various modes of power at different historical moments (e.g., sovereign power, disciplinary power, bio-power and governmentality).

The framework of governmentality, coined by Foucault, is thus useful when analyzing power relations and their effect on the establishment of rules, policies, and social practices (Dean, 2010). In particular, it helps researchers to unpack the governing mechanisms, processes, and norms within and beyond the state institutions. The focus on governmentality (as opposed to government) draws attention to the myriad social techniques and processes through which consciousness and conduct are coordinated across time and space through different social and political actors. In this framework, government is viewed as a set of thoughts, structures, technologies, and modes of calculation through which individuals' actions and ideas are conditioned. Simultaneously, people's actions and practices produce the structures and discourses through which governing processes operate.

Following this line of thought, the examination of the first element of the governmentality framework—government—is centred on the notion of a "regime of practices"

or “organized ways of doing things” which is useful to uncover the power relations and their effects (Dean, 2010 p. 27). Therefore, the tools, technologies, practices, and the language chosen by a government to regulate conduct are analyzed in this study. The second element—mentalities of government—focuses on the political rationalities of states as well as the ways in which governments produce, act on, and sanction particular sets of ideas, premises, and principles. It refers to the ways in which governments rationalize their decisions based on certain philosophies, ideologies, cultural rituals, and forms of knowledge about governance. Therefore, where the rationalities have come from, why they were treated as the *truth*, and how they have transformed into courses of action are of particular interest to researchers using the governmentality framework. In this study, we have used governmentality as a heuristic tool to explore the modalities of the Taiwan government and their effects on ESD policymaking. At the same time, it helps us to understand the underlying motivation and technologies used by policy implementers when enacting the Environmental Education Act. The subsequent section elucidates the context in which Taiwan’s Environmental Education Act was developed.

Taiwan’s Environmental Education Act in the ESD Movement

In 2010, the Taiwan government enshrined environmental education in law to demonstrate the country’s commitment to the UN Decade of ESD (Legislative Yuan, 2010b). In the following year, the Environmental Education Act went into effect. Aligned with UNESCO’s vision for ESD, the goal of Taiwan’s environmental education program is to enhance citizens’ understanding and awareness of the world’s environmental challenges, as well as to encourage active participation in environmental protection and sustainable development (EPA, 2014).

The enactment of the Environmental Education Act is considered a landmark of the ESD movement in Taiwan (Legislative Yuan, 2010a). With its implementation, all civil servants, K–

12 school teachers and students, and employees of state-run businesses and statutory bodies with over 50% of their funds sponsored by the government must attend at least four hours of environmental education programs every year (Legislative Yuan, 2011, Article 9).

To ensure the quality of these programs, the EPA is authorized to operate a certification system. Thus far, approximately 11,000 staff members have been certified by the EPA and the Ministry of Education to promote sustainable development in formal and informal educational settings (Executive Yuan, 2017). In particular, some certified staff host professional development workshops for school teachers to support them in integrating sustainability topics into their daily teaching. Other certified staff members undertake administrative tasks to help organize ESD activities for staff or the public. To promote experiential learning and outdoor education, the EPA has also certified 175 ESD facilities (e.g., community centers, museums, national parks). All facilities are required to hire at least one certified staff member to design ESD curriculum, organize outreach activities, and educate people about sustainable development.

In this study, we view these certified staff members as key policy implementers of Taiwan's Environmental Education Act because they are trained, certified, and trusted by the EPA to support people's engagement with the Act's key directives via professional education, curriculum design, and project implementation. Across a range of educative environments, they are the policy brokers or intermediaries (Vandeyar, 2015) who are mandated by the government to pass on the ESD content prescribed by the EPA. Depending on the local contexts, they may also interpret, translate, and mobilize ESD policies in particular ways for particular purposes and visions. Attending to the ways certified staff talk about their work—the rationalities they employ and the technologies of governance they point to—can help us to discover whether Taiwan's Environmental Education Act has the desired effect on the sustainability practices of the public

or whether the intersections of legislation and practice produce the expected and unforeseen discursive and practice outcomes.

Methodology and Methods

A framework of policy ethnography (Ball, 2016) was used for this study. Official documents related to Taiwan's ESD policies were identified and analyzed. Examples of the documents include *Taiwan Agenda 21* (National Council for Sustainable Development [NCSD], 2004), *Annual Report on National Sustainable Development* (NCSD, 2010), the Environmental Education Act (Legislative Yuan, 2011), and *National Environmental Education Action Plan* (EPA, 2014). Moreover, relevant curriculum guidelines, such as the Education Basic Act and the curricula for grades 1 to 12, were also examined to understand the topics as well as the pedagogical strategies included in Taiwan's ESD program. The official UN documents, such as *Agenda 21* (UNSD, 1992) and *Our common future* (World Commission on Environment and Development, 1987), that have been cited in the policy texts were also reviewed to understand the inspiration for Taiwan's ESD initiative. All documents were collected and analyzed in a concurrent fashion to provide an iterative understanding of the policy context. In this paper, we refer to Taiwan's ESD policies as those legislations that are related to the country's education and sustainable development policies.

The empirical data included two semi-structured interviews (90–120 minutes) with 30 certified staff. The staff included teachers, school administrators, government officials, university professors, and directors of ESD centres; detailed demographic information of the participants is outlined in Table 1 (on page 40 of this dissertation). The interviews focused on certified staff's perspectives on policy vision, their personal goals related to ESD, and their understanding of global and local environmental issues vis-à-vis Taiwan's sustainability policies.

All interviews were audio-recorded and transcribed word by word by the first author. Importantly, artifacts such as internal memos, official letters, evaluation forms, and project reports were also collected and analyzed.

All data were analyzed using thematic analysis (Fereday & Muir-Cochrane, 2006). Emerging themes (or categories) from the interviews and artifacts were developed by studying the transcripts repeatedly. Similarities and differences across categories (e.g., bureaucratic versus local perspectives on implementation, facing resistance versus conflicting interests) were also explored. To increase the trustworthiness of the study, member-checking was carried out with three participants to discuss the interpretation of the data. Additionally, a group of five social science researchers, including faculty members and advanced graduate students, conducted an external audit trail (Miller, 1997) to examine the raw data and the constructed themes.

Governmentality of the Taiwan Government

This section presents key findings from the analysis of the official documents and interview data related to the political rationalities and governing mechanism employed by the Taiwan government.

ESD policy as environmental diplomacy.

Governmentality is useful to explore the ways in which the Taiwan government has used the international ESD discourse to gain legitimacy for its political objectives through the UN's forum. The policy documents showed that Taiwan's environmental policies are tied to its political struggle to gain an independent status in the international community. The political and legal status of Taiwan has been an ongoing debate at the international diplomatic level. Therefore, through active participation in international organizations and intergovernmental activities, Taiwan's national goal is to gain international support and recognition as an

independent country (Lee, 2017). Specifically, the Ministry of Foreign Affairs (2007) emphasized that "promot[ing] environmental diplomacy in accordance with global trends" helps Taiwan to establish its importance as a key partner with other countries (para. 2). The rationale to establish environmental diplomacy is also reflected in the country's education policies. The development of Taiwan's ESD policies has complied with UN conferences and publications on sustainable development (Tsai, 2012). For example, in response to the 1992 Rio Summit, the Taiwan government established the National Council for Sustainable Development (NCSD) in 1997. Taiwan's Environmental Basic Law was passed in 2002 as a response to the World Summit on Sustainable Development in Johannesburg in the same year. This law granted legal status to the NCSD as the authoritative body to promulgate national policies for sustainable development that are aligned with the UN-led discourse of ESD.

At the local level, the state's rationality for environmental diplomacy was translated into presenting Taiwan as an international partner for attaining the UN's Sustainable Development Goals (Executive Yuan, 2017). The city governments are also expected to highlight and organize international sustainability meetings, conferences, or forums to contribute to the international discourse. Furthermore, a Global Environmental Education Partnership project was set up in 2014 between the Taiwan EPA, the United States Environmental Protection Agency, and the North American Association for Environmental Education to reinforce Taiwan's national image as an environmentally "active and civilized" country (Yeh, 2015, p. xii). It seems that Taiwan's environmental diplomacy serves to rationalize the government's efforts to seek political support for the country's independence in the international community.

Top-down deliberative approach to ESD governance.

The discourse of ESD in Taiwan tended to emerge from the political leadership and was then transmitted to the civil service and sometimes to the broader society. In particular, the process of policy formation and agenda setting was mostly conceived and orchestrated by the state. As in the example of the Environmental Education Act, the policy was pledged and planned by the NCSD and EPA (Legislative Yuan, 2010a; 2010b). With the implementation of the Act, all members of public sectors and schools are mandated to take environmental and sustainability courses each year. According to the EPA (2014), the enforcement of the Act will help to "enhance citizens' environmental literacy and attain environmentally responsible behaviours for a sustainable society" (p. 2).

An analysis of the official documents also showed that Taiwan's implementation of the ESD framework is inclined to follow a top-down path. Rather than providing spaces and opportunities for diverse actors to engage in the decision-making process, the government relied on incentives and on imposing state controls, such as mandates, constraints, regulations, and decrees, to encourage desired behaviours (see Chapter 4 for more detailed discussion). For instance, although the government encourages knowledge exchange by mandating that all government agencies must "promote environmental education through community building, professional development, or eco-tourism" (EPA, 2014, p. 3), there seems to be a lack of coherence between the policy's demand and the evaluation criteria. In the government's view, the indicator for community building was to count how many community members attended the information sessions on energy saving, carbon reduction, and the crisis of plastic pollution in the ocean (*Community Environmental Investigation and Reconstruction Plan*, EPA, 2018)

At the municipal level, a top-down, deliberative strategy of ESD implementation is also exercised. For example, the Taipei city government proposed a school-garden education program in 2014 to promote experiential learning. Within four years, this initiative has achieved almost full participation among all public elementary and secondary schools in the city. Although the city government claimed that school participation was voluntary, our interview data showed that the schools were, in fact, indirectly compelled to participate in this program through the infrastructure fund and annual school evaluations (see more detailed discussion in Chapter 5). All K–12 public schools were expected to set up a campus farm. Rates of participation in the school gardens were listed as critical factors in assessing a school's overall performance, and so incentivising their participation in the gardening initiative. Indeed, the schools are evaluated based on the total number of classes participating and the total number of students from each class involved in the school-garden project (Ministry of Education, 2016).

A number of certified staff members also argued during the interviews that the government did not understand how to engage in bottom-up participation. Bou-jie,[9] an ESD consultant, stated that "the EPA has always thought that giving schools some money and the schools will happily pick up the task of creating an eco-school. . . . [however,] an eco-school system should be from the bottom up". For Bou-jie, the current way of EPA's thinking is "to assign the task to some school principals and administrators, which is totally top-down". Taken together, the discourse of ESD is orchestrated from the top through clearly articulated mandates and evaluation metrics to encourage the public to participate in sustainability education.

Governmentality of the Policy Implementers

[9] All participant names in this dissertation are pseudonyms.

As mentioned earlier, we consider the certified staff members as the policy implementers of Taiwan's Environmental Education Act because they were tasked by the EPA to carry out mandatory environmental education courses. During the interviews, we invited the certified staff members to share their professional goals of ESD. The objectives were to understand the policy implementers' personal visions for sustainability, teaching philosophies, and knowledge about ESD, as well as their interpretations of the Act as presented below.

Policy implementers' goals for ESD.

First, our analysis focused on the implementers' rationalities for Taiwan's ESD policies. The majority of certified staff expected that the Environmental Education Act could help to develop citizens' sensitivity toward environmental issues and their dispositions for sustainability. When probed further, some of them (12/30) described a sustainability disposition as *an attitude towards life*. For example, Fen-shou, a volunteer at an ESD facility, explained that we were living in "a throw-away culture", as the contemporary society encourages people to "buy new household items" rather than "to repair them". Therefore, Fen-shou's professional goal was to "change people's attitude" towards conserving resources for future generations. Similarly, Zheng-qing, a certified staff member who is an experienced elementary teacher, believed that, instead of teaching students "the visions and goals of the Paris Agreement" on climate change, it would be more effective to "develop students' empathy" toward animals and people. On a similar note, Ying-li, who is a school consultant, described her conceptualization of environmental education as follows:

> It is a kind of attitude towards life that allows humans to continue to have this amazing environment to survive. . . . The attitude will naturally reflect in your words, your deeds, and your actions. You will then no longer need to think about 'what I should do, what

this is for, or can this reduce carbon' . . . It will turn into an attitude, such as how I should perceive and treat the Earth.

Other certified staff described a sustainability disposition as "reducing material desires". Yun-ru, a director of a national science museum, explained that the influence of capitalism has forced us to become consumeristic. She believed that we should return to "the way we used to be", show "respect for the environment", and "make the wisest use of the resources" for creating a sustainable society. Similarly, An-li, a director of a certified ESD facility, also believed that "educating children to reduce their material desires from an early age" could help to address the issue of consumerism that has resulted in many environmental problems. Echoing An-li, Mei-sheng, a community college lecturer who teaches the required environmental education courses as a certified staff, also shared that her goal was to "promote a simple lifestyle" to create a generation that prefers sharing to owning materials.

When invited to share their professional goals for participating in EPA's certification program, several interviewees (18/30) said that they sought to inform citizens about environmental problems and to invite more people to care about the environment. Most of them (19/30) also stressed the importance of promoting behavioural changes to foster environmental conservation. For example, Li-mei, a school administrator who used to work at a sustainability education centre, shared that her goal was to have "everyone pay attention to the environment" so that "we are all willing to change our daily habits" for a sustainable future. Qing-lin, an officer in one of the largest ESD consulting firms in Taiwan, proposed introducing a policy to engage every student in one environmentally friendly action every year. She believed that enforcing regulations can be effective in altering individuals' behaviours and promoting systemic change for environmental sustainability. According to Qing-lin,

> . . . the four-hour course is only a beginning, a very basic start. It does not mean anything. Rather, if the government is really willing to, we may try to, for example, enforce that everyone has to do one good thing for the environment. . . . We should begin the change through our daily habits. The government should also put effort into making policies to change our behaviours from a systemic perspective.

In this section, we discussed the implementers' professional goals for participating in the certification system. While many certified staff believed that cultivating people's dispositions for sustainability was important, most of them also argued that it was crucial to promote behavioural changes among citizens through ESD. Overall, the analysis showed that most policy implementers' rationality for participating in the EPA's certification program was to cultivate a set of moral codes among citizens for environmental sustainability, including pro-environmental attitude and behaviours, reducing material desires, and caring about our environment. In the next section, we turn to the technologies that the policy implementers have used for achieving their professional goals.

Policy implementers' technologies for promoting ESD.

For most certified staff, education could be an effective tool to develop citizens' dispositions to foster environmentally friendly attitudes and behaviours. In particular, the Environmental Education Act was used as a persuasion tool to encourage and convince their colleagues—other government officials—to participate in the sustainability courses. To attract the public to these courses, they used a number of rhetorical devices, such as showing the damage to the environment, gradual disappearance of unique species in the country, shrinking of the forests, etc., through videos, pictures, and messages mostly shared via social media.

Many certified staff also reported that building a deep connection with the land was essential to develop a sensitive disposition toward sustainability. To this end, about half of them indicated that their ESD activities focus on developing citizens' sense of belonging to the land through outdoor education, historical and cultural tours, or understanding the ecological, cultural, historical, and economic development of their community. For example, Ying-li and Syuan-zhen, who are secondary school consultants, emphasized the importance of integrating culturally-specific elements into science, history, language, arts, and mathematics curricular. In one of their exemplar lesson plans developed for teachers, "the theme of tea culture" was used to connect different subject areas (i.e., geography, language, arts) for promoting local sustainable economic development.

Similarly, Shan-yu, a teacher in a public elementary school, designed several after-school outdoor projects to expose her elementary students to the natural environment in the central part of Taiwan. As a science teacher, Shan-yu organized trips to wetlands for students to introduce them to the wetland ecology as well as to scientific studies that had been carried out by local scientists and community members. Shan-yu talked about a project that she initiated to highlight the importance of the railway system and its historical contribution to the economic and urban development of their city. For Shan-yu, young children nowadays "rarely pay attention to their living environment" because everything has been decided by their parents. Therefore, through a railway trip, Shan-yu sought to engage her students in thinking about their surrounding environment and sustainability issues, such as air pollution and the renewable energy debate, in their home city.

Another example is Hong-bo's Kavalan indigenous flora project. Hong-bo is an experienced elementary school teacher in Yilan county. Hoping that young children could learn

to recognize the histories of the land and the social change that has happened in Yilan, Hong-bo designed a school-based interdisciplinary curriculum to engage his students in discovering the ways of living of the Kavalan people—the aboriginal people of Yilan county from 1600 to 1800. After the immigration of Han Chinese into this area, the population of the Kavalan people drastically decreased. As a science teacher, Hong-bo integrated the history of Kavalan into his teaching of scientific method and biology. In the project, students participated in an ethnographic investigation to understand Kavalan folk knowledge of plants and its application in medicine and daily diet. Students also collected indigenous stories and tried to make sense of their connection with modern Yilan. For Hong-bo, through "imagining the lifestyle of the Kavalan people in the past", the students began to understand the relationship between humans and flora. He further explained that his goal was to increase their sensitivity to the environment and to cultivate the value of contributing to their community.

In this section, we focused on various technologies and strategies that policy implementers have used to encourage individuals to learn about sustainable development and connect related concepts with people's daily life. While some of them have exercised the legitimate power of the Environmental Education Act to convince their colleagues to learn about environmental sustainability, others have used the overarching focus of ESD as a springboard from which to design and implement interdisciplinary school-based curricula. In the following sections, we discuss the competing perspectives and motivations between the Taiwan government and the policy implementers around the ESD policy goals.

Tensions on the Ground: Competing Perspectives on ESD Policies

This section presents a thematic analysis of the interview data drawing from participants' perspectives on the Environmental Education Act, ESD governance, and the implementation

mechanism. The goal was to understand the complex, but hitherto unexplored, challenges that the policy implementers have confronted while enacting the ESD policies.

Misaligned motivations for the ESD movement.

The participants sought to challenge Taiwan's ESD policies and the international discourses that the government drew on. Approximately one third of the certified staff believed that the government did not seem to have a long-term plan for Taiwan's own sustainability path. In particular, some believed that the Environmental Education Act mainly represented a token action for Taiwan to align itself with international discourses of ESD. For example, De-wen, a director of an ESD consulting firm, contested that the government "did not understand the purpose of education" and just transferred the Western pedagogical approaches without "understanding the background and philosophy supporting them". Likewise, An-li, a director of a certified ESD facility, shared that the government was "only eager to participate in international organizations and to echo the declarations and ideas proposed by these organizations". He felt that the state did not fully understand how a systemic change could happen through education. For An-li, environmental education cannot achieve its goals without first resolving local, social and economic issues, such as aging populations in community and inadequate educational resources for youth in rural areas. Concern about these issues in his community, An-li and his team worked towards creating a sustainability learning community by putting the idea of community service at the heart of their educational activities. Specifically, An-li's sustainability centre focused on constructing an elder-care service system, promoting care for youth, and creating local employment opportunities related to sustainability research in order to collectively find ways to balance various aspects of social, economic and environmental sustainability in his community.

One consequence of uncritically following the issues highlighted in the international discourse is that local needs and long-term capacity building are often overlooked in the process of policymaking and implementation. Indeed, Bou-jie, a consultant working for rural communities, found himself isolated because there were not enough community and technical specialists to work together to discover local solutions to sustainability issues with interconnected economic and environmental challenges. For Bou-jie, the EPA only enforced decrees and issued penalties "without caring about the people". There was also a lack of support to assist local factories and small-scale manufacturing in transitioning to a more sustainable path. Bou-jie observed that, instead of assisting local factories to mitigate the hazardous impact of pollution, some even had to shut down or lay off employees because they were "punished" by the EPA with unpayable fines for causing pollution. At the same time, some certified staff pointed out that limited effort has been made to engage local citizens in understanding how to use scientific evidence to communicate and respond to pollution in neighbouring communities.

ESD policy implementation as ineffective in solving environmental challenges.

While a few certified staff (6/30) remained optimistic, some (13/30) argued that there has been little improvement in environmental problems in Taiwan since the Environmental Education Act was enacted. More than one-third of the policy implementers believed that the law was bound to be ineffective because it focuses on those who have little impact on current environmental problems, such as K–12 students. Sheng-hua, a government official at a national park, asserted that the Environmental Education Act "targeted" public servants and K–12 schools who have no power to resist. Also, such groups have little power to resist or to enact systemic changes, such as setting national standards for mitigating pollution and promoting sustainability. Sheng-hua further explained that the Act should address social norms and apply to those "who

really needed to receive environmental education" so that some environmentally harmful behaviours could be stopped. In a similar vein, Mei-juan, a university lecturer who teaches ESD courses, observed that there seemed to be an echo-chamber effect among the ESD community: "No matter how many conferences we hosted, how many outreach activities we organized, and how much effort we have put into promoting environmental sustainability," certified staff members were still "talking to the same group of people" who were already interested or aware of the topic.

On a similar note, some certified staff from the private sector felt the Environmental Education Act was counterproductive in addressing sustainability concerns. In particular, An-li and De-wen, directors of certified ESD facilities, thought that the EPA's evaluation practices conflicted with the core value of ESD. They believed that the government has been using metrics that have failed to measure environmental education outcomes, focusing instead on numbers of people participating in programs (i.e., outputs) as these outputs do not inform us about policy efficacy. An-li shared that he had been struggling with the quarterly performance reports required by the EPA. He was afraid that "the EPA would stop supporting [his] centre financially" if he reported no growth or a decreasing number of course participants coming to his centre. On the other hand, he has to "consider the capacity of his centre" and allows the natural environment to recover from human interference due to the increasing number of visitors. Noticing the same conflict, De-wen contended that the performance reports have forced many outdoor facilities to be "customer-centric" and they have "lost sight of the deeper purpose of education", which aims to "engage students in reflecting" on the sustainability issues and their potential solutions.

A few certified staff also raised concerns that the flourishing ESD movement in Taiwan was only a superficial phenomenon, as it has distracted people from thinking more deeply about

the root causes of environmental problems (e.g., societal norms, individual habits, consumerism, lack of sensitivity for the environment) and possible solutions. For example, De-wen, who has extensive experience of working with certified ESD facilities, said that "the norm in Taiwan now is to engage students in hands-on activities" such as farming chores or do-it-yourself recycling. For De-wen, the practice of ESD in Taiwan "is not improving" and people have stopped "seeing other possibilities" in regard to the environmental problems. Sharing the same concern, Bou-jie (a consultant working for rural communities) posed the following questions:

> Do they [the government] realize what may be the risks of ESD, or its limitations? It requires a lot of time to do it right. I am afraid people would start thinking that after we have the Environmental Education Act and we talk about ESD, we are saved.

In this section, we discussed misaligned motivations for Taiwan's ESD initiatives between the Taiwan government and the policy implementers. While some certified staff perceived that the government did not seem to have a long-term plan for addressing local sustainability challenges, others began to suspect if the ESD policies in their current form could be effective in engaging learners in reflecting on our social practices and addressing environmental issues. This discussion will be further elaborated in Chapter 5 of this dissertation.

Discussion

Relevant research points out that the process of mainstreaming ESD is challenging because it requires a transformative change in current education systems, government structure, corporate intentions and practices (Hofman, 2015; Sterling, 2014). Uncertainty about the practicality of ESD has also been a recurring theme in the literature (Jickling & Wals, 2008; Stern, Powell, & Hill, 2014; Stevenson, 2007). Lenglet (2014) also observed that ESD practitioners and policymakers tend to fall into the trap of only "showing and telling", instead of

"walk[ing] the talk" to challenge existing power structures and institutions (p. 123). Consequently, the transformative intention of ESD tends to be diluted in practice (Lenglet, 2014).

Some ESD researchers have noticed this challenge and a few studies have begun to explore how ESD can be implemented for the desired systemic change to occur. For example, Bormann and Nikel (2017) undertook a meta-analysis examining the process by which the central concept of ESD has been transferred from the federal to the community level in Germany. The results showed that an "openness for interpretation" of the ESD concepts is, in fact, more likely to meaningfully engage administrative and civil societal actors who have not been previously involved but seek to become part of the official ESD community (p. 804). That is, providing policy spaces and opportunities for diverse actors to negotiate the meaning of the concepts and to agree on shared goals can lead to a shift in ownership that could in turn trigger a sense of shared responsibility. Indeed, our findings suggest that a lack of policy negotiation and dialogue in Taiwan has seemed to contribute to a superficial engagement with and uptake of the ESD policy ideas and directives.

Our study also contributes to the understanding of how the ESD discourse has been transferred to and interpreted by local governments in practice. Specifically, our analysis shows that the UN-led discourse of ESD has created a policy window of opportunity (Kingdon, 2011) for the Taiwan government to work toward its desire for international recognition as an independent country. This opportunity has enabled the policymakers to continue their efforts to establish environmental diplomacy with other countries. The government's rationality to this end led to the introduction of a series of policy initiatives to align with the UN's proposal, such as the formation of the NCSD and the enactment of the Environmental Education Act. In particular, the

UN's vision for a sustainable future was upheld by the government and promoted as "a true path" for Taiwan to become an advanced and developed country (Legislative Yuan, 2010a, p. 174). A similar policy narrative was used when the science education reform was introduced in Taiwan in the 2000s (Huang & Asghar, 2016). The politicians transferred an American curriculum, aiming to facilitate the country's advancement in science and technology as an independent country.

Such political discourses on what constitutes the "true path" to the country's political, economic and sustainable development play a vital role in constituting a particular "political regime of truth" (Foucault, 1980, p. 207). This regime of truth is "the status of those who are charged with saying what counts as true" (Foucault, 1980, p. 207). Indeed, our analysis has shown that a top-down, deliberative approach was used to legitimize and manage the integration of the ESD framework into the public sector and civil society in Taiwan. The government has relied heavily on contractual funding and key performance indicators to control the desirable outcomes, which tend to focus on quantitative measures (e.g., number of course participants, number of lesson plans, number of social media posts). A centralized certification system was also enforced for policy implementers and the participating institutions. In doing so, the government is authorized to select and recruit policy implementers and ESD facilities (e.g., outdoor centers, museums, community centers) that are willing to transfer the state's values and content related to sustainable development to the public. A similar technology for engaging civil society groups was found by Nomura and Abe (2009) in Japan, where the Japanese government "valued the work of the NGOs in policy implementation rather than their advocacy work" (p. 492). Aligned with our findings, the Japanese government provided funding and involved civic groups in the policy process to demonstrate their support for a collaborative approach to ESD

governance. Nonetheless, in reality, the Japanese Ministry of Environment held the decision-making power in determining the representatives of the civic groups to participate in international conferences and summits. The goal was to ensure that the policy issues raised in these intergovernmental settings were less controversial (e.g., education) and within the scope of the government's interests (Nomura & Abe 2009). As a former staff member of the Japan Forum for Johannesburg contested, this situation was in fact "state-dominated with civil society playing a subservient role" (p. 486). Similarly, some policy implementers in our study also felt compelled to cooperated with the demands of the government because the survival of their ESD facilities relied on government funding.

Drawing on our findings, we argue that a state-engineered ESD movement has tended to create a rigid environment which defines and structures people's actions. However, this structured discourse has also led to resistance on the ground. For instance, some certified staff members were reluctant to uncritically follow the government's ESD initiatives which tend to overlook the local environmental challenges. Several staff members also argued against the narrow quantitative metrics used by the government to evaluate the performance outcomes. An authentic partnership needs to be facilitated between the government and the civil society to develop a shared ownership of ESD. However, cultivating a collaborative relationship between public and private sectors requires not only an explicit policy demand, but also long-term commitment, sufficient capacity of the partnering organizations and communities, and, most importantly, a shared vision among various stakeholders. Although a state-led ESD movement can efficiently spark an impressive start, the initiative may receive little local buy-in, so the outcome is in fact not effective and sustainable. Indeed, interviews with the certified staff revealed that the implementation of ESD on the ground tended to be superficial in some ways.

Many observed that the four-hour required course has become a *box-checking activity*. Some certified staff also felt that the government has neglected urgent challenges that the local communities are facing today. While there is seemingly a cultural influence on the preferred forms of government among East Asian governments (see also Peng, 2000), this study supports the assertion of Lim-Ratnam and colleagues (2016) that the states have to "be comfortable with the fact" that the civil society institutions would "implement the policy in their own way", depending on their visions, philosophies, concepts, skills, contextual needs, and interpretations of the policy intent (p. 241). Particularly in the case of ESD, where concepts are complex and interconnected and stakeholders may have competing interests, effective implementation of ESD policies would require a constructive contribution from the public and private sectors. As elaborated by Lim-Ratnam and colleagues (2016), policy-making around multifarious and intricate problems should not be a process of "wresting control from a centralized state and distributing it to the ground" (Lim-Ratnam, Atencio, & Lee, 2016, p. 241). The concerns shared by the policy implementers of this study also illustrate the need to focus on ways to bring together diverse ideas and accelerate the process of responding to complex, wicked sustainability problems.

Concluding Thoughts

Taken together, this study offered useful insights on the ways in which ESD policies can be more responsive to the environmental challenges in Taiwan. In particular, a rigid bureaucratic implementation process may lead to a superficial compliance of the Environmental Education Act. The findings also suggested that Taiwan's ESD policies need to adopt a comprehensive evaluation approach to track the impact of ESD initiatives. At the same time, the global and local sustainability issues need to be balanced to address the real problems being faced by various

communities. Reflecting on the findings, we conclude with a few considerations to stimulate further discussion on ESD governance:

First, a top-down bureaucratic structure can sometimes be slow in dealing with sustainability issues that require adaptivity and agility on the part of the government. Therefore, different forms of governance can be explored to create a space for a deep engagement and productive contribution from civic and private enterprises. As such, Mintzberg, Etzion and Mantere (2018) proposed an ascending spiral model, which seeks to guide our thinking in potentially spawning more interactions in different forms, such as partnerships, alliances, or joint ventures, to consolidate organized efforts between the public, private, and plural sectors. Such "constructive networks of consolidation" (Mintzberg et al., 2018, p. 7) can be useful in addressing the problem of climate change by provisioning services, infrastructure, and legislative conditions needed to combat this complex challenge.

Secondly, an incentive and regulative mechanism should not consist of only surface level quantitative outputs or individual rewards and punishment. Instead, the government should map out long-term mechanisms and plans for transition management to support manufacturing in the throes of social and economic development. On the other hand, the institutions that demonstrated an exemplary performance, including government agencies, private organizations, and education institutions, can be encouraged (and maybe incentivized) to participate in knowledge sharing and mentoring other organizations to establish effective norms for joint efforts in relation to sustainable development.

Thirdly, it is vital to encourage multiple forms of leadership. For example, community leaders are necessary when we need to consult for local knowledge or engage members of the community. Leadership in knowledge mobilization is important for reaching out to different

stakeholders and bringing in diverse experiences, resources, and networks when confronting a complex problem. Instead of relying solely on enforcing and monitoring ESD implementation, we also need to pay attention to the enabling and nurturing function of governments in terms of creating spaces for dialogue and exploration of the unknown within and beyond government institutions (Meijerink & Stiller, 2013).

Lastly, while education and capacity building are important in addressing environmental issues (e.g., climate change, pollution, loss of biodiversity, habitat destruction), the government and civic institutions can collaboratively attend to urgent environmental problems by developing key environmental policies (e.g., environmental standards and oversight for corporations; protective legislation with respect to biodiversity; municipals bans on the use of harmful and non-recyclable materials etc.) to combat these issues. Importantly, education alone is not enough to address the broader problems that are caused by an inadequate implementation and enforcement of regulations on economic actors. There are many policies and regulations that we need to pursue besides or at least in addition to ESD.

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Connection

Before entering the field, I was also interested in exploring the relationships between cultural values and people's visions for sustainable living because UNESCO (n.d.; 2004) places much emphasis on the role of religious worldviews and traditional knowledge in promoting ESD. A number of scholars also acknowledged that the Confucian value of self-cultivation in creating a harmonious society could be a salient feature of the UN's vision of global sustainable development (Tu, 2001; Tucker, 1991; Weller, 2006). This feature can therefore serve as a basis of promoting sustainable development in East Asian societies (e.g., Hong Kong, Taiwan, Singapore, mainland China, South Korea, and Japan) where the social values are deeply rooted by Confucianism (Weller, 2006). Yet, a review of Taiwan's policy documents showed that cultural components such as the values of Confucianism, Taoism, and Buddhism appeared to be absent from the official discourse. Discussions of Confucian ecology were also not present in Taiwan's environmental and sustainability education programs. This finding support Ball's (1993) assertion that "discourses are about what can be said, and thought, but also about who can speak, when, where and with what authority" (p. 14). I must then be attentive to the silences that lie outside the boundaries of acceptable "truth" because the "rules" that shape discourses tend to "elude the consciousness of the practitioners of these discourses" (McNay, 1994, p. 52). That is, in modern societies, governments tend to rely on the exercise of power through hidden agenda and strategic games, such as political rule, ideological manipulation, rational argumentation, moral advice, or economic exploitation (Lemke, 2001; Stoddart, 2007). Therefore, policymakers consciously or unconsciously choose certain values that conceal the social reality to advance their political ideologies (Trowler, 2003).

Drawing on this body of literature, I was therefore interested in learning about this *absence* and how it might have shaped the development and implementation of Taiwan's ESD policies. For this reason, during the interviews I invited my participants to share with me their visions for sustainable living and the ways in which, if any, those visions were related to any traditional values or their cultural beliefs. Surprisingly, I found that most certified staff/policy implementers made only fragmentary connections between Confucius' thoughts and sustainable development. Of the 30 participants, only three referred to any Chinese traditional practices or Taiwanese sayings such as "If people do not act according to the rules of nature, nature must fight back" [人無照天理，天無照甲子]. When I elicited further, only two participants connected the modern concept of sustainability with the following quote by Mencius, an influential thinker in Confucianism (as translated by Legge, 1875):

> If the seasons of husbandry be not interfered with, the grain will be more than can be eaten. If close nets are not allowed to enter the pools and ponds, the fish and turtles will be more than can be consumed. If the axes and bills enter the hill-forests [only] at the proper times, the wood will be more than can be used. (Book I, "Mencius Met King Liang Huiwang," p. 127)

On the other hand, as the interviews unfolded, I began to notice that many certified staff/policy implementers seemed to be ambivalent about the government's strategies to implement the Environmental Education Act. It appeared to me that many of them expected more policy initiatives from the government and favoured concrete regulations that could outlaw citizens' unsustainable behaviours, as I briefly mentioned in the Chapter 3 (see also the *Meeting Record of the Legislative Council's Public Hearing*, 2009). Another recurring theme in my conversations with the participants was the emphasis of enforcing strict penalties for ensuring the

proper implementation of Taiwan's ESD policies. Some of them even expected the government to track citizens' day-to-day behaviours, such as water and energy consumption. Many even felt frustrated and disappointed with the government because the penalties for not adequately holding the environmental education courses were not strictly enforced in their organizations. This attitude seemed very different from the ESD framework portrayed by UNESCO, in which actions are focused on empowerment, leadership, capacity building, community, and collaborative networks.

It was against this backdrop that I began to look for an explanation for this allegedly preferred approach to governance in Taiwan and possibly the wider East Asian region. A few studies of different legal cultures in the international dispute settlement system caught my attention (Chen, 2014; Moon, 2013; Picker, Lixinski, Steel, & Fitzsimmons, 2016; Tang, 2016). In particular, Peng (2000) attributed the recent ability and willingness of East Asians to establish a quasi-judicial dispute settlement system within the World Trade Organization to the application of Chinese Legalism. Peng (2000) argued that although Western legal models have greatly influenced East Asia, fundamental differences between systems remain. For example, influenced by the Confucian emphasis on group harmony, East Asians tend to avoid legalistic procedures, disputes, and negotiations (Tang, 2016; Zhang, 2007). This cultural value is also reflected in the practice of intergovernmental organizations. For example, "avoiding formal and legalistic procedures" (Peng, 2000, p. 21) was a dominant political norm in the Asia-Pacific Economic Cooperation (APEC) forum.[10]

However, this voluntary and consultative dispute settlement mechanism has little impact on resolving actual confrontation and disputes. Western officials also found it challenging to

[10] Of APEC members, China, Taiwan, Hong Kong, Japan, Korea, and Singapore are influenced strongly by Confucian tradition. The influence of Confucianism in other Asian members tends to be more subtle (Peng, 2000).

follow APEC's nonlegalistic approach to economic cooperation. APEC's common practice of "letting things evolve and grow gradually" drastically contrasts with "the American way of beginning with legally binding commitments covering a wide range of issues" (Peng, 2000, p. 21). Peng (2000) thus argued that "the non-litigiousness of East Asian legal culture" (p. 31) has been sustained in the region for thousands of years; consequently, people accept changes only when regulations and decrees are enforced and monitored strictly. These studies thus showed that Chinese Legalism has remained relevant in modern societies and profoundly impacted East Asian legal culture and political practice (Moody, 1979; Peng, 2002; Winston, 2005). Along these lines, I thus began to explore the potential influence of Chinese Legalism on policymaking in Taiwan. In the subsequent chapter, I turn to Chinese Legalism and present an analysis of the ways in which this political philosophy of governance in ancient China has influenced the governing structures of the Environmental Education Act in Taiwan.

Chapter 4: The Political Initiative of Taiwan's Education for Sustainable Development: Looking Through the Lens of Chinese Legalism

Abstract

This study examines the development of Taiwan's Environmental Education Act and how Education for Sustainable Development (ESD) was mainstreamed into the national policy framework within the country. The goal is to understand the policy tools and governing strategies that were used by the Taiwan government to develop and implement a nationwide environmental education policy for integrating environmental sustainability into all areas and levels of teaching and learning. Official documents related to national plans for ESD and environmental education policies were analyzed and examined. In particular, Chinese Legalism was used as a lens to interpret the government's philosophy, assumptions, unspoken norms, legislative practices, and deliberate strategies. Several principles and techniques proposed by Chinese Legalists were used to examine the negotiation and formulation of Taiwan's Environmental Education Act. This analysis contributes to our understanding of the ways in which UNESCO's framework of ESD can be transferred into a national policy. A discussion of the Chinese Legalist philosophy also offers a cultural frame of reference to think about ESD politics and governance in other East Asian contexts.

Introduction

The importance of mainstreaming Education for Sustainable Development (ESD) into educational systems has been discussed by a number of scholars (Hofman, 2015; Hopkins, 2014; Sterling, 2014; United Nations Educational, Scientific and Cultural Organization [UNESCO], 2018). However, identifying the entry point to transform a system is often challenging (Gough,

2006; Harich, 2010; Lenglet, 2014). One reason is that the processes of policymaking and national agenda-setting are complex and heavily depend on the legal frameworks, norms, and traditions of the governments (Bizikova et al., 2018; Bormann, & Nikel, 2017). Moreover, available information is often located within various government institutions given the nature of sustainability issues (Hess, Schramm, & Luber, 2014). Therefore, there have been few studies examining the process of ESD policymaking to date. This article attempts to address this gap by presenting an analysis of the official documents to understand the development and implementation of Taiwan's ESD policies.

The government of Taiwan has been working towards implementing ESD to demonstrate the country's commitment to global sustainability efforts (Legislative Yuan, 2010a). To this end, environmental and sustainability education was enshrined in law, and Taiwan's Environmental Education Act went into effect in 2011. With the enactment of the Environmental Education Act, environmental and sustainability education became mandatory in all government institutions including government-funded community organizations and K–12 schools in Taiwan. All government employees, school administrators, teachers and students are required to complete at least four hours of coursework in environmental and sustainability education each year.

The policy framework of the Environmental Education Act is ambitious, as it seeks to transform the existing learning and training environments across schools, communities, and various institutional contexts to achieve United Nations' vision for sustainable development (Legislative Yuan, 2010a). Similar to UNESCO's (2018) proposal, a holistic approach to promoting sustainable development was adopted in this Act. That is, rather than advancing ESD by adding more topics and context to an already overcrowded curriculum, the Taiwan government attempts to mainstream ESD into the "entire system [which can serve] as a practical

learning model for sustainable development" (UNESCO, 2018, p. 12). The policy backdrop of Taiwan's Environmental Education Act thus creates an interesting research context for studying the policymaking process of Taiwan's ESD initiatives and the ways in which the government has mainstreamed ESD into national education and sustainable development policies.

Given that the ESD policy discourse in Taiwan is taking place within an East Asian cultural and political context, it is useful to examine this policymaking process using a governance framework which has influenced policymaking in this society (Peng, 2000; Winston, 2005). In particular, Chinese Legalism (*Fajia*) seems to be an appropriate lens to interpret the principles, assumptions, and norms underlying the governance structures and mechanisms in the ESD policymaking process. Chinese Legalism arose as a political thought in ancient China and was used to inform statecraft to ensure domestic stability (Pines, 2014). Before turning to Chinese Legalism and its philosophical foundation, we first introduce the methods of this study. We then elucidate how the Legalist approach to governance can shed light on the policymaking process of Taiwan's ESD policies.

Method of the Study

This article aims to explore what governance structures and mechanisms have the Taiwan government established to implement the Environmental Education Act. It presents a desk-based review of policies related to ESD that was conducted from 2016 to 2018. The primary documents were sourced from the government website, using the search terms 'sustainable development', 'sustainability', 'environmental education', and 'sustainability education'. Official documents that were analyzed included *Taiwan Agenda 21* (National Council for Sustainable Development, 2004), the Environmental Education Act (Legislative Yuan, 2011), the official records of parliamentary meeting notes on this Act (Legislative Yuan, 2010a, 2010b, 2010c, 2010d), and

Environmental Regulations Applicable to Schools (Ministry of Education, 2012). Additionally, relevant certification guidelines were reviewed to uncover the EPA's criteria for selecting qualified policy implementers of the Act.

Chinese Legalism was used as an analytical framework to thematically analyze these policy texts. Given the emergent nature of this work, other relevant policy documents were gathered as the first author began to immerse herself in the policy texts. Data from various sources were collected and analysed concurrently to provide an iterative understanding of the policymaking process and its political context.

Chinese Legalism

Fajia (法家, Chinese Legalism) is a pragmatic political philosophy which argues for a powerful centralized government as a means of achieving peace, stability, prosperity and an orderly society (Kern, 2000). It was developed in pre-Qin ancient China (the Spring and Autumn period and the Warring States period, from 770 to 221 BCE), when the politics were unreliable and conflicts between states were rampant and increasingly ferocious (Watson, 1967). One primary concern of rulers at that time was the recruitment of government officials who were loyal and could provide political guidance to strengthen their states. Therefore, upward social mobility became legitimized and the meritocratic discourse of "elevating the worthy [尚賢]" proliferated (Pines, 2013; Watson, 1967). Hundreds of intellectuals travelled between the states to offer their wisdom on governance, military strategies, and foreign relations. The Legalists' vision of a unified, mighty state was particularly attractive to political leaders and practitioners. Its techniques of centralizing and securing a ruler's power later contributed to the first unification of Imperial China: the Qin dynasty (221–206 BCE).

Chinese Legalism is thus considered one of the major schools of thoughts in the pre-Qin period, along with Confucianism, Mohism and Taoism. These major schools were all concerned with means of achieving social harmony and world peace (He, 2011). Nonetheless, their philosophies of governance and propositions of statecraft to realize this vision differed.[11] Confucianism sought to cultivate the ruler's morality and believed that emperors should lead by virtue. Mohism argued against wars among states and advocated for universal love and impartial care for everyone. Taoism focused on nature and the correspondence between humans and the cosmos; therefore, human actions shall not interfere with the natural order of things. Taoist concept of *wu-wei* (action through inaction) led to the vision of small governments governing without intervention (Littlejohn, 2010). One major contrast between other schools of thought and Legalism in ancient China was that Legalism argued for a society governed through rules. Legalists viewed the Confucian principle of ruling by virtue as impractical because, in a legalist perspective, humans are selfish and egoistic by nature and covet wealth (Han Fei, 1964; Watson, 1967). Thus, ruling by *fa* ('law') was deemed as the only effective and realistic solution to social problems, particularly in a chaotic society during the Warring States period (Han Fei, 1964).

It is important to note that although its literal translation is 'law', the Chinese character of *fa* (法) encompasses far more than penal codes or laws (Goldin, 2011). In Chinese Legalism, *fa* refers generally to standards, natural rules, scales or correct methods (Goldin, 2011; Han Fei, 1964). Drawing on this conceptualization of law, Legalists suggested that, in addition to morality

[11] Although the name *fajia* (Chinese Legalism) was given by Sima Tan (died 110 BCE), the philosophy rose no later than the other schools of thoughts. In fact, their development was interrelated, and their ideas were more or less connected and influenced by each other (He, 2011). For example, Confucius often commented on Legalism's technique of severe penalty and praised Legalist Zi Chan for his insights and ability to stabilize the Zheng State around 500 BCE. Legalists Shen Buhai, Shen Dao, and Shang Yang studied Taoism before studying Legalism. Li Si, a well-known Legalist writer and chancellor of the Qin dynasty, studied under a student of Confucius, Xue Zi. Han Feizi (died 233 BCE), the most significant representative of Legalist intellectual development, was named the master of Confucianism, Mohism, and Taoism.

and education, institutionalizing *fa* was the key to managing all aspects of governance and regulating social and economic behaviours. That is, *fa* was viewed as an essential "social control institution" (He, 2011, p. 646).

Goldin (2011) also cautioned that the term Chinese Legalism can be misleading and should not be confused with Western Legalism. Chinese Legalism differs from Western Legalism not only in geographical and historical background, but also in ideology. Chinese Legalists argued that an orderly society could be achieved only by strengthening people's fidelity to the monarch who created and enforced the law, whereas Western Legalism focuses on the legalistic attitude and normative behaviours of following the law (Goldin, 2011; He, 2014). In contrast to Chinese Legalism's ruler-centred approach, Western Legalism is a "modern ideology about the justification of rule-following" (He, 2011, p. 662). In Chinese Legalism, the law protected neither the political rights nor the economic position of the individual, whereas the Western approach to law regulated the private and economic rights and duties of individuals (Goldin, 2011; He, 2011).

Three Pillars of Legalist Governance and Their Relevance Today

Chinese Legalists believed that an orderly society was required for agricultural prosperity and military strength, which would lead to a mighty state (Ames, 1983; Hwang, 1995). Thus, monarchs should rely on three pillars of governance to ensure societal stability and develop a state's wealth and power: (a) *shi* 勢: force of control, legitimacy or power; (b) *fa* 法: standards, laws, rules or methods; and (c) *shu* 術: art of control, techniques or tactics. A comprehensive explanation of these terms is beyond the scope of this paper; the following sections discuss Legalist thinking of the three pillars relevant to the study findings.

***Shi* as legitimized authority or positional power.**

Chinese Legalism suggested that a ruler's *shi* (force of control) was a prerequisite for applying *fa* (rules or standards) and *shu* (art of control) to control their ministers and officials (Hwang, 1995). Specifically, Legalists believed that emperors were representatives of Heaven and that nature amended them and validated them to rule. It is the rulers' high political positions, rather than their wisdom or virtue, that secured their authority and power. As Shen Dao (395–315 BCE) illustrated, "The serpent soars with the mists, the dragon rides the clouds; but if the mist and the clouds clear, they both become crawling worms—because they've lost their vehicle" ('Chinese Text Project,' n.d., author's trans.). Therefore, a ruler himself was not enough to make people obey; it was the authority legitimized from Heaven and his political position that made people, even the intellectuals, submit (Watson, 1967).

To understand the concept of *shi*, it is important to situate it in the historical context where various factions fought for the establishment of a true king in the pre-Qin dynasty. Under this political climate, it was possible for a ruler to hold political power through the position without being amended by Heaven, and vice versa. Therefore, exploring ways to legitimize the rulers' authority and secure rulers' political positions became a focus of Chinese Legalists in ancient China.

***Fa* as unvarying rules, correct methods or standards of good behaviours.**

Equality with respect to *fa* among ministers and citizens is an essential doctrine in Chinese Legalism (Watson, 1967). Although *fa* does not apply to the rulers, all people under the emperors were equal before *fa*. Therefore, Legalists suggested that the unvarying application of *fa* would lead to public order because the system would reward those who followed the rules and severely punish those who broke them. Han Feizi (279–233 BCE), the most famous Legalist

writer, who synthesized the philosophy and methods of the Legalists who came before him, expressed this as follows:

> The law does not favour the nobility; unlike a rope that bends when it is unyielding. When implementing the law, worthies [people of worth] do not dare to challenge it, and tyrannical people do not dare to argue with it. The rules of punishment will not spare the minister, and the rules of rewarding the good will not exclude the civilians. Therefore, to correct the faults of the officials, to investigate the evils in the people, to manage chaos, to judge mistakes, to punish the greedy, to rectify and reverse, and unify the standards of the people's behaviours, there is nothing more effective than *fa*. ('Chinese Text Project,' n.d., *Hanfeizi*, *yuudu*, ch. 5, the first author's trans.)

Legalists were particularly critical of Confucianism's mysterious and ambiguous codes of conduct (Han Fei, 1964); they thus sought to develop concrete guidelines for people to follow. For Legalists, once the scales of justice had been established and made clear to the people, they would learn that bribery, without exception, was futile (Han Fei, 1964). Even ministers and officials had to follow strict rules, and the full force of the law would be applied to them and their families if they committed an offence. Legalists predicted that if *fa* were successfully enforced, the legislative system would run the state smoothly and there would be no need for a monarch to intervene. This approach would lead to an orderly society and a mighty state, even if it was governed by a weak ruler (Han Fei, 1964).

Influenced by Taoism, Chinese Legalists adapted the concept of *wu-wei* (action through inaction) and suggested that emperors should aim to rule without directly intervene (Xu, 2013). The rationale is for rulers to remain aloof and mysterious, so that their ways of thinking and preferences could not be predicted and manipulated by their ministers and officials. Therefore, the legislative system had to be fully established without direct involvement of a ruler, the tasks of the various public offices had to be properly defined, and administrators had to enforce the laws without corruption. Nonetheless, *wu-wei* did not mean the emperors should take no actions.

Rather, the rulers' role was to deliberately exercise their political power (*shi*) and reinforce the rightfulness of *fa*; then, the vision of a well-ordered state could be realized [抱法處勢則治]. In other words, Chinese Legalists believed that, in order for the heaven-chosen king to rule and to become an emperor of a mighty state, the ruler needs to hold a high political position and secure his power (*shi*). To achieve this, Legalists suggested rulers to focus on setting up administration and assigning officials to develop and enforce *fa* (legislative system, rules or correct methods) that can lead to a well-ordered state. *Shu* (techniques or strategies) was thus proposed to guide the rulers to control and monitor the administration.

Shu **as the techniques or tactics of control.**

Shen Buhai (395–337 BCE), famous Legalist, formalized a series of *shu* that rulers could use to ensure the operation of their administration. Here, as examples, we explain only three *shu* that are relevant to the findings of this study, namely techniques of lawmaking, techniques for controlling government officials, and techniques of policy enforcement in the society.

Techniques of lawmaking: Under Chinese Legalism, lawmaking focused on how the law had been developed as well as on its justification. This is because Chinese Legalists believed that laws are meant to set out standards for human behaviour (He, 2011). Guan Zi described *fa* as the "compass for everything and every procedure" of people's lives (He, 2011, p. 657). Han Feizi (279–233 BCE) proposed that *fa* was "the scale for judging behaviours and the mechanism to normalize behaviours" (He, 2011, p. 657). The metaphors of compass and scale portrayed *fa* as an objective, impersonal, and impartial standard for human behaviours (take the modern Social Credit System in China as an example). The Legalists thus used objectivity to persuade the rulers to believe that an established judicial system would lead to social stability and to convince common people that *fa* was just, so imposing it would lead to a stable society (Chan, n.d.).

Therefore, justifying which instruments could be used to evaluate human behaviour and the universality of this process was an important tactic of lawmaking in Chinese Legalism.

Chinese Legalists advocated that the penal code should be written by the authorities. This way, defining and enforcing *fa* was the official mandate of the emperor and governors, which meant that it was above family rules (that were upheld by Confucians) and social conventions. Legalists also believed that it was incorrect to take the wisdom of the common people into account because their minds were as naïve as those of babies [民智之不可用，猶嬰兒之心也]. Han Feizi (279–233 BCE) used an analogy of a caring mother who shaved her baby's hair to prevent head sores. Even if the baby cried, the mother would continue because she understood the usefulness of such action. Similarly, an emperor should institutionalize top-down laws even if the public resisted them. The short-term suffering of the people would benefit the future collective good of the nation (Han Fei, 1964). Therefore, it was believed that a top-down approach to lawmaking helped emperors to win appreciation and popularity among the public in the long term (Chan, n.d.).

Techniques for controlling government officials: If rulers should not consider the wisdom of common people, whose advice should they listen to? Legalists answered this question by drawing on the Mohist proposal of elevating the worthy. They agreed with Mohism that meritocracy was at the core of political structure. Official positions should be strictly given to the 'worthies'. Rulers can then focus on honouring the worthies' advice, righteousness, and performance through merit, promotion, and wealth (Han Fei, 1964).

However, in the Legalists' view, the notion of worthiness was too vague and prone to manipulation by political parties. They also argued that any promotion not based on impersonal

standards—even if it were a correct one—would cause inflated expectations or excessive resentment among their officials. As Shen Dao (395–351 BCE) explained,

> When the ruler abandons *fa* and relies on himself to govern, then punishments and rewards, recruitment and demotion all arise out of the ruler's heart. If this is the case, then even if rewards are appropriate, the expectations are insatiable; even if the punishments are appropriate, lenience is sought ceaselessly. If the ruler abandons the standard and relies on his heart to decide upon the degree [of awards and punishments], then identical merits will be rewarded differently, and identical crimes will be punished differently. It is from this that resentment arises. (trans. in Pines, 2017, ch. 4)

Therefore, Legalism suggested developing clear, impersonal rules to objectively recruit the worthies, appoint the officials, control and monitor their performance and reward those who fulfilled their duties or punish those who neglected them. According to Pines (2017), "this *objective* process of promotion according to measurable and *objective* merits became one of the hallmarks of the Chinese administrative system throughout the imperial era and beyond" (ch. 4, emphasis added). As we discuss below, this practice is also relevant to the EPA's approach to recruiting officials and ESD personnel today.

Another central technique for controlling officials in Legalism was *xing-ming* (形名, performance and title). Legalism sought to develop a governmental structure where rulers remained distant and did not directly intervene in the implementation process. To this end, Han Feizi (279–233 BCE) proposed the tactic of *xing-ming* to evaluate the performance of public officials. He argued that the titles and duties of each official should be clearly defined so everyone would know exactly what was expected. When an official's performance was in accordance with the duties associated with the title, the official was rewarded; when it was not, the official was punished (Watson, 1967). These firm criteria for evaluating officials would

allow rulers to sit back and watch the administration run smoothly (Han Fei, 1964; Watson, 1967).

Although Chinese Legalism emphasized the accord between an official's performance and political position, it did not rate the performance itself. Those who overperformed would be considered to be violating the rules and would be punished. A story written by Han Feizi (279–233 BCE) illustrated this point:

> Marquess Zhao of Han was drunk and fell asleep on his desk. The officer in charge of his ceremonial head gear was concerned that he might catch cold, and therefore put a coat over him. When Marquess Zhao of Han woke up the next morning, he was very pleased and wondered who put the coat over him. When he found out that it was his cap master who did this but not his coat master, the ruler decided to punish both of them—the one for not doing his job and the other for exceeding his job. (Chan, n.d.)

Han Feizi's story highlighted that officials who went beyond their given duties were potentially harmful to the stability of governance. Legalists viewed humans as fundamentally selfish and greedy. Considering that worthies were motivated by pursuing honour and might be unwilling to limit themselves to assigned tasks, Legalists believed that their ambition, desire for a good reputation, and competitiveness would eventually corrupt them (Xu, 2013). A norm of overperforming in government would then lead to manipulation to usurp the throne. Consequently, Han Feizi (279–233 BCE) advocated that overdoing in public service should be discouraged. Rulers should apply the same rule to officials who overperformed as to those who underperformed. Full accountability and robust monitoring of performance, in the Legalist view, would ensure proper operations of government.

Techniques of policy enforcement: In Chinese Legalism the key to a ruler's control was to effectively use reward and punishment to ensure effective administration of policy (Watson, 1967). Although incentives and penalties are common in modern society, Legalists developed

this tool, *er-bing* (二柄), for emperors to strategically control their officials and citizens 5,000 years ago. Importantly, Chinese Legalists emphasized publicizing both the positive consequences of following and the negative consequences of violating *fa*. Publishing the identities of people who disobeyed the law and their punishments would serve as a warning to the public.

While Legalists argued that there was no greater means of ensuring the ruler's superiority than *er-bing*, this technique appeared to offer limited reflection on the potential abuse of power by rulers. The Legalist commitment to preserving and strengthening the ruler's authority may have established the rule of the first emperor of ancient China, Qin Shi Huang. However, Legalism's "abnormal assertiveness of its administrative apparatus, over-reliance on penalties, senseless expansionism, and debilitating mistrust between the emperors and their entourage" (Pines, 2017, ch. 7) eventually led to criticism of Chinese Legalism as it progressed through history. The practice of severe punishment is often associated with cruel torture methods in ancient China. As Sima Tan famously commented, Chinese Legalism was "a one-time political philosophy that could not be constantly applied" (Pines, 2017, ch. 7).

Nevertheless, some features of Chinese Legalism continue to be relevant to the modern context of Taiwan, including: (a) relying on laws, techniques and positional power; (b) relying on unvarying application of laws to establish social behaviours; (c) using *shu*-related techniques in lawmaking and justifying objectivity and universality of *fa*; (d) monitoring and evaluating officials to ensure obedience of public servants; and (e) using rewards and punishments to ensure the effectiveness of policy implementation. We argue that these Legalist approaches are largely manifested in the Environmental Education Act and several school-based policies in Taiwan. The following sections illustrate how the concepts of *shi* (force of control, legitimacy or power),

fa (standards, laws, rules or methods), and *shu* (art of control, techniques or tactics) can be used to interpret the contemporary ESD policies and their enforcement in Taiwan.

Analysis of *Shi*: Legitimized Power and Political Position of the EPA

This finding section explains how the newly elected president's political commitment created a desirable context for the EPA to lead the process of formulating Environmental Education Act during the 2010s. It also illustrates the legitimized power and political position (*shi*) of the EPA within the National Council for Sustainable Development (NCSD).

A desirable political context emerged for the EPA.

Before the EPA's Environmental Education Act was passed in 2010, several attempts had been made to incorporate ESD into formal education. For example, in 1993, the EPA appointed Professor Chiau Wenyan at National Sun Yat-sen University to produce a comprehensive report examining the need to legislate environmental education policies. Between 1995 and 2003, the Chinese Society for Environmental Education and Legislator Eugene Jao proposed making environmental and sustainability education mandatory, but their motion did not attract much political support. In the meantime, the EPA began to establish its political power in the NCSD which was formed in 1997 in response to the Earth Summit in Rio de Janeiro. In 2002, the Basic Environmental Law was passed to grant the NCSD legal status as the authoritative body to promulgate national action plans and policies related to sustainable development. The EPA assumed the management of all the secretarial affairs of the NCSD and thus has had an influential role in overseeing the country's sustainability plans.

The early 2000s marked a turning point for the EPA. The government noticed that the National Environmental Education Fund had accumulated a large amount of money from environmental pollution fines. It was therefore vital to integrate environmental resources across

various government agencies and develop mechanisms to manage these resources. Seeing potential of the National Environmental Education Fund, the EPA initiated a new draft of the Environmental Education Act in 2005 to include regulation on receiving and spending money through the Fund ('Environmental Quality Protection Foundation', n.d.). Although the Legislative Yuan (a constitutional body that develop laws) rejected the EPA's proposal, the idea of developing and enforcing concrete ESD policies using the resources generated by the Fund was adopted by the presidential candidate Ma as one of his primary campaign promises in 2007. When Ma was elected in 2009, the EPA's version of the Environmental Education Act was immediately pushed forward by the Legislative Yuan, and the bill to promulgate the Act was passed in 2010.

The political position of the EPA.

With the legislative support, the EPA now holds the most favourable political position within the NCSD. It acts as a federal judicial institution managing the National Environmental Education Fund, the primary use of which is to promote ESD at all levels (EPA, 2014). The annual statutory budget of the EPA is 50% of the Fund, the highest among all government agencies, followed by the Ministry of the Interior (29%) and the Council of Agriculture (5.4%) to promote sustainable development (EPA, 2014, p. 10). The Ministry of Education (MOE) is granted only 2% of this fund, while a unit responsible for promoting ESD under the EPA's Department of Comprehensive Planning receives 5% (EPA, 2014). Therefore, in contrast to a commonly held perception about the role of the MOE in promoting ESD, Taiwan's EPA acts as the main player in the country's ESD initiatives.

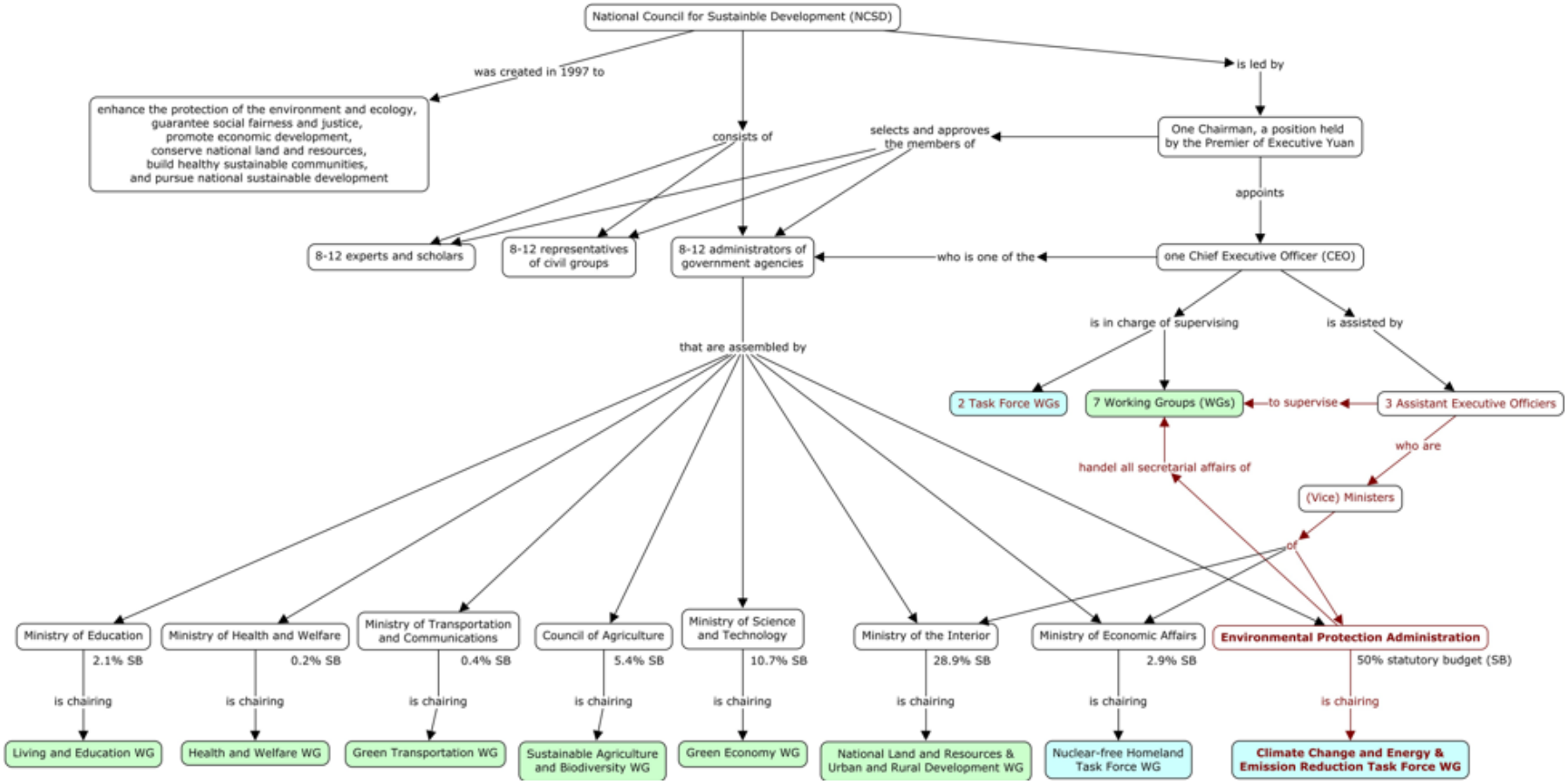
Moreover, the EPA continues to exercise its jurisdiction within the NCSD by undertaking all secretarial affairs and supervising working groups. Although the NCSD's structure seems

inclusive because council members represent diverse groups, further investigation portrays a different story. The NCSD's governance structure seems to allow the EPA to play an influential role in decision-making among various agencies and working groups (see Figure 3). Specifically, the chairperson position of the NCSD is concurrently held by the premier of the Executive Yuan (a constitutional branch of the government that is responsible for executive affairs), who is appointed directly by the president. Membership of the NCSD consists of 24 to 36 representatives. One third are academics, one third are representatives of civil and professional groups (e.g., the World Bank, Taiwan Ecotourism Association, Homemakers United Foundation) and one third are heads of various government ministries (Executive Yuan, 2017). Members are approved by the council chairperson. Although NCSD members are authorized to set up working groups on sustainability issues, the EPA, in its supervisory role, seems to firmly steer all the groups. That is, all secretarial affairs of the groups are handled by the EPA. Three assistant executive officer positions responsible for supervising the groups are also held by the EPA, as well as the Ministry of the Interior and the Ministry of Economic Affairs. The working groups meet every three months and report to these assistant executive officers every half year (EPA, n.d.). In the upcoming sections, we explain how the EPA has applied its positional power (*shi*) to steer the development of Taiwan's Environmental Education Act.

Analysis of *Fa*: Governing by Laws to Lead to Sustainable Behaviours

This section illustrates how the EPA has deliberately used its power to negotiate the content of the Environmental Education Act throughout the legislative process. In particular, the EPA played a key role in justifying the necessity of the Act to Taiwanese lawmakers. It also applied the Legalist concept of *fa* (standards, laws, or correct methods) in the Environmental Education Act to establish appropriate social behaviours.

Figure 3. The legislative structure of the National Council for Sustainable Development



This figure illustrates the political position of the Environmental Protection Agency within the governance structure of the National Council for Sustainable Development.

The Environment Education Act as a standard of good behaviours.

Data from several parliamentary meetings showed that some Taiwanese legislators appeared to believe that the passing of the Environmental Education Act would serve to address the environmental problems in the society. In particular, they argued that educating teachers and young children was vital to address these issues. Thus, the Act was considered "a good law" that would ensure that future generations will develop "appropriate habits" for the environment (Legislative Yuan, 2010a, p. 373).[12] Defending the Act, Legislator Wu Yusheng pointed out that many citizens did not have accurate notions about environmental issues and their perspectives "deviated from the views of professionals" (Legislative Yuan, 2010a, p. 373). Consequently, the public tended to consider the government's efforts to address the environmental problems as "political manipulation" or "government conspiracy"; citizens often "worked with the civil groups to stir up" government's decisions and "criticize the government" (Legislative Yuan, 2010a, p. 372). Legislator Wu believed that institutionalizing the Act could "effectively reduce the public's misunderstanding of the government" (Legislative Yuan, 2010a, p. 372). Moreover, the Act would ensure "[full] cooperation from school teachers" so that "our next generation will benefit" from learning the "correct approach" to environmental and sustainability education (Legislative Yuan, 2010a, p. 372).

It is important to highlight that during the policy-formulation process, legislators and the EPA attempted to maximize the unvarying application of the Environmental Education Act by proposing ways to make environmental and sustainability courses compulsory for all citizens. For example, Legislator Wu Yusheng upheld the "symbolic significance" of declaring "the entire citizenry" as the target group of the Act because "Taiwan is one of the first countries to set

[12] Quotations in this and subsequent sections were translated by the first author.

environment and sustainability education into law" (Legislative Yuan, 2010a, p. 415). Moreover, Legislator Tien Chiuchin proposed making the courses compulsory for all universities and graduate programmes. The deputy minister of the EPA suggested enforcing the courses even further for all citizens (Legislative Yuan, 2010c, p. 83; Legislative Yuan, 2010d, p. 101). This attempt is aligned with the Legalist approach of relying on unvarying application of laws to develop desired human behaviours in a society. Nonetheless, due to other legislative restrictions, the final Environmental Education Act can only require that "all governmental institutions, state-run business, K–12 schools and statutory bodies with over 50 per cent of the funds sponsored by the government shall create environmental and sustainability education programmes every year" and "all employees, teachers and students shall attend the programmes for more than four hours" per year (Article 9). In other words, about one-sixth of the population in Taiwan (approximately 3,770,000 people) is now required to take an annual course related to environmental sustainability (EPA, 2016).

According to the official document *Environmental Regulations Applicable to Schools* (MOE, 2012), it is vital for the government to legislate concrete actions for environmental protection because "affecting citizens' rights and obligations" is possible "when enforcing the pollution prevention or nature conservation measures" (MOE, 2012, p. 1-1). Therefore, the Environmental Education Act can help "citizens understand what proper behaviours are and what are not" (MOE, 2012, p. 1-1). This way, both the government and the public can "act in accordance with the law" (MOE, 2012, p. 1-1) and the Act can also "serve as a legal ground for those who wish to promote environmental and sustainability education" (MOE, 2012, p. 9-1). That is, institutionalizing environmental education through this Act would lead citizens to recognize that participating in such courses is a good behaviour that the government encourages.

It would also provide legal justification for those who want to promote ESD. Following this line of reasoning, the "Environmental Education Act is a law that promotes learning and a law that is the closest to the idea of sustainable development" (MOE, 2012, p. 9-1).

Additionally, the content of the Environmental Education Act reflects the Chinese Legalist conceptualization of *fa*, as it stresses the correct approach to environmental and sustainability education. According to the Act, the four-hour courses "shall be delivered through lectures, discussions, online learning, experiential learning, experiments, outdoor activities, film watching, hands-on and other activities" (Article 19). In particular, outdoor activities "shall be arranged at the selected facilities" (Article 19) that are certified by the EPA. We will discuss these certified facilities later in this article.

Analysis of *Shu*: Art of Control, Techniques or Tactics

Herein we present the techniques that aid the EPA in lawmaking, such as outlining and justifying the laws developed by the authorities. This section also explains the strategies that were used by the EPA to recruit the "worthies" and monitoring their performance through a rigorous system. Similar to a Legalist perspective, many Taiwanese legislators seem to view the function of the Environmental Education Act was to punish evil and reward righteousness.

Lawmaking technique: Emphasizing the universality of ESD Policies.

The official record showed that much effort was made to emphasize the universality of ESD implementation around the world as a justification for the Environmental Education Act. During the public hearing (*Meeting Record*, 2009), many experts and civic groups urged the institutionalization of ESD in response to international trends. Several official documents also highlighted that the development of the Act was necessary for Taiwan to be considered as an advanced country. As stated in the introduction section of the Environmental Education Act,

"many advanced countries have developed specific laws to respond to the Decade of Education for Sustainable Development; considering this, the Environmental Education Act is proposed" (Legislative Yuan, 2010b, p. 173). Legislator Wu Yusheng underscored that "the United States and Japan are more advanced than us, but even South Korea has had legislation on ESD policies for a long time" (Legislative Yuan, 2010a, p. 372). Thus, the passing of the Act was "a critical action" and "the universal implementation of environmental and sustainability education … [was] a necessary step" for Taiwan to "become a sustainable, developed country" (Legislative Yuan, 2010b, pp. 174–175).

In a similar way, American and Japanese ESD policies were often referred to when the EPA needed to justify its legislative practices during the parliamentary meetings. When debating if it was necessary to enforce penalties and to require sustainability courses for all citizens, the deputy minister of the EPA argued that "Japan also enforced the penalty system" and "many American reports confirmed that continual compulsory environmental and sustainability education was vital" because "children tend to care less and less about ecology when they grow older" (Legislative Yuan, 2010d, pp. 99–100). Likewise, when being questioned on whether a certification system was required, the deputy minister of the EPA pointed out that "the US Environmental Education Act is applicable to all public and private sectors" (Legislative Yuan, 2010d, p. 101) and that certification mechanisms had also been put in place in Japan and the United States (Legislative Yuan, 2010d, pp. 93–94). Nonetheless, it is important to note that the ESD policies in Japan and the United States are different from Taiwan's Environmental Education Act in terms of policy content, rationale, and implementation mechanisms.

Techniques for recruiting and monitoring the government officials, the 'worthies'.

Some lawmakers and civic groups intensively questioned the necessity of legislating a certification system within the Environmental Education Act (Legislative Yuan, 2010a, 2010c, 2010d; *Meeting Record*, 2009). For example, Legislator Huang Sueying questioned the intention of establishing the EPA as the central authority for the certification programme. She pointed out that "many civic groups and the public have different [sustainability] values from the EPA"; it is thus "problematic to only allow the EPA-approved staff" and facilities to implement the courses (Legislative Yuan, 2010a, p. 414). Some lawmakers were concerned that the groups or institutions with different approaches to ESD would receive limited funding and support from the EPA. Most legislators felt that the Act should encourage diverse ideas and innovative ways of participation (Legislative Yuan, 2010c). In response, the EPA insisted on centralized standards and qualifications for the certification programme to ensure fairness and the quality of environmental and sustainability education in general. Although it remained unclear that what would count as a high-quality course during the parliamentary meetings, the EPA agreed to allow for multiple application channels to welcome members of diverse groups to apply for certification. As a result, Article 10 of the Environmental Education Act stated that the qualification of training institutions, task assignment, certification evaluation standards and other mandated compliance matters were to be defined by the central authority, which is the EPA.

Despite some opposition, it was widely accepted by legislators that an extensive bureaucracy should be established to effectively implement the Environmental Education Act. This bureaucracy should be properly staffed and tightly monitored to prevent deception. Therefore, the EPA's primary concern was to recruit staff who were capable of implementing the

policies in all contexts. Legalism's rigorous means of recruitment, promotion, and performance control thus became particularly relevant and practical to this Act.

According to the Environment Education Act, the EPA is the authoritative body to promulgate and monitor the ESD certification system. At present time, there are three certification programmes in place to certify training institutions (機構), staff members/personnel (人員), and ESD facilities (設施場所). These programmes serve different functions to promote ESD (see Table 3). The following sections briefly elucidate the three certification programmes.

Table 3. The functions and sample performance indicators of the certification programmes

	Certification Programmes			
Streams	ESD Training Institutions (機構)	Staff Members/Personnel(人員)		ESD Facilities (設施場所)
		Administrative Category	Educative Category	
Function	- Provide training courses for the interested staff members - Provide ongoing professional development for the certified staff members	- Plan ESD activities, manage funding and prepare for performance reports	- Deliver the four-hour required environmental and sustainability course at formal and informal settings	- Provide a space for the four-hour required environmental and sustainability course
Sample Performance Indicators	- Total hours of training course provided - Total hours of professional development provided	N/A	N/A	- Total sessions of the required environmental and sustainability courses hosted - Total numbers of participants who attended the course

First, certified training institutions are in charge of "enhancing the professional competence" of the certified staff who are responsible for implementing the sustainability education courses at all levels (EPA, 2014, p. 18). The institutions' primary role is to organize

both the required courses for certified staff members and the required continuing professional-development sessions for those staff who have already been certified. The Environmental Professional Training Institution, a unit under the EPA, provides all training guidelines and funding to carry out these programmes. Although there is no restriction preventing civic groups from becoming training institutions (Legislative Yuan, 2013b), the EPA has certified only universities and government organizations for this work. Specifically, of the 30 institutions that have been certified in the past seven years, 25 are universities, two are government-funded associations, and three are government agencies.

For certified staff/personnel, there are two types of certification programmes: the *administrative category* responsible for ESD planning and promotion and the *educative category* responsible for teaching the courses in formal or informal educational settings. Candidates can apply for certification based on their environment-related degrees, expertise in particular knowledge areas or years of teaching experience in the field, or by passing the certification examination (Legislative Yuan, 2013b). Early in the Act's implementation, every public school was obligated to have at least one certified staff member. As the *Environmental Regulations Applicable to Schools* (MOE, 2012) stated, "schools at all levels should designate personnel to promote environmental and sustainability education. The designated personnel shall obtain environmental education personnel certification within 5 years from the date of the implementation of Environmental Education Act" (p. 9-1). However, within a few years, the EPA was criticized by K–12 schools for setting excessive requirements for the personnel-certification programmes (e.g., total 80 hours of training course, pen and paper examinations, formal interviews). To encourage more public schools to participate in ESD activities, the Ministry of Education (MOE) was then authorized to offer ESD certification courses which

could simultaneously be considered as fulfilling the required continuing professional-development hours for school teachers. The MOE's personnel-certification process has lower requirements to accommodate the needs of school administrators and teachers (i.e., total 12 hours of training course). There are currently approximately 5,000 MOE–certified personnel and approximately 6,000 EPA-certified personnel (EPA, 2017). In total, there are currently approximately 11,000 certified staff members working to implement the Environmental Education Act at formal, non-formal and informal educational settings. As mentioned earlier, I consider these certified staff members (or personnel) as the policy implementers of the Environmental Education Act in this study.

For ESD facilities, the EPA has thus far certified about 160 facilities, including 37 recycling centres, 33 leisure farms and amusement parks, 16 museums, 14 cultural heritage centres, 11 national or city parks and 11 sustainability educational centres (EPA, 2017). These facilities are certified because they integrate natural and professional resources to carry out environmental and sustainability education courses (more information about these courses will be discussed in Chapter 5). To obtain certification to offer ESD courses, a facility must employ a full-time EPA-certified staff member, obtain an operating licence, demonstrate financial self-sufficiency, and establish sustainability curricula that have been approved by university professors and content experts (Legislative Yuan, 2013a). In order to renew their certification every three years, facilities must submit annual performance reports to the EPA that include the number of events organized, the number of participants, detailed outcomes and photos, participants' satisfaction results, and proposed improvements. In addition, participation in the EPA's regular audits is mandatory.

Similar to the Chinese Legalist technique of monitoring government officials, the EPA has designed rigorous rules and certification processes to ensure that institutions and personnel have a consistent approach to ESD. Duties of each certified staff member and facility are also clearly defined (*xing-ming*), so everyone knows exactly what is expected for the annual performance reports for each stream of certification. The annual performance and evaluation reports submitted by each ESD facility and institution play a critical role in determining promotion (or demotion) of the associated officials. Staff and facilities are also closely monitored through annual reports and regular audits by EPA officials and the university professors recruited by the EPA. These administrative practices align with the Legalist approach to dealing with suspicions about ministers and officials to prevent dishonesty and corruption. In our view, these regulations, tactics, and techniques serve to achieve Legalism's impersonal means of performance control.

Policy enforcement technique: Publicizing rewards and penalties.

Official documents showed that the EPA strongly emphasized rewarding *good* behaviours and publicizing the identities of officials who cooperate with the EPA's mandate. The exercise of this technique creates a sense of achievement and righteousness when officials participate in the activities promoted by the EPA. This ESD policy is described in the report *Environmental Protection Agency of the Executive Yuan Assesses the Performance Standards of Local Environmental Protection Agencies* (EPA, 2017):

> (1) Group rewards and punishments: The winners of the total scores are awarded with medals and public praise [by the EPA]. For the last three, the central EPA may reduce the subsidy or suspend the subsidy.
> (2) Individual rewards and punishments: The assessment results of municipalities and counties [such as the numbers of certified facilities in the city] shall be sent to the central EPA by the Mayors or Magistrates as the reference for their rewards and punishments. If the municipality or county attained the last three of the total scores, the Mayors or

> Magistrates will be punished depending on its severity. The local governments are responsible for rewarding other meritorious personnel with outstanding performance. (Assessment Reward and Punishment Section)

Similar emphasis on rewarding and announcing good behaviour can be found in *Environmental Regulations Applicable to Schools* (MOE, 2012), which stated that "the central and local governments should reward, counsel, and encourage schools" to promote ESD as regulated by the Environmental Education Act (p. 9-5). Importantly, the school "should publicize praises and rewards so that those who are good will be made known", while those who are not actively promoting ESD "should be corrected" (MOE, 2012, p. 9-5). By following this practice, "the educational objectives can then be achieved" (MOE, 2012, p. 9-5).

The emphasis on publicizing incentives and penalties was also apparent in the parliamentary meetings. In particular, lawmakers paid much attention to the penalty section of the Act and believed that effective implementation was possible only when the EPA strictly executed punishments. Legislator Huang Sueying doubted whether people would really attend the required four-hour course. She felt that those who did not participate "should be arrested" so that others would be frightened (Legislative Yuan, 2010d, p. 107). Legislator Liu Chienkuo proposed "announc[ing] the names of the companies and their chairmen", as well as suspending business-registration certificates of companies that did not attend the required course (Legislative Yuan, 2010d, pp. 108–122). Many legislators also agreed on announcing the identities of the people responsible if the performance of a public or private institution was lower than expected. They argued that the EPA should follow this practice to establish morality and a sense of rightness for those participating in environmental and sustainability activities (Legislative Yuan, 2010c; 2010d).

Concluding Thoughts

In the past two decades, the UNESCO has earnestly attempted to promote and improve the integration of ESD into all forms of teaching and learning activities. One strategy is to connect principles of sustainable living with moral frameworks and religious worldviews of local cultures and communities. For example, the UNESCO emphasizes that the societies where cultural values are deeply rooted in Confucianism (e.g., Taiwan, Singapore, South Korea), Confucian wisdom, humanism, and moral practice are at the core of promoting ESD (UNESCO, n.d.). Confucian ethics of creating a harmonious society through self-cultivation are believed to have the potential to contribute to UNESCO's vision of sustainable development (Tucker & Berthrong, 1998; Zhang, 2016). Self-cultivation is an important concept in Confucianism which promotes self-discipline to develop the habits of reflections and self-improvement. The Confucian practice of self-cultivation could help to inspire family ethics, political principles and social values that connect with ecological consciousness and a sense of collective responsibility (Jenkins, 2002). Moreover, Confucian humanism, which is the most influential habit of the heart in Chinese societies, could lead to a reconceptualization of peace, economic equality, and political responsibility in modern society (Weiming, 2001).

While the principle of self-cultivation can be important to the achievement of sustainable development goals, this article seeks to demonstrate that the political thought proposed by Chinese Legalists is reflected in the lawmaking process in Taiwan. The analysis presented above reveals that various Legalist tenets, concepts, and techniques are manifested in the development and enforcement of Taiwan's Environmental Education Act—a nationwide education policy inspired by United Nations Decade of ESD. For example, this analysis illustrates that Taiwan's ESD movement is inclined to be centrally conceived, driven, and planned by the EPA. From a

Legalist standpoint, EPA has held a favourable political position within the NCSD to mainstream ESD into national sustainable development plans. This positional power provides the EPA with the authority to apply *fa* (e.g., the Environmental Education Act to define the standards for sustainable behaviours) and *shu* (e.g., monitoring performance through a rewards and punishment system) to deliberatively manage the process of policy enforcement within government units, government-funded organizations, and K–12 schools. This analysis supports Peng's (2000) assertion that Chinese Legalism can be used as a heuristic tool to explore modern legislative practice in East Asia and possibly other countries. We also join King's (2018) call for paying more attention to government techniques guided by Chinese Legalism to further understand the hidden curricula operating within public schools which tend to reinforce the state's values and its sociopolitical practice (Sandlin et al., 2011).

The analysis of the official meeting records also showed that the EPA's exclusive political leadership has been challenged by several lawmakers. The critics of the EPA argued that a single government agency can be limited in its ability to bring about social change for a sustainable future (Legislative Yuan, 2010a, 2010c, 2010d). In particular, when most policymaking activities (e.g., making decisions, developing regulations, managing financial resources) take place solely within the EPA, conflicting interests may arise between this and other government agencies. Government officials and public servants may, unsurprisingly, participate minimally or not at all to fulfil the policy requirements due to a lack of shared ownership and vision. As some Taiwanese lawmakers pointed out, the EPA's authority can constrain diverse opinions about ESD, such that the opportunity for dialogue between the government and citizens becomes slim. Nonetheless, when the public sector is faced with complex problems, sophisticated coordination and negotiation within and between the

government, private sector and non-profit organizations is especially vital. These organizations may have expertise, technology, and relationships that can be deployed in a collaborative effort to deal with increasingly complex and uncertain sustainability and adaptation issues. Since these contemporary debates among lawmakers are occurring within a democratic political system in Taiwan, it is not surprising that some legislators argued for a distribution of authority among relevant government agencies to encourage a diversity of approaches to the implementation of ESD policies. A growing number of scholars have also discussed the potential of cross-sector partnerships and government networks to enhance the adaptivity and agility of the current government structures to better address sustainability and adaptation issues (Compagnucci & Spigarelli, 2018; Hess et al., 2014; Holmes & Moir, 2007; Meijerink &Stiller, 2013; Mintzberg et al., 2018; Provan & Milward, 2001). Therefore, more theoretical and empirical studies are needed to explore various approaches to ESD governance in East Asian and other political contexts.

It is important to note that we are well aware of other cultural influences on Taiwanese society and its political practice (see also Hahm & Paik, 2003). In this work, we attempted to offer a cultural frame of reference to help us think about politics and governance of ESD in this particular context. Using the lens of Chinese Legalism, we have endeavoured to understand the ESD governance in Taiwan. It is our hope that this effort would initiate a conversation about the ways in which cultural ideologies may shape governance structures, modalities of policymaking, and various legislative practices in contemporary East Asian countries. Moreover, Huang (1993) cautioned that the sociopolitical change in Chinese society has "never come from any lasting assertion of societal autonomy against the state" (p. 238), nor from increasing bureaucratic control against the civil society. Contrary to the Western experience, Chinese sociopolitical

changes should be understood through the premise of a collaborative state-society relationship. That is, "those changes need to be seen in a space in between state and society … that can be developed further" (Huang, 1996, p. 223). Thus, future studies may continue to explore the relationship between the state and civic groups in driving social change in the context of ESD while considering the influence of Chinese Legalism or other traditional schools of thought. This understanding would aid in the exploration of different forms of governance vis-à-vis the sustainability discourses in the face of an uncertain and rapidly changing future.

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Connection

As I discussed in the Introduction chapter, one major concern about UNESCO's ESD framework was its practicability at K–12 level. Some scholars felt that the attempt of integrating the economic, social, and environmental pillars of sustainability into the already crowded curricular seems infeasible (e.g., Dale & Newman, 2005; Wals & Benavot, 2017). At the same time, providing curriculum guidelines for teaching ESD topics can be challenging because issues related to sustainable development are complex and often involve competing interests between different groups of people. Drawing on these scholarly discussions prior to data collection, I therefore thought that the challenges faced by the policy implementers in Taiwan might be centred on the support mechanisms related to the country's ESD implementation.

As I began to interact with the policy implementers (certified staff) in the field, I soon realized that various support mechanisms were, in fact, in place for them to carry out the required environmental education courses in schools, government institutions, and ESD facilities. These mechanisms, such as mandatory professional development, ongoing funding support, exemplar curricular materials, and online professional learning communities, have been set up to facilitate adequate implementation of the Environmental Education Act as well as related ESD projects. Such governance structures for supporting ESD implementation nationally thus seemed to have the potential to integrate the theme of sustainable development into all forms of formal, non-formal, and informal education and learning.

However, as I discussed in Chapter 3, many certified staff still found that the implementation of Taiwan's ESD policies was ineffective in addressing current environmental and sustainability challenges. Their perspective on the policy effect thus raised an important question about the unexplored issues when implementing UNESCO's framework of ESD. For

example, despite active government investment and support, why have ESD activities failed to—or at least deemed as failing to—prompt meaningful actions to address the underlying drivers of Taiwan's unsustainable development? Moreover, what are our collective visions for a sustainable future? What are the gaps between our present social practices and the worlds we envision, and what are the roles of education in supporting, facilitating, and maintaining the transformation towards such visions for sustainable futures? To explore these questions further, I turn to the next chapter in which I present my ethnographic observation of the work of the policy implementers on the ground. The goals are to contribute to the broader discussion of ESD implementation and critically examine the potential role of education in attaining UN's vision for sustainable development.

Chapter 5: A Critical Appraisal of Education for Sustainable Development: Looking through the Stories of the Policy Implementers in Taiwan

Abstract

Despite eight years of strong national support, Taiwan's Education for Sustainable Development (ESD) has generated limited enthusiasm for sustainable development, and is even turning some educators into skeptics. In one of the first attempts to uncover the work of policy implementers within Taiwan's ESD initiatives, this policy ethnography examines links between national policy and practice in educational settings. Drawing on interviews with thirty policy implementers and about seventy hours of observation, we find that Taiwan's ESD efforts have failed to prompt meaningful actions that address unsustainable development. We reflect on the reasons for this failure and offer critical insights on whether UNESCO's ESD framework, in its current form, can fulfil its proposed goals.

Introduction

> We are faced with a paradox: Is education the problem or the solution in working toward a sustainable future? At current levels of unsustainable practice and over consumption it could be concluded that education is part of the problem. If education is the solution then it requires a deeper critique and a broader vision for the future. (UNESCO, 2005, p. 59)

The United Nations Educational, Scientific and Cultural Organization (UNESCO) put forward the message quoted above to call for a transformative change and announce the United Nations (UN) Decade of Education for Sustainable Development (ESD) in 2005. The Decade ended in 2014, having resulted in a range of successful national, regional, and international initiatives for promoting sustainable development through education and learning (Noguchi,

2018). According to a final evaluation report (UNESCO, 2014), most UN member states made progress in integrating ESD into national policies over the decade. In addition, significant efforts were made in reorienting education policies, curricula, and plans towards sustainable development. The report also highlighted that more than half of the countries around the world had included the theme of sustainability or environment in their national goals for education (UNESCO, 2014). Importantly, the Decade is credited with growing political support and multi-stakeholder partnerships for ESD-related endeavours. A number of regional networks[13] were set up to put forward new research and capacity-building efforts towards ESD (UNESCO, 2014).

To continue the momentum gained during the Decade, the UN released the 2030 Agenda for Sustainable Development in mid-2013, with the idea of uniting global economic and social development plans and environmental protection goals in one framework (McGrath, 2018). As such, seventeen Sustainable Development Goals (SDGs) were outlined in the *2030 Agenda* as the global blueprint for achieving "a sustainable future for all" (Kacyira, 2012, para. 16). The SDGs are interrelated, and they address interconnected development and environmental challenges, such as poverty, inequality, climate, and environmental degradation (McGrath, 2018). Each SDG encompasses a set of targets which guide and monitor the progress of national policies, plans, and programs towards sustainable development "for all nations and peoples and for all segments of society" (UN, 2016, p. 3). At least one target within each set involves learning, training, or, at the very least, raising awareness of core sustainable development issues. According to UNESCO (2016), this emphasis on education "as a cross-cutting means" of attaining the SDGs represents immense progress of UNESCO's ESD initiative (p. 2).

[13] These include the *Higher Education and Research for Sustainable Development* network, the *Promotion of Sustainability in Postgraduate Education and Research Network* in Asia, *Regional Centres of Expertise*, and the *European Network on Higher Education for Sustainable Development*.

Nonetheless, despite the positive outcomes of the Decade of ESD, humankind continues to live unsustainably; the planet's resources are being depleted and anthropogenic emissions of greenhouse gases into the ecosystem have continued to rise. Rather than acting expediently to mitigate environmental damage, many governments still turn a blind eye to the reality of climate change by allowing greenhouse gas emissions to grow or by failing to honour intergovernmental commitments on emissions reductions (Smith, 2009; Tollefson, 2017). Politicians are not the only ones responsible; people in general have been paralyzed by our convenient lifestyles and we often lack commitment to behavioural changes needed for a sustainable path (Gifford, Lacroix, & Chen, 2018; Maniates, 2012). As Saylan and Blumstein (2011) asserted, "Environmental education has failed to bring about the changes in attitude and behaviour necessary to stave off the detrimental effects of climate change, biodiversity loss, and environmental degradation that our planet is experiencing at an alarmingly accelerating rate" (p. 1). Huckle and Wals (2015) argue, the Decade of ESD has failed to challenge "neoliberalism as a hegemonic force blocking transitions towards genuine sustainability," so it turned out to be "business as usual in the end" (p. 491). That is, neoliberal policies which focus largely on economic growth often contradict with the ideals and goals of sustainable development by increasing poverty and inequality. The key tenets of neoliberal economic agenda such as commodification, deregulation, and privatisation may also increase the exploitation of environmental resources, in turn, undermining the attainment of sustainable development (Haque, 1999; Kumi, Arhin, & Yeboah, 2014).

The contradiction between UNESCO's celebration of the Decade of ESD and the reality of the growing environmental crisis has highlighted the gap in our knowledge about how and to what extent education can be expected to contribute to solving environmental sustainability challenges. In their review of 37 UN flagship publications, Vladimirova and Le Blanc (2016)

found relatively weak connections between education and the issues related to environmental sustainability (e.g., sustainable energy, sustainable consumption and production, climate change, and oceans and marine resources). This knowledge gap has become especially important since the 2030 Agenda for Sustainable Development (McGrath, 2018; UNESCO, 2016) placed even more emphasis on the role of education in bringing about the desired outcomes for sustainable development. As Orr (2004) argues, "conventional wisdom holds that all education is good, and the more of it one has, the better. The truth is that without significant precautions, education can equip people merely to be more effective vandals of the earth" (p. 5).

Thus, the question of how ESD is expected (or even can be expected) to contribute to achieving UN's SDGs has become critical. To this end, more evidence is needed to understand which ESD practices have brought about actual changes necessary for sustainable development in various international contexts. The present study addresses this gap by looking at Taiwan as a case for examining the challenges to and limitations of its UNESCO-inspired ESD policies. The following section discusses the political background of Taiwan and elucidates why Taiwan is a particularly well-suited case for this study.

Study Context: ESD Initiatives in Taiwan

Over the past decade, the government of Taiwan has been actively establishing its international diplomacy through environmental and sustainability activities (see also Chapter 3). The political rationale is to gain international support for Taiwan's independence through environmental diplomacy (Hsu, 2017). This background can be understood within the country's historical and political context in which Taiwan's political and legal status as a country has been an ongoing debate at the international diplomatic level (also known as the Taiwan Issue or Taiwan Strait Issue, see Bush, 2005; G.T. Wang 2006). While the citizens of Taiwan have

recognized Taiwan (Republic of China) as an independent country with democratic elections and no formal sworn allegiance to the Chinese political leaders (Dittmer, 2004; T.Y. Wang, & Liu, 2004), the Chinese government (People's Republic of China) continues to regard Taiwan as a rebel region that must be reunited with the mainland—by force if necessary (*'Xi Jinping says Taiwan 'must and will be' reunited with China*', 2 January, 2019).

Against this backdrop, the Taiwan government has been actively establishing environmental diplomacy since early 2000s by actively engaging in UN- and UNESCO-led initiatives (Hsu, 2017). This motivation has become especially explicit since the election won by President Tsai Ing-wen of the Democratic Progressive Party in 2016. Under the leadership of Tsai's government, Taiwan's national agenda and policy framework are now largely aligned with the *UN's 2030 Agenda for Sustainable Development*. In a 2016 national council meeting, Premier Lin Chuan announced that "the government would further advance its efforts by referring to the UN SDGs and . . . formulate national goals based on the UN SDGs, including goals for 2030 and targets for 2020" (Executive Yuan, 2017, p. 6-7). A voluntary national review was therefore published by the government to demonstrate "Taiwan's overall efforts" in response to the UN Earth Summit of 1992 as well as the recent endeavours on "implementing the UN SDGs" (Executive Yuan, 2017, p. 7). The Ministry of Foreign Affairs even produced a promotional video, *An SDG a Day* (2018), in ten languages to showcase Taiwan's contributions to sustainable development.

In line with the UN's strategy for promoting sustainable development, the government of Taiwan places much emphasis on the role of education in addressing sustainability issues (National Council for Sustainable Development, 2004). In particular, a nationwide education policy, the Environmental Education Act, was implemented to exhibit Taiwan's commitment to

the UN Decade of ESD (Legislative Yuan, 2011). Similar to UNESCO's approach to ESD, Taiwan's Environmental Education Act aims to integrate the concept of environmental sustainability into all areas of learning and training activities (Wu & Chang, 2018). To this end, the Environmental Education Act mandates that all civil servants, including government officials, publicly funded employees, school administrators, teachers and K–12 students complete at least four hours of coursework in environmental and sustainability education each year (Wu & Chang, 2018). This Act therefore has much potential, as almost one-sixth of the population in Taiwan (approximately 3,770,000 people) is now required to take an annual course on environmental sustainability (Environmental Protection Administration [EAP], 2016; Wu & Chang, 2018).

A group of approximately 6000 policy implementers was recruited, trained, and certified by Taiwan's Environmental Protection Agency (EPA) to carry out these required courses at various educational settings, such as schools, government institutions, national parks, and ESD learning centres. The goal is to ensure that the theme of environmental sustainability is covered not only in formal education but also in all forms of professional development and training programs (S.M. Wang, 2016). This strategy echoes UNESCO's conceptualization of education in ESD. That is, *education* is used in a broad sense that encompasses "all forms of formal, non-formal and informal education and training that equip individuals and institutions in the public, private, and community sectors to effectively respond to pressing environmental challenges" (Wals & Benavot, 2017, p. 405).

While many studies have emphasized the importance of governments' political commitments (Burby, et al., 2013; Juma, 2002), the Taiwan government seems to have a strong interest in ensuring the success of ESD implementation through the Environmental Education

Act to contribute to the UN's SDGs. This policy context offers a unique opportunity to examine the potential of UNESCO's framework of ESD in addressing sustainability challenges. Thus, in this study we considered Taiwan as a well-suited case to exploring how UNESCO-inspired ESD policies have been implemented and to what extent these endeavours can be expected to contribute to achieving the UN's SDG targets.

This study focuses on the stories of the policy implementers who are tasked with implementing the Environmental Education Act in Taiwan. In doing so, we sought to understand how the policy implementers have perceived Taiwan's ESD policies as well as the outcomes of the Environmental Education Act. Although there is a growing number of studies exploring the impact of the Environment Education Act already, they have either focused on the presentation of positive case studies or the comparison of policy development programs between Taiwan and other countries (e.g., Chang & Sheen, 2012; Chao, Kim, & Kim, 2018; Wang, 2016). The specific knowledge, experiences, and needs of the policy implementers who deal with the implementation on a daily basis have seldom been privileged or critically explored. As a result, this study provides an opportunity for these policy implementers to share their insights and dilemmas when carrying out the important task of Taiwan's ESD implementation. By focusing on the experiences of the policy implementers who play a key role in determining the success of Taiwan's ESD policies, this study offers critical insights on whether the framework of ESD in its current form is actually fulfilling its proposed goals. This discussion will facilitate a deeper reflection on the potential of education in addressing complex sustainability issues.

Methodology and Methods

As discussed in Chapter 2, the framework of policy ethnography was used to examine the iterative process of policy development, implementation, and evaluation from the standpoint of

policy implementers (Ball, 2016; Ball, Junemann, & Santori, 2017; Griffiths, 2003; Verger & Curran, 2014). For this study, policy ethnography can provide in-depth understanding of the "messy realities" of the contexts in which Taiwan's ESD policies have been produced, reproduced, interpreted, and implemented in practice (Ball, 1990, p. 9). The term 'ESD policies' is used here to refer to a number of legislations related to the government's initiatives on promoting sustainable development through education, including the Environmental Education Act, the Basic Environmental Law, Taiwan's Agenda 21, and several school-based regulations (e.g., the ban on using disposable tableware in school).

Drawing on the methodological framework of policy ethnography we reviewed policy texts related to Taiwan's ESD policies and interviewed the policy implementers to gain "conceptual access to the unwritten, unspoken, common sense, every-day, tacit knowledge" of the implementation of Taiwan's Environmental Education Act (Yanow, 2009, p. 34). Sources of data included (1) policy texts related to Taiwan's ESD policies (e.g., official documents, implementation guidelines, evaluation forms), (2) interviews with 30 policy implementers who are responsible for administering the Environmental Education Act, and (3) approximately 70 hours of ethnographic observation of the work of four policy implementers in the field in Taiwan between 2017 to 2018. Findings presented in this article draw primarily from the interview and observation data.

Participants of this study are the policy implementers of Taiwan's Environmental Education Act. These policy implementers include, but are not limited to, government officers, university professors, school teachers, school consultant, public-school administrators, principals, and members of nongovernmental organizations. They navigate between different educational settings to implement the Environmental Education Act. For example, some

implementers voluntarily visit various institutions, such as schools, government departments, and government-funded organizations, to teach the required courses. Others work at public schools or ESD facilities, such as recycling centres, museums, national or city parks, and sustainability educational centres, to provide onsite support, training, or teaching. There is also a recent trend for the policy implementers to operate consulting firms, which bid on government outsourcing projects such as managing ESD facilities, undertaking performance audits, and providing professional development services for policy implementers.

In these roles, these policy implementers act as policy brokers or intermediaries (Vandeyar, 2015) across a range of social learning environments to promote sustainable development and assist the government in passing on important information regarding environmental issues to the public (EPA, 2014). They are trusted by the EPA to organize and coordinate ESD activities on the ground, and experience firsthand, the practical contexts in which the Environmental Education Act is administered across educational settings. Thus, their perspectives on the impact of this Act on society offer important insights into the affordances and limitations of UNESCO-inspired ESD policies.

Data collection and analysis.

Before conducting field observation, we conducted two rounds of semi-structured interviews with approximately 30 policy implementers. The purpose of the interviews was to gain an in-depth understanding of the Environmental Education Act from the policy implementers' standpoint, their professional vision related to ESD, and their understanding of global and local environmental issues vis-à-vis Taiwan's sustainability policies. Drawing on Ball's (2016) approach, we also invited participants to share with us their professional connections (e.g., professional memberships, listservs, blogs, and social media networks) as well

as any information sources they have often consulted in their work. We then visited the online sites and virtual professional networks to explore their sources of information on policies updates, guidelines, and curricula, as well as the discursive environment which might have influenced the participants' thinking about ESD. As the first author immersed herself in this fieldwork, we began to identify and gather relevant scientific reports, news reports, and online articles that participants had mentioned during the interviews. The goal was to further understand participants' perceptions of the ways in which Taiwan's ESD policies has been effective in understanding and addressing the environmental challenges facing the country. The materials that the participants pointed us to (e.g., journal articles, news reports, online discussions on professional platforms) are woven into the analysis presented below.

In order to gain a broader vantage point on policy implementers' frontline work related to the Environmental Education Act, the first author carried out ethnographic observation with four participants who had agreed to take part in this process. She accompanied these participants to school visits, staff meetings, and professional development or information sessions. She also attended the courses that participants taught in different settings, such as public schools, universities and colleges, and ESD facilities. When in the field, the first author wrote extensive notes, which included key words and phrases about what she had observed, as well as jotting verbatim conversations with participants. Thus, the fieldnotes focused on the activities of these policy implementers and how their work connects to the larger environmental sustainability issues on local and global scales. Over the course of three months, the first author completed approximately 70 hours of ethnographic observation.

All data were analyzed using thematic analysis (Fereday, & Muir-Cochrane, 2006). Emerging themes were developed by studying the interview transcripts repeatedly and

considering how the salient concepts fit with developing themes. This analysis focused on the social context in which policy implementers work. In particular, the interviews helped in gaining a better understanding the nature of the policy implementers' work, the challenges they have confronted while implementing the Environmental Education Act, and the drawbacks of Taiwan's ESD policies. The observation data presented below seeks to highlight the work processes, unspoken norms, and unexpected challenges faced by the implementers of the Environmental Education Act. For the purposes of this chapter, we draw from the compilation of field observation, interviews with participants, online texts shared by the participants and weave them together in the findings discussed below. Specifically, we begin with the first theme illustrating participants' feeling of demotivation and frustration with the Environmental Education Act. We then draw attention to the context in which participants' response to the Act have been shaped. In doing so, we intend to take our readers into the process in which the findings unfolded as we began to understand and untangle the challenges faced by the policy implementers and how they led to their disappointment about the Environmental Education Act.

Key Findings and Analysis

This section presents the findings focusing on the concerns of policy implementers regarding the Environmental Education Act and their critique of the implementation, outcomes and impacts of Taiwan's ESD policies. It then turns to the specific challenges that the participants have faced during this work. As mentioned earlier, the research participants were trained and certified by the EPA to implement the Environmental Education Act and related ESD policies. Given that the participants used the phrase 'certified staff' (認證人員) while describing their role, hereafter we refer these policy implementers as 'certified staff' or 'certified staff members'.

Experience of ESD implementation: "*We are frustrated. . . . I am not motivated anymore*"

In the initial interviews with certified staff, many of them expressed disappointment with the ways that the Environmental Education Act has been implemented. Nearly all of them shared that they were "frustrated", "not motivated anymore", or "feeling helpless" in their role and work as the policy implementers of the Act. As the interviews continued, some certified staff began to identify a number of challenges that had led to their disappointment regarding the implementation of the Act. One issue that emerged specifically in the context of public schools was that certified staff are mandated to carry out a range of responsibilities, including supporting other teachers and school administrators to carry out sustainability related projects, assisting schools in securing funding for these projects, and ensuring that school-based regulations regarding sustainability are followed. Ning-li, who is a school administrator, described her key duties as a certified staff member in her school as follows:

> As a certified staff member, I always try my best to help [teachers and other administrators] applying for funding for their environmental sustainability–related projects; it doesn't matter if it is from the Internet or the official announcements from the government. . . . As for the school-based regulations, such as the ban on using disposable tableware in school, it is my duty to implement and promote them in schools, and ask students to cooperate. . . . I am now the Director of the General Affair office, and the principal expects me to put more effort into promoting environmental sustainability in our school. Therefore, I applied for more funding to initiate some campus construction projects and purchase new technologies, such as compost makers and rainwater collection systems.

In observing the certified staff of public schools, we soon realized that taking on these responsibilities was not as straightforward as Ning-li described above. We found that these certified staff act like policy mediators who assist the government in promoting, operating, and monitoring the Environmental Education Act as well as other school-related environmental

regulations. While several school administrators and teachers volunteered to obtain the ESD certification, some are "designated" to do this work by their school head and thus reluctantly take on the role of the certified staff members. Consequently, some felt that they were "put on the frontline" to "face resistance" by their colleagues and students to the official demands related to ESD. For example, Ying-li, who was a school consultant, observed that many school teachers often responded to their requests by saying, "You are doing these things again; it's only meant to comply with the government's requirements. . . . We don't have time for this". Connected to Ying-li's observation, we noticed that Ning-li was also struggling to gain her colleagues' support in her work. We found that Ning-li often worked on campus sustainability projects by herself (and sometimes with her own children) over the weekend although these projects are not part of the mandate of the Environmental Education Act. When showing the composting machines that she had set up the previous year, Ning-li shared that her students do not tend to cooperate with her on the sustainability projects.

> I told the students that we need to do composting so that we will have fertilizer for the school garden. The students only need to bring the leftovers from the lunch to the machine. However, no one was willing to do it. Isn't it so frustrating?

During the school visits, we also noticed that certified staff of public schools were held accountable for the extent to which their students and colleagues complied with the official demands concerning campus sustainability initiatives from multiple local and federal government agencies (e.g., the Education Bureau, the Department of Environmental Protection, Environmental Protection Agency). For example, school administrators who took on the role as the certified staff of their schools were expected to meet the government's expectations, such as initiating campus garden projects for their schools and achieving the annual targets of the "Four Saving Projects for Government Institutions and Schools" to reduce the use of electricity,

gasoline, water, and paper (Bureau of Energy, Ministry of Economic Affairs, n.d.). The government agencies conduct performance evaluations of school administrators and public schools through various mechanisms for such projects. Feeling pressured by the official demands, a school administrator described his situation as “always being caught between the government, principals, colleagues, students, and parents”. Likewise, the following excerpt from the fieldnotes about a meeting that the first author attended at a public school illustrates the type of confrontation that many certified staff members have to encounter every day in schools.

> The goal of this meeting was for the school administrators to discuss the logistics for the upcoming sports day. The Director of the General Affairs Office, who is the certified staff member of the school, was the responsible person to manage the funding for the event. During the meeting, the Director refused to approve the purchase of bottled water for the upcoming event. Other school administrators tried to convince the Director by describing how inconvenient it would be to ask parents to bring their own containers and to look for drinking fountains in the school during the event. One senior administrator argued that the Director should consider making an exception for the sports day event because the ban on using disposable tableware in public schools may not be applicable on the weekend. In his defense, the Director pointed out the amount of waste generated by the entire school had reduced this semester so far, and so he emphasized that it would be a total waste of effort if the school did not meet the waste reduction requirement only due to this one-day event.

After the meeting, the Director went on to explain how his colleagues had been calling him “the bubble tea police” and would “hide their drinks” from him because everyone knew that he “did not like it when other people used disposable cups”. Similarly, Fu-long, a high school teacher and a certified staff member, also joked about how his colleagues were “looking for his approval” when they wanted to turn on air-conditioners. Thus, in their role as certified staff responsible for promoting environmental sustainability, most teachers and administrators found it “challenging to convince others” to “fight against their convenient lifestyle”. As the interviews continued, we found that the feeling of frustration among school staff was, in fact, widely shared

by most of the participants, including those working in non-formal educational settings (i.e., ESD facilities and consulting firms). For example, Liang-wei, who is a volunteer at an ESD centre, expressed his feelings of disappointment due to lack of cooperation from the course participants offered at his ESD centre by saying:

> We feel less and less motivated. I can interact very well with elementary school students. But when they are in junior high school, I asked them 'Why don't you recycle?' They responded, 'Teacher, you are interfering too much.' . . . When they are in college, no one cares about this issue anymore. [The course participants] at government institutions, they even responded, 'As long as I recycle, I am fulfilling the four-hour course requirements. These are the things that I have observed after so many years [of working on implementing the Environmental Education Act]. When the Act was implemented in 2011, everyone was trying to find certified staff. However, starting from the second year, no one cares about it anymore. Starting from the third year, they responded: 'Environmental education?! We don't have time for that.' This is why we are frustrated. We are not motivated anymore. For me, I am not motivated anymore.

As the observation and interviews with certified staff unfolded, we discovered that central to their feelings of frustration were the day-to-day activities associated with the implementation of the ESD policies (including the Environmental Education Act). As we discussed above, extensive bureaucratic demands on policy implementers has seemed to lead to their demotivation. In addition to this prevalent challenge, several issues were also identified by the participants. For example, we noticed that many policy implementers described the implementation of ESD policies as "only about filling out paperwork". School administrators even perceived it as "an administrative burden" and many were considering giving up on their certifications because they felt "defeated by the amount of paperwork" associated with the certifications as well as the implementation processes of the Environmental Education Act.

Half of the policy implementers also pointed out that they were particularly disappointed at the outcomes of the Environmental Education Act. The policy implementers in non-formal

educational settings, for example, characterized their work as “creating spotlights” and “grabbing the media’s attention”, while the “our environmental condition” (e.g., quality of air and water) was “not improving”. Some policy implementers also shared that they felt “disrespected” and “not appreciated” by the public, as many people viewed sustainable development as “a buzzword”. Nonetheless, most of the participants enrolled in the certification programs voluntarily because they were passionate about ESD and therefore took on the additional responsibility to act as policy implementers in the initial implementation phase of the Environmental Education Act. Many policy implementers still felt that the Environmental Education Act was very important. These internal tensions that emerged from their conversations with us pointed to a significant gap between their vision and actual experience. To further explore the challenges confronted by the policy implementers, we drew on the interview and observation data to analyze the contexts in which their feelings of frustration and disappointment had occurred. In doing so, three themes became clear: the implementation as a bureaucratic exercise, concerns about the outcomes of ESD activities, and the implementation as a public relations activity. The following sections present the ways in which these intimately connected themes have emerged.

ESD implementation as a bureaucratic exercise: “*It is only about paper work. . .* ”

As noted above, excessive demands on certified staff (the policy implementers) were indicated as a major concern by many participants. This section elaborates on this issue further. During one interview, Zheng-li, a school administrator, described different types of reports that school administrators have to submit annually to meet the demands of the Environmental Education Act and associated ESD policies. As Zheng-li recalled, the mandatory dossier on environmental sustainability included: (a) annual proposals for the four-hour required course on

environmental sustainability for teachers and students at their school, (2) annual reports demonstrating the results of the required course, (3) annual assessment reports for electricity reduction, water conservation, waste reduction, recycling management, and unused campus space, and (4) annual reports on additional sustainable campus-development projects, and (5) annual evaluation reports for community engagement in campus sustainability. Zheng-li added that additional progress and evaluation reports were also required if teachers from the same school had applied for funding for their sustainability-related teaching activities. Zheng-li felt that his day-to-day work was primarily oriented toward these reports, which did not leave any time for him to design a comprehensive ESD curriculum for his school.

At the same time, most certified staff were aware of the extreme demands placed on school administrators as many of them shared that they "sympathized" with the administrators who were "designated" by their school head with the task of promoting environmental sustainability in public schools. It almost felt like "throwing them under the bus," because everyone in the system knew how demanding this administrative role was. Zheng-li also observed a high burnout rate among the administrators responsible for this work, despite their enthusiasm for environmental sustainability. As Zheng-li explained:

> Given that the Environmental Education Act is demanding, there has been a high burnout rate among the hygiene sector[14] [in schools] due to all the administrative tasks. It is rare for someone to survive for the second year. It is very rare to have people like me who have stayed on in this role for more than three years. Many of them are novices so they did not know why they shouldn't take on this administrative role.

[14] While some certified staff were school teachers, many of them are the Section Chiefs of Hygiene of their schools. My participants suspected that most school principals designated Section Chiefs of Hygiene for this work because people tend to confuse *environmental hygiene* with *environmental education*.

Nonetheless, Zheng-li was not alone in describing the implementation of the ESD policies as "only about filling out paper work". Several certified staff who work in other settings also echoed this concern during the interviews. For example, Yun-ru, the Director of a national museum, talked about the excessive demands made by various government agencies and the certification committee members regarding the ESD courses which has led Yun-ru to consider withdrawing their facility certification granted by the EPA. According to Yun-ru,

> A unit like ours, we are also considering withdrawing from the certification program. Because we don't need to be certified as an ESD centre to do the same things that we have been doing . . . after we spent so much time and effort [in applying for the certification], [the certification committee] should encourage us and guide us. Instead, they criticized us with a very strict attitude. My team has been very tired. . . . This process is very painful. . . . [It seems like] we are doing something wrong every day. That is not right, this thing is not written, that thing is not written, or this is not included [in the paperwork]. So, we are very afraid, you know? . . . Of course, they [the certification committee] are the experts. We don't dare to say that in front of them. What if they take away our funding? Therefore, whatever they said at that time, we just nodded. But we were just helplessly nodding. One day, if we can't take it anymore, we will let it go. I would rather let this certification go, and we can still do it as part of our education [existing outreach] activities.

After these conversations, we began to wonder whether or not there was any mechanism in place to support the certified staff in these educational settings. We later learned that a number of private consulting firms, mostly operated by certified staff, were offering services to ESD facilities like Yun-ru's to deal with the bureaucratic demands of the government agencies. Regarding public schools, there is an official Compulsory Education Advisory Group in every city to develop lesson plans on ESD, organize professional development sessions, and provide onsite support and consultation for school administrators and teachers. These Advisory Groups are overseen and funded by the local Education Bureaus, and members of the Groups are exemplar teachers, school administrators, or principles who were selected by the Education

Bureaus. Most of the members in these Advisory Groups are also certified staff. In the conversation with a school consultant of the Advisory Group, Ying-li pointed out that, indeed, schools were required to organize many sustainability projects and events in addition to their existing curriculum, and thus adding to existing administrative burdens. In Ying-li's words:

> . . . the main reason why public schools have implemented official demands half-heartedly was that every topic is *thrown* into public schools. Today, the government says climate education is important; we have to take time to teach it. Then life education[15] is very important, so we also have to take time to teach life education. It became very fragmentary. . . . And then energy education is also important; solar energy is also important. Therefore, public-school teachers and administrators have to deal with all these demands.

However, Ying-li admitted that there was not much the Advisory Groups could do to help the administrators with the paperwork. In particular, Ying-li found that supporting school administrators "was a difficult task" because the ESD curriculum was supposed to be "different from school to school" depending on their local contexts. As Ying-li explained,

> The school administrators are miserable. However, [I don't know] how to help them. How can I make the coordination [of paperwork and teaching activities] effective and easy for administrators? We sometimes want to help, but it's challenging. For this, we also feel very frustrated. . . . The Advisory Group can't really do much. We can just stand next to each other and feel sorry to see what has happened. . . . I want to visit every school and support them, but only in our view we think we are supporting them.

Ying-li's description of her dilemma corresponded with the observation of the professional development sessions organized by other Compulsory Education Advisory Groups and the Education Bureau. Sessions designed for school administrators tended to focus on tips and techniques for filling out reports and "completing multiple reports from a single event".

[15] In Taiwan, Life Education focuses on developing K–12 students' ability to think about the meaning of human development and the definition of quality of life from the perspective of balancing human development and environmental impact.

While talking about this issue, Zheng-li (a school administrator) also shared that he sometimes had to "combine everything in one PowerPoint file" and present it to the teachers as a way to complete the required four-hour environmental course for the teachers and administrators at his school. This presentation included information about topics that needed to be covered (e.g., sustainability education as required by the Environmental Education Act, life education, energy education, ocean sustainability education) as well as various events that were demanded by different government agencies (e.g., Earth Day, Water Saving Day, International Day for Biological Diversity). Since school administrators also have to write reports on students' and teachers' participation in these activities, some administrators have developed ways to deal with the issue of excessive reporting requirements. One way is to reduce the number of sustainability activities in schools. For instance, instead of offering an additional four-hour course on environmental education or organizing events, teachers tend to "integrate them into their classroom teaching". This strategy seems to have become a common way of dealing with the amount of paperwork in the public-school system as the administrators do not have to write separate detailed reports on each of these courses and events. If teachers cover these topics and events in their existing classroom activities, the administrators can report that all requirements (including the four-hour environmental education course and the demand associated with other ESD policies) have been met in their school. This reduces the amount of paperwork, as the administrators can briefly report to the government that they passed on the essential information to the teachers who in turn covered the required topics in their regular teaching. As one certified staff described ironically, "It's always about paper work. . . . 'Oh! Look at our amazing four-hour course because we invited a guest speaker.' Post the pictures, submit the report, and the work is done."

Concerns about the outcomes of ESD activities: "*its impact . . . to be honest with you, it's limited. It is very limited*"

The interviews and field observation revealed how ESD implementation in Taiwan is burdened by the heavy bureaucracy that surrounds it. Also significant were the concerns raised by certified staff about the relevance and outcomes of the ESD projects and activities proposed by the government. These issues led to unspoken tensions in relation to the projects. In fact, some school principals have begun to push back against the official demands for school-based sustainability projects. The following description of a meeting, based on the first author's fieldnotes, illustrates this tension.

> In early 2018, I attended a meeting organized by the Education Bureau to gather advice from school principals regarding how to better promote and implement the new Green Roof 2.0 project. This project was an extension of the Campus Green Energy Sustainable Environment Construction Project. The goal was to create low-carbon schools by reducing electricity consumption that was mainly caused by the urban heat island. An urban heat island is the phenomenon occurs in an urban area or metropolitan area in which the temperature is significantly warmer than its surrounding rural areas due to human activities. Inspired by the green building techniques to construct sustainable structures, the Education Bureau encouraged K–12 schools to create campus gardens and set up solar panel systems on the rooftops of all school buildings. According to the official announcement, this initiative would not only reduce schools' carbon footprints, but would also help create new spaces on campuses for learning and mental decompression. The professors who were invited by the Education Bureau also recommended that school principals consider the educational value of this new Green Roof 2.0 project.
>
> However, one principal raised her concerns that the amount of electricity generated from solar panels was not enough compared to the total energy consumption of the school. She asked if the officers of the Education Bureau had thought about the issues regarding cost and power generation efficiency, especially for schools located in a high-density city with a large number of high-rise buildings which limited exposure to the sun. Another school principal questioned how the new Green Roof 2.0 project could resolve the water leakage problems, which was the main reason for the failure of the Green Roof 1.0 project. He questioned if the Education Bureau had a long-term plan for these initiatives by saying, "Schools have spent a lot of money on green construction as suggested by the Education

> Bureau. The investment is good, but what is the actual educational purpose of spending so much money? Aren't there more effective ways to teach these topics?" In response, the Education Bureau officer said that she would bring the comments back to her colleagues, and the meeting ended there.

During the de-briefing session after this meeting, one participant explained that everyone in the system was aware of this "band-aid solution" in the name of "educational purpose". Nonetheless, public schools were "compelled" to meet the administrative expectation because campus sustainability was an important component of school evaluation. As a school administrator explained about the school evaluation process:

> When the evaluators visit, it's like: 'Oh, based on the evaluation form, you have a certified staff, five points.' And 'Okay, five more points for the garden and this and that'. . . . As for its impact (*smiling*), to be honest with you, it's limited. It is very limited.

Many certified staff argued that the long-term solution was not to reduce students' and government officials' electricity consumption or to install solar panels in schools and government buildings. Indeed, according to some academic reports (Energy Sector, Risk Society and Policy Research Centre, 2018; Lin, 2017), although the public sector has been the major contributor to electricity reduction in the past few years, the energy consumption growth rate of the industrial sector has been much higher than that of other sectors. In other words, despite all the earnest effort toward energy reduction in the public sector, Taiwan's gross electricity generation and consumption continues to increase every year, with a growth rate of 2.1 percent in 2016 and 2.3 percent in 2017 (Lin, 2017). These statistics discouraged many certified staff about the impact of such school-based projects, as Taiwan's energy transformation plans aim to reduce the annual energy growth rate by 0.7 percent by 2025 (Bureau of Energy, Ministry of Economic Affairs, n.d.).

As we immersed ourselves in these stories, we came to understand more about why most policy implementers (certified staff) felt frustrated by the outcomes of Taiwan's ESD policies. Many of them were actually aware that some school regulations and ESD activities prescribed by the government, such as the Green Roof 2.0 project, were not actual solutions to Taiwan's environmental challenges. While the students and government officials have made efforts to reduce electricity consumption, the industrial sector continues to increase its energy use (Chou, 2017; Energy Sector, Risk Society and Policy Research Centre, 2018; Energy Information Administration, 2016). While the Ministry of Education and municipal governments have actively supported schools to set up "campus solar farms" to promote renewable energy, fossil energy has continued to generate more than 90 percent of the country's gross electricity in the past decade (Chou, 2017; Bureau of Energy, Ministry of Economic Affairs, n.d.). The contradiction between actions and outcomes have led to much resistance and skepticism within the work environments where policy implementers promote ESD. As a result, after a few years of attempts, implementing ESD projects has turned into a futile bureaucratic exercise, as people began to perceive that the proposed activities as ineffective in contributing to resolving the country's environmental problems. Being obligated to promote ESD, public schools participated in setting up solar panel systems "only for the sake of doing it". Feeling defeated, many policy implementers turned to "thinking that the realistic goal was to just finish these administrative reports".

ESD implementation as public relations: "*The government needs to show performance so it wants you to shine a spotlight on outcomes. . . .*"

As we interacted with the participants working at certified ESD facilities, we began to notice another layer of challenges that some certified staff experienced. In addition to feeling

bombarded by “the official requests” and “administrative demands”, many of them believed that “environmental sustainability has become just a buzzword” for the government and private organizations to establish public relations. In their view, “we celebrate the increasing numbers of people who attended the activities” and assume that “the job was done at the awareness level”. However, some participants indicated that there was “a lack of critical reflection on the causes of environmental issues” and on potentially effective solutions to those problems, such as unsustainable production and consumption patterns resulting in waste management and ocean pollution. The following exchange with De-wen, a certified staff member of a private consulting firm, is parallel with this observation:

De-wen:	[I’ve already] felt that there is not much change regarding the environment issues. Moreover, the Environmental Education Act has made certified staff feel more frustrated. I just think how can it be so bad even when we’ve already institutionalized environmental and sustainability education?
Researcher:	So, where does the feeling of frustration come from?
De-wen:	It’s because of . . . many reasons. I just feel that . . . (*thinking*)
Researcher:	Administrative tasks?
De-wen:	In addition to the administrative pressure, another reason is that they don’t care about the quality [of environmental education]. [They] only evaluate the outcomes quantitatively. As a result, I just cannot be happy with the outcomes [of the Act]. Another reason is that I feel that we are just thoughtlessly doing activities, such as the beach clean-up [event]. No one actually thinks about what exactly we are doing and what the effect of it is. Moreover, another reason for feeling frustrated is that the Environmental Education Act targets the wrong people. I just feel that there is actually no need to bully schools and civil servants. And [this issue is related to] the administrative demands which I’ve already told you this morning.

The frustration of the certified staff was evident in observing the certified staff in non-formal educational settings (e.g., museums, national parks, consulting firms, etc.). We found that their work mainly centered on building “a sustainability reputation” for their institutions and

maintaining a favourable relationship with various publics. These publics could be visitors to their ESD facilities, course participants (e.g., government officials, parents, teachers, students), local community members, or those working in government agencies (e.g., the Environmental Protection Administration, the Department of Environmental Protection, the Forestry Bureau, the Council of Indigenous Peoples). Many certified staff also reported that their facilities were "asked" by their municipal governments to participate in the ESD certification programs because no mayor "wanted to look bad" when the performance report was released to the public at the end of each year.

In observing the work of De-wen and his team at their consulting firm during the field work, we found that they were particularly keen on aligning their activities with the interests of various government agencies and the desired outcomes that the government expected. Given that the company's revenue relied on government contracts, De-wen devoted much effort into building relations with various groups, such as government officials and directors of ESD facilities who would potentially outsource their ESD projects to his consulting firm. He was engaged in bidding for government contracts for ESD; assisting other facilities in obtaining the ESD certification; and supporting the certified ESD facilities in management, course development, and program evaluation. For example, De-wen and his team supported the certified staff of an outdoor ESD facility in filling out administrative reports and forms related to key performance indicators. In this process, we noticed a strong emphasis on publicity for that ESD facility in their conversations. Based on their government contract, certified staff were expected to attract media attention by publishing online articles, producing promotional videos, and sharing event photos on social media to promote ESD. A few hours of discussion were devoted to brainstorming ways to increase the number of visitors and course participants' satisfaction

with their ESD program, especially through family activities and summer camps. It seemed that most decisions were made to attract more visitors, to receive high reviews for their ESD activities, and to make the best sales pitch for securing further government funding for the facility as well as the consulting firm.

During the interviews, De-wen was critical about the "managerial mindset" that prevailed throughout the implementation of the Environmental Education Act. He felt that the actual purpose of education was somehow lost due to a heavy emphasis on shining a spotlight on "positive results" expected by the government, such as "how many people attended the four-hour course", "how satisfied the course participants were", and "how many news articles were [written] about your facility last year". De-wen attributed this phenomenon to a narrow evaluation matrix for ESD. In his view, the ultimate purpose of ESD was to find ways to address serious environmental problems, such as improving the quality of air, water, and land which in turn would enhance people's "living conditions" and their "happiness". De-wen's critique of the Act was echoed by many other certified staff members. Another certified staff working at a consulting firm also shared that the government officers "only want us to cast spotlight on [quantitative] outcomes", which is "not necessary for [achieving] educational purposes".

On the other hand, engaging in environmental and sustainability education has also become a strategy for the private sector to establish public relations and promote a positive image of their organization. Interestingly, a growing number of corporate-led centres have been set up as ESD facilities. The EPA has also certified these facilities and promoted them as a government-approved space for the four-hour required environmental and sustainability course. These include wastewater treatment plants, water resource education centres, and ecological parks that are established and managed by various corporate and manufacturing organizations

(EPA, 2017). Curious about the ways in which some private sector organizations have "used the Environmental Education Act as a means to build their green corporate image", the first author participated in some four-hour courses offered at those certified ESD facilities. In observing these courses, she soon realized that the public relations strategy was in fact a mutual effort between the public and private sectors to create positive attitudes in the public about their respective organizations. The following fieldnote described the observation:

> I was invited to attend a full-day professional development trip along with one school consultant who is a certified staff member. The trip was funded by a local Education Bureau in a city and organized for the members of the City Compulsory Education Advisory Group as part of their required continuing professional development as certified staff. Most of the members of this group were school principals as well as school consultants who are certified staff members. We visited a certified facility during this professional development trip. This facility was set up by a petrochemical company. When we arrived at the site, we got out of the bus and immediately gathered for a group photo at the gate. Ms. Chen, the certified staff member of the facility, came to welcome us. We then followed Ms. Chen to an audiovisual room in the main building. The room was very comfortable: air-conditioned, dim lights, and sofa chairs. We then watched a video presenting the history of Taiwan's oil mining industry. Through the video, I learned about the government's recent efforts in upgrading Taiwan's oil mining and petrochemical industry. I also noted that the petrochemical industry has been the most important pillar of Taiwan's economy since the 1960s. It also exhibited the company's commitment to taking up responsibility for Taiwan's environmental and sustainability education. I remember feeling so impressed by the company's dedication to promoting environmental sustainability. Afterwards, Ms. Chen took us to see a model of the drilling technology in the same building. We also walked to the monument of the first mining site outdoors. We took a group photo beside the monument and another group photo with the signboard of the facility before leaving the site. I noticed that all the photos were taken with a long red cloth banner held by the course participants at the front. The banner had the name of the City Compulsory Education Advisory Group. 'What for?', I jotted down in my journal.

The question regarding the purpose of the group photos was answered when the first author observed the reporting process for this event. The team needed group photos to be attached to the evaluation forms for their ESD facilities. Later, other certified staff explained that

events photos were essential for the reports, because they acted as a rhetorical tool by the government. This explanation supported a school principal's comment that they sometimes "did things for presenting a positive image of the public-school system". One school consultant also shared that the campus solar energy project was promoted at K–12 schools because the mayor thought that "solar panels and green roofs are features of the city". The consultant continued to share that public schools were now expected by the municipal government to set up campus garden because the city mayor was recently elected; nonetheless, "it is difficult to challenge the authority". In a similar vein, certified staff working at private consulting firms mentioned that photos capturing students "having fun" or engaging in "some farming chores" can "act as the spotlight" to attract the media attention. While explaining and reflecting on the reporting process, Li-mei, an officer of a consulting firm, echoed others' views on the purpose of ESD:

> The government needs performance. So it [the government] wants us to shine spotlights [on such activities]. . . . I don't blame the government . . . but we all forget one thing. That is, the goal of environmental and sustainability education should not be these [superficial results]. The goal should be improving the environment, but no one talks about this. Yes, I am not able to change anything. I know (*laughing*).

This visit stimulated our interest in understanding the role of the industry vis-à-vis Taiwan's ESD policies. Aside from participating in sustainability education activities, how, if at all, are these ESD activities reducing their environmental impacts? We thus began to review the relevant documents and statistics to inform our thinking which we will share in the final section of this article.

Taken together, the findings suggest that a multitude of reasons have led the policy implementers (certified staff) to feel disappointed with the impact of the Environmental Education Act. Many policy implementers believed that the Act has led to limited or "no improvement in Taiwan's ESD practices". They also felt that there is an overemphasis on

paperwork, but "a lack of reflection" on many ESD activities, such as beach cleansing and recycling. Some also argued that we have "forgotten to pay attention to" resolving the fundamental causes of the environmental problems, as Taiwanese society has been distracted by the "publicity activities", "the public praise", and the "funding and awards" from the government. We tried to "paper over the cracks" by "investing resources into education", but we have overlooked the actual purpose of sustainability education and its contribution to sustainable development. This lack of contemplation about the purpose of ESD has demotivated many policy implementers leading some to re-evaluate their role and involvement in the implementation of the Act and other ESD projects. Despite their reluctance, some policy implementers felt obligated to cooperate with the government's efforts. At the same time, some felt optimistic about ESD as they believe that these efforts will eventually have a positive effect. Therefore, they believe in continuing their persistent efforts despite feeling discouraged by the issues that are discussed above.

Epilogue: Is Education the Actual Solution?

> Everyone learns to be politically correct. . . . Yes, people can go protest. However, how can we really influence policies by protesting? . . . [Protesting] is ineffective because we just cannot develop enough green energy in Taiwan. [We are just] not able to fill the energy gap. [The choice of] replacing nuclear power with fossil energy was also weird. But, what can the citizens do? Not much, really. . . . Therefore, we learn to be politically correct and declare that we want to protect the environment. However, are we willing to sacrifice something to make it happen? Thinking from this perspective, environmental and sustainability education has failed. . . . If it were successful, we don't even need to begin with blaming the government for the environmental problems that have already affected our daily life. (De-wen, a certified staff member at a consulting firm)

In reviewing the relevant scientific reports that participants had pointed us to, we soon realized that many of the challenges encountered by the policy implementers were bound to

arise. Take the issue of energy conservation as an example. At the time of this study, more than 90 percent of Taiwan's gross electricity generation was fueled by fossil energy (Lin, 2017; Bureau of Energy, Ministry of Economic Affairs, n.d.). At the same time, developing "green energy in Taiwan" is a key challenge as pointed out by De-wen in the above quote. A major obstacle to the development of renewable energy is the country's geological situation as an island (Chou, 2017). Similar to Japan, Taiwan is densely populated (653.4 people per kilometers) with a land area of less than 36,000 square kilometers. Limited land area has posed tremendous challenges for Taiwan in developing its renewable energy structure, as both solar- and wind-power technologies require a large land area to collect the energy at rates that are sufficient for such a dense population. Despite the government's attempts toward the "uptake of renewable energy sources" (UNESCO, 2016, p. 8) in the public and private sectors, the natural limitations have led to little improvement in Taiwan's sustainable energy program (Lin, 2017). Even with a large amount of government subsidies for renewable energy sources, the amount of renewable energy has increased by less than 1 percent in the past two decades. This trend has not changed over the past decade, with renewable sources accounting for 1.41 percent of the energy supply in 1999, 1.7 percent in 2008, and 1.8 percent in 2017.

Moreover, Taiwan's economy relies heavily on energy-intensive industries such as petrochemicals, steel, and electronics manufacturing. These industries consume nearly 60 percent of the country's gross electricity generated each year (Bureau of Energy, Ministry of Economic Affairs, n.d.). The total amount of the energy consumed by Taiwan's industrial sector ranks fourth highest in the world, following Trinidad, Gabon, and Singapore (Chou, 2017). Although the Ministry of Education and the Environmental Protection Agency have encouraged students and government officials to reduce their electricity consumption through various ESD

policies, the total energy use of the country has continued to grow (Energy Sector, Risk Society and Policy Research Centre, 2018; Lin, 2017). As a result, "promoting better energy conservation and uptake of renewable energy sources," as suggested by UNESCO (2016), seems to be far from enough to achieve "reliable, sustainable, and clean energy for all" in Taiwan (p. 6; p. 10). Thus, proposing educational activities (e.g., installing solar panels in school and government buildings) as potential solutions to energy problems may not help in addressing Taiwan's energy issue. In light of these challenges, the extent to which education can contribute to solving environmental challenges, becomes of paramount importance.

If UNESCO and its ESD agenda are serious in their belief that education is "humanity's best hope and most effective means in the quest to achieve sustainable development" (p. 8), then programs like Taiwan's need to be radically rethought. As our study showed, despite active government investment and support, ESD activities have failed to prompt meaningful actions that address the underlying drivers of Taiwan's unsustainable development. Instead, the efforts have resulted in symbolic actions and 'green washing' (Rasmus & Montiel, 2005). Take, for example, the petrochemical industry, the country's primary contributor of greenhouse gas emissions. This industry has been the most important pillar of Taiwan's economy since the 1960s, supplying raw materials for products in the United States, China, and Europe (Chang, 2016; Energy Sector, Risk Society and Policy Research Centre, 2017). In order to reduce the environmental impact of the country's petrochemical industrial sector, the government of Taiwan has focused on upgrading the petrochemical technologies—through, for example, carbon capture and storage technologies, and energy recycling or recovery processes (Bureau of Industry, n.d.). Although Taiwan's Ministry of Economic Affairs has encouraged enterprises to set up research and development centers to shift the petrochemical industry towards high-value output

production strategy, the outcome has been limited in terms of reducing the sector's emissions levels (Chan, Chang, & Wang, 2016). In recent years, the rate of emissions reduction has slowed due to limitations in the existing technologies (Chan, Chang, & Wang, 2016). As a result, Taiwan continues to be a leading contributor of global carbon emissions by some measures, with per capita carbon dioxide emissions almost three times higher than the world average (Burck, Marten, Bals, & Höhne, 2017; Burck et al., 2018). Without any major changes in the global markets and production patterns, it is unlikely that Taiwan's petrochemical industry will significantly reduce its overall carbon footprint in the short term (Chan, Chang, & Wang, 2016). Seeing through this illusion of change, Taiwanese policy implementers have increasingly disengaged from national sustainability efforts. Consequently, a range of disingenuous participation began to occur across various sectors: the government sought to raise its international standing rather than reduce emissions; schools strive to avoid reprimand and maintain good standing with government; and the private sector were engaging in greenwashing without a serious intent to contribute to sustainability.

Some may argue that educational change is a slow process. However, UNESCO has been promoting ESD since 1992 (UNESCO, 2017; 2018). Two decades ago, UNESCO (1996) stated that "education will shape the world of tomorrow—it is the most effective means that society possesses for confronting the challenges of the future" (op.cit. p. 38). Takemoto (2012), the Chair of the UN Interagency Committee for the Decade on ESD, also claimed that "education is the answer", as it can "change people's values and behaviours" to "adopt more sustainable lifestyles" (para. 2). However, reflecting on the findings of this paper, we argue that it is, in fact, not only commitment or will that hampers progress towards sustainability. Instead it is also our collective lack of vision, acceptance, and understanding of the necessary actions that paralyzes

us from thinking, acting and engaging in the transformations required for developing sustainable societies. While we know that deep emissions reductions are technically feasible (The Deep Decarbonization Pathways Project, 2015), our society as a whole has not yet managed to come to an agreement on plausible pathways to move forward. Thus, more research and action are much needed to explore ways to move ESD beyond a "business as usual" agenda (Huckle and Wals, 2015), towards a more deeply transformative effort of creating sustainable societies. More studies are also needed to explore ways to make the vision for sustainability a reality.

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Chapter 6: Conclusion

The preceding chapters presented the three manuscripts of this dissertation. In this concluding chapter, I begin with an overview of the study. I then discuss and highlight key findings of this study. I also discuss some directions of future research stemming from the study findings. I then conclude this dissertation with final remarks to critically explore the role of education in promoting global sustainability.

Synopsis and General Discussion

As I mentioned in Chapter 1, the overall goal of this study was to explore the potential impact of Education for Sustainable Development (ESD) in terms of bringing about the desirable changes in society. To this end, I examined the ways in which the Taiwan government has taken up, adapted, and approached the global discourse of ESD by studying the development and implementation of Taiwan's Environmental Education Act—a nationwide environmental and sustainability education policy that emerged during UN Decade of ESD. I specifically sought to understand: (a) which governance structures and mechanisms have the Taiwan government established to implement the Environmental Education Act?; (b) in what ways and to what extent a nationwide education policy can (or cannot) contribute to the desired outcomes of the Act?; and (c) what lessons can be learned from the Taiwanese experience of developing and implementing the UNESCO's ESD framework?

In searching answers to the research questions, I used policy ethnography as a methodological framework to *follow* Taiwan's Environmental Education Act (Ball, 2016; Junemann, Ball, & Santori, 2015; Marcus, 1995;). In particular, I followed how the Taiwan government developed and legitimized the Act by reviewing the official texts related to the country's ESD initiatives. I also followed the ways in which the Act was implemented, adapted,

or resisted by different policy actors in various formal, non-formal, and in-formal educational settings. In doing so, I interviewed 30 policy implementers to gain an understanding of their on-the-ground knowledge and experience. I also observed the ways in which they implemented the Environmental Education Act in various contexts, such as public schools, private sector organizations, and environmental education facilities. All data were analyzed using a hybrid process of inductive and deductive thematic analysis. As I explained in Chapter 2, this approach allows themes to emerge inductively from the meaning-making of the participants while also using theory-driven coding to interpret data. Taking on a critical realist stance, I analyzed the data with an attempt to discover the most likely explanations of the observed phenomena. Specifically, using abductive reasoning, I began with a set of observations, reasoned backwards from the observation to the underlying reality that might have contributed to them, and sought the most likely explanation of the observed phenomena (Saunders, Lewis, & Thornhill, 2009, p. 139). My hope is that the findings of this study would contribute to the broader discussion of ESD implementation in various contexts. At the same time, I am aware that that my knowledge of the world is shaped by my social conditioning; therefore, I was conscious of the ways in which my socio-cultural background and experiences may have influenced this research and the explanations of my observation. In order to address my biases and assumptions during this research, I used a number of qualitative research tools to ensure trustworthiness of this study, including prolonged engagement, persistent observation, member-checking, triangulation, and audit trail (Guba & Lincoln, 1994; Lincoln & Guba, 1990). Drawing on the findings and analysis presented in Chapters 3, 4 and 5, in the subsequent sections I summarize the key takeaways of this dissertation research and highlight their significance in understanding the role of education in the path towards sustainable societies. The first two key takeaways drew on findings that are

particular to the case of Taiwan, whereas aspects of the third and the fourth key takeaways are more relevant to other contexts where ESD is also being considered as a national priority for sustainable development pathways.

Firstly, the government of Taiwan seems to have a strong political interest in ensuring the proper implementation of the Environmental Education Act in the Taiwanese society. This finding can be understood within the country's historical and political context in which Taiwan's political and legal status as a country has been an ongoing debate at the international diplomatic level (also known as the Taiwan Issue or Taiwan Strait Issue, see Bush, 2005; G.T. Wang 2006). While the citizens of Taiwan have recognized Taiwan (Republic of China) as an independent country with democratic elections and no formal sworn allegiance to the Chinese political leaders (Dittmer, 2004; T.Y. Wang, & Liu, 2004), the Chinese government (People's Republic of China) continues to regard Taiwan as a rebel region that must be reunited with the mainland—by force if necessary (published speech, Hong Lei[16], the Chinese Foreign Ministry, 2016). Especially following Taiwan's democratization in the 1990s, Taiwanese citizens and government have striven for formal and non-formal diplomatic ties with countries around the world. Against this backdrop, the Taiwan government has been actively establishing environmental diplomacy since early 2000s through engaging in UN- and UNESCO-led initiatives (Hsu, 2017).

Aligned with this diplomatic agenda, the analysis of the parliamentary meetings presented in Chapter 4 showed that, when negotiating the content of the Environmental Education Act in 2011, the lawmakers in Taiwan had upheld UN's vision for a sustainable future as "a true path" for Taiwan to become a "developed", independent state (Legislative Yuan, 2010a, p. 174). Similarly, the analysis of official policy texts discussed in Chapter 4 illustrated

[16] Foreign Ministry Spokesperson Hong Lei commented on the 2016 presidential election in Taiwan and his outlook for Taiwan-related diplomacy.

that the UN's call for global collaboration on sustainable development has created a policy window of opportunity for the Taiwan government to work toward its desire for international recognition as an independent state. Since the 2010s, the Taiwan government has strived for carving out a niche for Taiwan as a leading nation and global partner of the UN to achieve the Sustainable Development Goals (SDGs). With an underlying motivation to highlight the difference between the Taiwanese and Chinese societies, the Taiwan government has been actively mainstreaming a sustainability agenda into various national policies, such as emphasizing gender equality (SDG 5), reducing income inequality (SDG 10), and promoting human rights (SDG 16) (Executive Yuan, 2017). This political rationale, as presented in Chapters 3 and 4, is evident in several official texts produced by multiple governmental institutions, such as the Ministry of Foreign Affairs, Ministry of Education, and Environmental Protection Administration in Taiwan. These documents share similarities in terms of presenting the positive outcomes of Taiwan's initiatives on sustainable development. Drawing on these evidences, I thus conclude that the Taiwan government has a particularly strong political interest in ensuring the success of Taiwan's national plan for sustainable development. This conclusion serves as an important basis for the following key takeaways, as it allows me to establish that the Taiwan government has demonstrated the political commitment to institutionalizing UNESCO's ESD framework and ensuring its implementation on a systemic level. Importantly, this takeaway highlights that national motivations for promoting ESD are inseparable from their wider geopolitical interests. Therefore, it is vital for future environmental and sustainability education studies to critically examine governments' political rationalities for ESD agenda.

The second important lesson from this study is that Taiwan's Environmental Education Act appears to have realized UNESCO's strategy of introducing and promoting ESD through multiple formal, non-formal, and informal educational programs (United Nations Sustainable Development, 1992; UNESCO, 2015; 2016; 2018). As the policy analysis presented in Chapters 3 and 4 showed, the Taiwan government has placed education at the heart of sustainable development and has been promoting it as a key means to encouraging lifestyles that are harmonious with nature. The Environmental Education Act not only focuses on formal curricular, but also stresses the necessity for building the capacity of individuals and communities by mandating all government officials, school administrators and teachers, K–12 students, and employees of government-funded community organizations to take courses in sustainable development every year. Therefore, Taiwan's Environmental Education Act has much potential, as almost one-sixth of the population in Taiwan (approximately 3,770,000 people) is required to take an annual course on environmental and sustainability education (Environmental Protection Administration [EAP], 2016; Wu & Chang, 2018). More importantly, following UNESCO's proposal, the Taiwan government has established various regulatory and operational frameworks to support ESD implementation. As I discussed in Chapters 3 and 4, the changes in governance structures associated with Taiwan's ESD policies include:

- an official committee (the National Council for Sustainable Development) which involves public, private, and nonprofit organizations to oversee national sustainability and ESD policies,
- a sustainable funding system (the National Environmental Education Fund) for supporting ESD activities at all formal, non-formal, and informal settings,

- a regulatory system (the Environmental Education Act) to ensure that all civil servants, employees of government-funded organizations, and K–12 teachers are engaged in professional development or lifelong learning for sustainable development,
- a national certification program (the Environmental Education Act) for ESD facilities and personnel to ensure the quality of environment and sustainability education for K–12 students and the public, and
- regional environmental education centres led by universities to strengthen local collaboration on ESD and develop adequate tools and locally-relevant materials for ESD (Chao, Kim, & Kim, 2018).

This comprehensive framework for promoting ESD nationally has mainstreamed the theme of sustainable development into all forms of formal, non-formal, and informal education and learning in Taiwan. Based on these evidences, I thus inferred that the Taiwanese approach to ESD echoes UNESCO's ESD program in which education is used in a broad sense to the public, private, and community sectors to promote people's understanding of our pressing environmental and sustainability challenges and foster pro-environmental values and behaviours (United Nations Sustainable Development, 1992; Wals & Benavot, 2017). These structural changes demonstrate the government's commitment to developing environmental citizenship and consciousness for sustainable development in Taiwanese citizens (EPA, 2014; National Council for Sustainable Development, 2004).

Th abovementioned key findings have important implications for future SDG studies, as Taiwan presents a unique context for piloting and comparing various living lab approaches to community sustainability. They also further strengthened my rationale for studying the potential outcomes of UNESCO-inspired ESD policies using Taiwan as a well-suited case, especially

when UNESCO has emphasized political commitment and structural reform as priority areas for ESD implementation in the *Global Action Program* (2016). Based on this ground, I proceeded to examine the extent to which Taiwan's ESD policies can (or have the potential to) actualize the desired outcomes of UNESCO's ESD goals. To explore this question, I focused on the policymaking process of the Environmental Education Act by studying the governing mechanisms and technologies that the Taiwan government and policy implementers have been using to ensure effective implementation of the Act (see Chapter 4). I also observed the day-to-day activities of the policy implementers to explore and inspect the outcomes of this Act (see Chapter 5). Drawing on the analysis presented in Chapters 4 and 5, I now turn to the third and fourth key takeaways of this dissertation.

Chinese Legalism (a political philosophy of governance in ancient China) provided a useful framework to explore the historical and political traditions that seem to have shaped Taiwan's ESD policies. This finding is an important theoretical contribution, as it demonstrates contemporary relevance of Chinese Legalism in East Asian societies, and thus has political and legal implications for future ESD governance and sustainability policy-making at international, regional, and national scales. As I discussed in Chapter 4, the Legalist lens of positional power (*shi*) explains why and how the governance, monitoring, and evaluation mechanisms are centrally managed by a single government institution, the Environmental Protection Administration. An analysis of the policymaking process of the Environmental Education Act also revealed that the Taiwanese lawmakers seemed to believe that an unvarying application of the law would help to establish a standard of *good* behaviours, such as learning about and practicing environmentally friendly behaviours. The content of the Act also places much emphasis on the standardized approach to ESD, which reflects the Legalist notion of law (*fa*) as

standards, rules, or correct methods. Moreover, the Legalist techniques (*shu*) for recruiting the worthies (尚賢) lends possible explanations to why the Taiwan government considered a national certification program for ESD facilities and personnel as an essential mechanism to ensure the proper implementation of the Act. On a similar note, Chinese Legalism provides a historical and political ground to elucidate the strong emphasis on publicizing rewards and penalties in Taiwan's Environmental Education Act. The Taiwanese lawmakers also stressed the importance of publicizing rewards and penalties to ensure effective implementation of the Act. For example, penalties, such as fines, are imposed on public schools or government institutions that do not comply with the annual four-hour environmental course requirement. Interestingly, King (2018) analyzed the "hidden pedagogy" in American schools using the Legalist framework. Drawing on traditional Legalist texts regarding rewards and punishment, King (2018) argued that the state approved—or "ruler-approved" as King described—attitudes, values, and behaviours were implicitly operated and reinforced to students through modern formal schooling.

In addition, Legalist techniques of monitoring and evaluating the government officials also reflect the ways in which ESD policies have been enacted in Taiwan; that is, every action and performance of government officials and policy implementers are monitored and measured by bureaucratic procedures. These evidences support the interview data presented in Chapters 3 and 5 in which policy implementers felt that the implementation of the Environmental Education Act was top-down and centrally-engineered by the Taiwan government. They also thought that Taiwan's ESD implementation was ineffective due to extensive bureaucratic control and a lack of bottom-up participation. These findings are also in parallel with Göhler's (2010) description of a hard governance approach to ESD in which the strategies for change are engineered by the government and enforced through an elaborate structure of decrees, regulations, penalties, and

incentives (Bormann & Nikel, 2017). Thus, this key finding is important, as it contributes to the scholarly discussion of different political traditions, governing structures, and policy tools for ESD implementation in various political contexts (Bieler, Haluza-Delay, Dale, & Mckenzie, 2017; Bormann & Nikel, 2017; LæssøE & MoChizuki, 2015; Leal Filho, 2010; Sung, 2015; Trajber & Mochizuki, 2015). Furthermore, it adds to the discussion on diverse ESD policy models and their implementation in similar East Asian contexts.

Last but not least, the fourth key takeaway is that education alone is not enough to bring about necessary changes for creating a sustainable future. This finding emerged from the interview and observation data that I discussed in Chapters 3 and 5. In particular, as I presented in Chapter 3, the policy implementers believed that Taiwan's Environmental Education Act was ineffective in driving changes for a sustainable lifestyle among citizens because people's participation in ESD activities has been superficial on the ground. This is particularly the case when the proposed educational activities on a small scale are not seen as adequate solutions to the current environmental sustainability problems within the country (e.g., high greenhouse emissions, challenges of renewable energy development). I also discussed in Chapter 5 that many policy implementers felt reluctant to uncritically follow the government's ESD initiative which, in their view, has distracted our attention from searching for possibly more effective solutions to the current environmental problems, both at global and local scales. As a result, most ESD activities have been turned into a futile bureaucratic exercise to fulfil administrative requirements. With this finding, we are now left to ask: what are the policies and institutional arrangements that can help us make progress toward environmental sustainability? What is the role of education in facilitating and supporting these policies in the pursuit of sustainable societies?

Concluding Remarks and Directions for Future Research

For decades, scientists have warned of the potentially devastating consequences of human activities such as deforestation, overfishing,[17] and anthropogenic emissions of greenhouse gases on the ecosystem. However, instead of acting expediently to mitigate these threats, we have been paralyzed by indecision, inaction, and a lack of commitment to change. Over the past 50 years, humans have depleted the ecosystems more rapidly and extensively than in any comparable period of time (Millennium Ecosystem Assessment, 2005). According to a 2014 report by the Intergovernmental Panel on Climate Change (IPCC), human influence on the ecosystem has had a pervasive and irreversible impact on the lives of millions of people and on the earth's ability to support future generations. Drawing on contributions from thousands of scientists around the world, the IPCC (2014) report concluded that some effects of global change, including extreme climate change, rising sea levels, and acidification of the ocean, will continue for centuries. In 2018, IPCC again warned that we have only a dozen years to mitigating or adapting to risks of catastrophic events caused by climate change, such as extreme heat, drought, floods, and hundreds of millions of climate migrants (Diaz et al., 2019). As a result, the question now facing us is whether human beings can act immediately to slow environmental change to a pace to which humans and natural ecosystems can adapt.

The responsibility for slowing global environmental degradation rests on all of our shoulders. We must change our attitudes, behaviours, and consumption patterns in a sustainable direction. Contemporary societies require environmentally aware and active citizens to hold their governments accountable for enacting and enforcing top-down environmental legislation. As a

[17] According to an extensive meta-analysis of data from 32 studies, Worm and colleagues (2006) showed that loss of marine biodiversity is increasingly impairing the health of the oceans, yet these trends may still be reversible. Approximate 30% of the world's most important marine fish stocks are depleted or overharvested, while 44% are fished at their biological limit and vulnerable to collapse (Worm et al., 2006).

result, there has been a wide agreement that education can transform values and empower people to participate in environmental protection (Fien, 1993; Hofman, 2015; Hopkins, 2014; Rischard, 2002). In his famous critique of Western economics, *Small Is Beautiful* (Schumacher, 1975), Ernst Friedrich Schumacher described education as "the greatest resource" (p. 64) to bring about the extensive social changes needed for a socially and ecologically sustainable pattern of development.

It is undeniable that education is central to the development of a sense of shared responsibility for sustainable development. Education can assist in providing the requisite knowledge and tools for individuals and communities to participate in social and economic transition towards a just, sustainable, and peaceful society for the future. However, as this study manifests, ESD in its current form is not a panacea for addressing all of our environmental problems. Promoting ESD without caution may result in using education as a means to perform public relations activities by the public and private sectors. It thus has created a false impression of change while the structural barriers to sustainability continue to go on almost unnoticed by most of us. Learning from the Taiwanese experience of ESD implementation, I conclude this dissertation with a few notes in the hope of nudging governments in the needed direction.

1. Without critically reflecting on what to change, Education for Sustainable Development (ESD) can be limited in bringing about the desirable changes in society. Sustainability issues are complex, and they often involve conflicting interests with "no best solutions" (Waring, 2012, p. 30). As a result, although many of us are aware that changing unsustainable practices are necessary, the main challenge often lies in not knowing what to change in order for the greatest possible impact on sustainability transformation (Abson et al., 2017; Meadows & Randers, 2012). As the findings of this study have revealed, the current

approach to ESD in Taiwan seems to take the form of promoting commonly perceived-best practices, such as incentivizing rooftop solar panels and promoting urban or school gardens. However, these proposed activities seem to have limited impact on addressing Taiwan's energy and climate challenges (see discussion in Chapter 5). This has resulted in decreasing trust in political institutions and an increasing skepticism among the public. Indeed, many policy implementers in this study shared that they have faced direct resistance by their colleagues and students to comply with official demands for participating in ESD activities. Many of them also felt in despair over Taiwan's ESD policies. I thus argue that, besides or at least in addition to these educational activities, we need to engage people in discussing uncertainty and debate associated with sustainability issues, envisioning what a sustainable society would look like for us as a community, and critically reflecting on the possible changes that we need in our communities to realize the shared vision of sustainability. Therefore, educational research is much needed to understand how the communicative strategies and pedagogical approaches can facilitate these conversations not only among students, but also citizens.

2. Education for sustainable action cannot be effective, if it does not teach people how to take actions. Over 40 years research on environmental education has persistently shown that imparting information about environmental problems has little effect in altering people's behaviours (Bamberg & Möser, 2007), and the connection between attitude and behavioural changes is tenuous (Baron & Byrne, 1991; Gralton, Sinclair, & Purnell, 2004; Hanna, 1995; Leeming, Dwyer, Porter, & Cobern, 1993). Nonetheless, the factors that correlate most closely with positive behaviours are people's knowledge of how to take action (e.g., how to recycle, how to compost) (Hines, Hungerford, & Tomera, 1987; Jordan, Hungerford, & Tomera, 1986; Ramsey, Hungerford, & Tomera, 1981). Therefore, if we wish to promote particular sustainable

actions (e.g., participating in a circular economy through reusing and recycling), we need to provide individuals with not only clear information, but also an appropriate mechanism for people to act on. Take the ban on discarding disposable tableware in Taiwanese public sector as an example. Without a clear instruction and an appropriate mechanism for people to act on, this regulation has led to the practice of dumping disposable waste outside the campus. Nonetheless, wouldn't it be more effective to develop a system for reusable cups and food containers which students and teachers can reuse? The effort of education can then be made to educate citizens about ways to participate in such reusable system.

3. Education policy alone cannot address the broader problems that are caused by an inadequate implementation and enforcement of regulations on economic actors. One consequence of making education central to environmental policies is that we have ended up taking the pressure off the states and corporations for the kinds of regulatory and incentives framework that could have been more effective in addressing pressing environmental concerns (e.g., climate change, growing antibiotic resistance, and overfishing and extractive activities). As I discussed in Chapters 3 and 5, the policy implementers raised similar concerns that although the ESD movement seemed flourishing in Taiwan, the administrative tasks and publicity efforts associated with ESD activities have distracted us from thinking more deeply about the root causes of environmental problems (e.g., societal norms, consumerism, lack of severe accountability mechanisms for the industrial polluters) and possible solutions. As a result, politically motivated politicians and corporative lobbyists continue to push for market-oriented policies that make environmental problems worse, and we continue to leave these problems intact for future generations. It is important to note that I do not mean to argue that education cannot contribute to sustainable development unless there is a holistic shift in educational,

economic, and industrial policies first. I argue that there are many policies and regulations that we need to pursue besides or at least in addition to ESD, but that part of the discussion has often been overlooked by us. For example, when local communities are encouraged to participate in beach clean-up activities (see *UNESCO Green Citizens*, n.d.), the larger questions, such as where has the trash been generated and by whom?, how does waste end up in the ocean?, and what would happen to the litter after we pick them up from the beaches?, have often been put off to the side.

4. More information is not necessarily better in driving changes. As this study showed, a nationwide environmental and sustainable education policy may seem to have a great impact on the society; however, such policy risks the danger of creating environmental numbness in society. Environmental numbness can occur when messages of environmental catastrophe are too often broadcast by the media, governments, or scientists, such that these messages are no longer been seen as news and, consequently, are ignored (Gifford, Lacroix, & Chen, 2018). This effect was also found in this study in which policy implementers found that people began to feel overwhelmed by the required annual courses on environmental and sustainability education. Some participants even felt that the nationwide environmental and sustainable education policy focuses on the groups of citizens (e.g., school teachers, K–12 students) who have little power to resist or to initiate systemic changes, such as setting national standards for mitigating pollution or investing in sustainable infrastructures at a large-scale. At the same time, one important area of research that has been neglected is the role of non-formal and informal education in promoting sustainability (Leicht, Heiss, & Byun, 2018; Noguchi & Sasaki, 2016). As a result, future studies are needed to explore what it takes to change our individual and collective behaviours, and what types of social learning can help to facilitate and bring about the desired changes.

Limitations

It is important to acknowledge some study limitations. Although I had intended to explore Taiwan's ESD policies comprehensively, the content of the Environmental Education Act has been continuously refined, modified, and updated by the Taiwanese lawmakers and the Environmental Protection Administration throughout the study. Therefore, the statistics and official texts produced by the government are not static. Future studies can continue to explore the evolution, implementation, and evaluation of Taiwan's Environmental Education Act and related ESD policies. Importantly, more comparative studies are needed to explore ESD implementation in different contexts.

I am also aware that the findings presented in this study may not represent the views of all policy implementers in Taiwan and that the study participants' perspectives might have been shaped by their particular work contexts. Therefore, similar studies will offer meaningful insights of other policy implementers' professional perspectives on Taiwan's ESD initiative. In addition, I only worked with 30 out of approximately 6,000 EPA-certified staff and only those whose expertise was in the area of 'school and society education'. Future studies can explore the perspectives of policy implementers with different expertise, such as those certified staff focusing on climate change and risk prevention. Furthermore, perspectives of parents and students can be examined in future research to understand their experience of Taiwan's ESD policies and their visions for sustainable futures. Understanding the perspectives of diverse stakeholders will help to identify the underlying barriers that have paralyzed us from collectively acting on the transformations required for developing sustainable societies.

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Appendixes

Appendix 1. A new world ethic of sustainability conceptualized by the United Nations

People and nature: Ecological sustainability	Interdependence	People are a part of nature and depend utterly on it. We should respect nature at all times, for nature is life. To respect nature means to approach it with humility, care, and compassion; to be frugal and efficient in resource use; to be guided by the best available knowledge, both traditional and scientific; and to help shape and support public policies that promote sustainability.
	Biodiversity	Every life form warrants respect and preservation independently of its worth to people. We should preserve the complexity of ecosystems to ensure the survival of all species and the safeguarding of their habitats.
	Living lightly on the Earth	We should take responsibility for our impact on nature. We should maintain ecological processes, the variety of life, renewable resources, and the ecosystems that support them. We should use natural resources and the environment carefully and sustainably and cooperate to restore degraded ecosystems.
	Interspecies equity	We should treat all creatures decently and protect them from cruelty and avoidable suffering.
People and people: Social justice	Basic human needs	The needs of all individuals and societies should be met, within the constraints imposed by the biosphere, and all should have equal opportunity for improving their lot.
	Intergenerational equity	Each generation should leave to the future a world that is at least as diverse and productive as the one it inherited. To this end, nonrenewable resources should be used sparingly, renewable resources should be used sustainably, and waste should be minimized. The benefits of development should not be consumed now while leaving the costs to the future.
	Human rights	All persons should have the fundamental freedoms of conscience and religion, expression, peaceful assembly, and association.
	Participation	All persons and communities should be empowered to exercise responsibility for their own lives and for life on Earth. Thus, everyone must have full access to education, political enfranchisement, and sustaining livelihoods, and they should be able to participate effectively in the decisions that most affect them.

(Adapted from IUCN, UN Environment Programme, & World Wildlife Fund, 1991; Tilbury & Janousek, 2007, p. 5)

Appendix 2. Comparison of UNESCO's ESD and Taiwan's environmental education

According to UNESCO (2005), key dimensions of ESD include:	Vision and Content of Taiwan's Environmental Education
"Education for Sustainable Development (ESD) empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity. It is about lifelong learning, and is an integral part of quality education. ESD is holistic and transformational education which addresses learning content and outcomes, pedagogy and the learning environment. It achieves its purpose by transforming society."	The vision for Taiwan's environmental education is to promote "one planet, environmental justice, intergeneration equity, and sustainable development" (EPA, 2014. p. 1, author's translation). Technology should be more fully utilized to bolster environmental education resources, and lifelong learning programmes on sustainable development should be strengthened so that social resources can be better used to build up people's awareness and understanding of sustainable development (NCSD, 2004, p. 15).
"Learning outcomes of ESD include stimulating learning and promoting core competencies, such as critical and systemic thinking, collaborative decision-making, and taking responsibility for present and future generations."	The goals of Taiwan's environmental education are to enhance citizens' knowledge and understanding of the relationship between humans and the environment; promote positive skills, attitudes, and values towards environmental protection; and emphasize active participation and responsibility for sustainable practice (EPA, 2014. p. 1, author's translation).
Learning content of ESD integrates "critical issues" such as the following into the curriculum: climate change, biodiversity, into the curriculum, • climate change, • biodiversity, • disaster risk reduction (DRR), and • sustainable consumption and production (SCP).	Essential knowledge areas of Taiwan's environmental education include the following: • Environmental issues: global environmental issues, sustainable development as the international solution to critical environmental issues, renewable and nonrenewable resources. • Global change: climate change, greenhouse gases, ozone depletion, acid rain, the water cycle, disaster prevention education. • Biodiversity: ecosystems and ecological equilibrium, conservation of habitats and species, values of biodiversity. • Sustainable development: environmental impact assessment, international environmental agreements and regulations, ecological paradigm and environmental ethics, responsible citizenship for sustainability,

	green economy (Taiwan Ministry of Education, 2009, author's translation).
The pedagogical approaches to ESD include • "designing teaching and learning in an interactive, learner-centred way that enables exploratory, action-oriented and transformative learning," and • "rethinking learning environments—physical as well as virtual and online—to inspire learners to act for sustainability."	Learning strategies suggested by Taiwanese MOE (2009) include, • environmental theme maps, • value clarification and role-play, • experiential learning, and • storytelling (Taiwan Ministry of Education, 2009)

According to the *ESD Learning Objectives* (UNESCO, 2017), key competencies for sustainability include:	According to *K-12 Curricula: Instruction Manual for Integrating Key Issues* (MOE, 2017), core literacy for environmental and ocean education include:
Self-awareness competency: The ability to reflect on one's own role in the local community and (global) society; to continually evaluate and further motivate one's actions; and to deal with one's feelings and desires.	**Quality of self and self-cultivation:** The ability to think about the meaning of human development and the definition of quality of life from the perspective of balancing human development and environmental impact; to establish a proper outlook on life; and to constantly improve and pursue the best.
Anticipatory competency: The abilities to understand and evaluate multiple futures – possible, probable and desirable; to create one's own visions for the future; to apply the precautionary principle; to assess the consequences of actions; and to deal with risks and changes.	**Planning execution and innovation response:** The ability to develop diverse professions, enrich life experience, and exert innovative spirit to enhance individual flexibility through the planning and implementation of effective environmental actions. The ability to plan and execute marine activities, to explore the oceans and develop marine resources, and to innovatively enhance the appropriate interaction between people and the sea.
Strategic competency: the abilities to collectively develop and implement innovative actions that further sustainability at the local level and further afield.	
Collaboration competency: The abilities to learn from others; to understand and respect the needs, perspectives and actions of others (empathy); to understand, relate to and be sensitive to others (empathic leadership); to deal with conflicts in a group; and to facilitate collaborative and participatory problem solving.	**Interpersonal relationship and teamwork:** The ability to build a good interpersonal relationship and participate in the social service team with the spirit of inclusion.
Normative competency: the abilities to understand and reflect on the norms and values that underlie one's actions; and to negotiate sustainability values, principles, goals, and targets, in a context of conflicts of interests and	N/A

trade-offs, uncertain knowledge and contradictions.	
Critical thinking competency: the ability to question norms, practices and opinions; to reflect on own one's values, perceptions and actions; and to take a position in the sustainability discourse.	N/A
Systems thinking competency: The abilities to recognize and understand relationships; to analyze complex systems; to think of how systems are embedded within different domains and different scales; and to deal with uncertainty.	**System thinking and problem solving:** The ability to think about and analyze the characteristics and impacts of major environmental issues such as climate change; to deeply reflect on the significance of human development; and to take positive actions to effectively deal with various environmental issues and the problems of marine ecology.
Integrated problem-solving competency: The overarching ability to apply different problem-solving frameworks to complex sustainability problems and develop viable, inclusive and equitable solution options that promote sustainable development, integrating the above- mentioned competences.	
N/A	**Moral practice and civic awareness:** The ability to actively take care of public issues related to the environment, and actively participate in relevant social activities, caring for the natural ecology and sustainable development of mankind.
N/A	**Multiculturalism and international understanding:** The ability to respect and appreciate multiculturalism, care about global issues and international situations, and develop international understanding, multicultural values and world peace.

Four essential knowledge areas described in Taiwan's environmental education programmes (Ministry of Education, Taiwan, 2009).

1. **Environmental issues:** This chapter introduces several international conferences and the UN's reports on sustainable development, such as *Our Common Future* (WCED, 1987), the 1992 Rio Earth Summit, and the current UN Framework Convention on Climate Change (2014). The objectives of this chapter are to help students understand (a) the global movement of sustainable development, (b) the negative impacts of human's agricultural and industrial activities on the environment, and (c) the causes and effects of acid rain, greenhouse gases, ozone depletion, desertification, and rainforest destruction and their effects on the environmental. It also includes educational materials that develop students' understanding of renewable and nonrenewable resources, energy efficiency, and Taiwan's vision for a nuclear-free homeland.

2. **Global change:** This chapter includes lectures on how human activities have contributed to climate change. Specifically, the burning of fossil fuels, which releases carbon dioxide gas into the atmosphere, is the largest known cause of the changes in the amounts of greenhouse gases, aerosols (small particles), and cloudiness in the Earth's atmosphere. The releases of carbon dioxide has also led to acid rain, increased greenhouse gases, and ozone depletion. In addition, the chapter introduces Taiwan's challenge of limited natural resources such as fresh water. In addition, disaster prevention education and information about Taiwan's frequent natural disasters (i.e., heavy rains, flooding, mudslides, earthquakes, typhoons, and drought) are included.

3. **Biodiversity:** This chapter emphasizes the importance of conservation of the world's natural heritage by introducing several UN initiatives, such as the 1972 World Heritage Convention (UNESCO, 1972), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (UN Environmental Programme, 1973), and the Convention on Migratory Species (UN Environmental Programme, 1979). The chapter's objectives are to develop students' understanding of biodiversity and inspire their appreciation and preservation of nature.

4. **Sustainable development:** In this chapter, milestone UN conferences and publications such as the *World Conservation Strategy* (IUCN, 1980), *Our Common Future* (WCED, 1987), *Caring for the Earth* (IUCN, et al., 1991), *Agenda 21* (UNSD, 1992), and the 2002 World Summit on Sustainable Development held in Johannesburg, are introduced to explain the origin and evolving concept of sustainable development. The chapter also includes detailed explanations of Taiwan's environmental policies and how these regulations are aligned with the UN discourse of environmental protection and sustainable development. Its objectives are to enhance students' understanding of sustainable development, develop responsible citizenship, and encourage more sustainable lifestyles.

Appendix 3. A list of the official documents for this study

Year of Publication	Name of the Documents	Publisher(s)
2004	Taiwan Agenda 21	National Council for Sustainable Development
2009	Partnerships for progress and sustainable development: White paper on foreign aid policy	Ministry of Foreign Affairs
2010a	Official records of parliamentary meeting notes	Legislative Yuan
2010b		
2010c		
2010d		
2014	Education Basic Act	Legislative Yuan
2017	Taiwan's voluntary national review implementation of the UN Sustainable Development Goals	Executive Yuan
2009-2016	Sustainable development assessment report	Executive Yuan
2005-2008	Taiwan's sustainable development: Current status	Executive Yuan
2002	Update, maintenance and release of Taiwan's sustainable development indicators	Executive Yuan
2006	Taiwan's sustainable development indicators: Systematic review	Executive Yuan
2007	Taiwan's sustainable development indicators: Systematic review	Executive Yuan
2017	Record of the 30th Committee Meeting of the National Council for Sustainable Development	Executive Yuan
2010	National plan for energy conservation and carbon reduction	Executive Yuan
2011	National environmental education program	Environmental Protection Administration (EPA)
2016		
2010	Environmental Education Act: Training hours and penalty	EPA
2014	National environmental education action plan: Implementation results report 2012-2014	EPA
2016	National environmental education action plan: Implementation results report 2015	EPA
2017	National environmental education action plan: Implementation results report 2016	EPA
2016	National environmental education action plan 2016-2019	EPA
2014	National environmental education action plan	EPA
2018	EPA Policy plan	EPA
2010	Environmental Education Act	EPA
2017		
2018	Environmental Education Act: Enforcement rules	EPA
2016	White paper on environmental protection	EPA
2017	National greenhouse gas reduction regulations promotion website	EPA
2017	National greenhouse gas emissions inventory report	EPA

2018	EPA Highlights of governance performance (Nov.)	EPA
2013	Application for the institution certification	EPA
2013	Application for the facility certification	EPA
2011	General explanation of environmental education personnel certification and management methods	EPA
2013	Environmental education personnel certification and management measures amendment/general provisions	EPA
2014	Environmental education personnel certification: Eight major areas of expertise	EPA
2014 2015 2016	Results report of the Environmental Education Regional Center	EPA
2013 2017	Assessment of local environmental protection agency performance standard operating procedures	EPA
2012	Environmental Education Fund Management Committee meeting note on Sept. 14	EPA
2017	Environmental Education Fund Management Committee meeting note on Sept. 6	EPA
2017	Environmental education fund income, expenditure, custody and operation status report	EPA
2014	A guide for environmental education personnel certification	Ministry of Education
2012	Environmental regulations applicable to schools	Ministry of Education
2014	Outline of the 12-year National Basic Education Curriculum	Ministry of Education
2015	Introduction to the 12-year National Basic Education Curriculum	Ministry of Education
2017	Instruction manual for integrating key issues into the 12-year National Basic Education Curriculum	Ministry of Education
	Issue integration into the course training instructions	Ministry of Education
2017	Focus areas of the Ministry of the Interior	Ministry of The Interior
2017	Ministry of the Interior governance performance report	Ministry of The Interior
2016	Current status of energy service industry development and follow-up recommendations	Ministry of Economic Affairs Energy Conservation and Carbon Reduction Promotion Office
2017	Suggestions on the policy of climate change mitigation in local governments in Taiwan	Ministry of Economic Affairs Energy Conservation and Carbon Reduction Promotion Office
2017	Self-report of school-wide environmental education results	Education Bureau
2018	Community Environmental Examination and Reconstruction Plan	N/A
2016	School performance indicators evaluation plan (2016-2019)	Education Bureau
2017	Environmental Education Program Selection Plan	Education Bureau
2014	Environmental Education Assessment Implementation Plan Results	Nantou County Government

2017	Long-term promoting plans for energy technology in schools (2017-2020)	Education Bureau
2017	"Taiwan Green School Partner Network" Coaching Program	Education Bureau
2017	Education Bureau Environmental Education Counseling Group Implementation Plan	Education Bureau
2013	Environmental education medium-term plan (2014-2017)	Education Bureau
2016	Annual environmental education implementation results report	Kaohsiung City Government
2009	Legislative Yuan public hearing	Chinese Society for Environmental Education

Appendix 4. Research ethic approval

McGill

Research Ethics Board Office
James Administration Bldg.
845 Sherbrooke Street West. Rm 325
Montreal, QC H3A 0G4

Tel: (514) 398-6831
Fax: (514) 398-4644
Website: www.mcgill.ca/research/researchers/compliance/human/

Research Ethics Board II
Certificate of Ethical Acceptability of Research Involving Humans

REB File #: 27-0617

Project Title: The Development and Implementation of Environmental Education Policy in Taiwan

Principal Investigators: Ying-Syuan (Elaine) Huang **Status:** Ph.D. Student

Department: Integrated Studies of Education **Supervisor:** Dr. Anila Asghar

Funding: FRQ-SC Scholarship

Approval Period: **July 11, 2017 to July10, 2018**

The REB-II reviewed and approved this project by delegated review in accordance with the requirements of the McGill University Policy on the Ethical Conduct of Research Involving Human Participants and the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans.

Deanna Collin
Ethics Review Administrator, REB I & II

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* All research involving human participants requires review on at least an annual basis. A Request for Renewal form should be submitted 2-3 weeks before the above expiry date. Research cannot be conducted without a current ethics approval.
* When a project has been completed or terminated, a Study Closure form must be submitted.
* Unanticipated issues that may increase the risk level to participants or that may have other ethical implications must be promptly reported to the REB. Serious adverse events experienced by a participant in conjunction with the research must be reported to the REB without delay.
* Modifications must be reviewed and approved by the REB before they can be implemented.
* The REB must be promptly notified of any new information that may affect the welfare or consent of participants.
* The REB must be notified of any suspension or cancellation imposed by a funding agency or regulatory body that is related to this project.
* The REB must be notified of any findings that may have ethical implications or may affect the decision of the REB.

Appendix 5. Study participation invitation letter

Dear _____

My name is Ying-Syuan (Elaine) Huang. I am a doctoral student at the Department of Integrated Studies in Education at McGill University, Montréal, Canada. I am currently carrying out a research project as part of my doctoral degree. The goal of this research project is to understand the development and implementation of Taiwan's environmental education policy. My doctoral research advisor is Dr. Anila Asghar, Associate Professor at the Department of Integrated Studies in Education at McGill University, Montréal, Canada.

I found that your contact information as a certified Environmental Specialist Educator through the government website at https://eecs.epa.gov.tw/front/_cert/lecturer_qry.aspx. I am very interested in the ways in which you help to promote environmental and sustainability education in Taiwan. Therefore, I would like to invite you to participate in my doctoral research during which you will be invited to participate in three individual interviews (60-120 minutes) to share your experience as an Environmental Specialist Educator. Moreover, I will conduct participant observation with you for 15-20 days. During the observation, I hope to understand your day-to-day work related to environmental education.

Your participation in this study is completely voluntary on your part and you may withdraw at any point. Every effort will be made to protect your privacy. The interview conversations will be audiotaped to help with data analysis. The audio recordings will be used for only transcription purpose. Interview transcripts and field notes will be de-identified. Any identifiable information (e.g., audiotapes and the master file) will be stored in a safe place separate from collected data and only I will have access to this information. The master file and the audiotapes will be erased after data analysis (approximately 7 year after data collection). Your name and other identifiable information will not be disclosed in any research reports, published articles, and conference presentations.

If you are interested in participating in this study, please reply to ying.huang6@mail.mcgill.ca. I look forward to your response. If you have any questions, please so not hesitate to contact me.

If you have any questions, please do not hesitate to ask me or contact my supervisor Dr. Anila Asghar at anila.asghar@mail.ca. We will be more than happy to share our findings with participants, and our results will be submitted for peer review and publication in professional journal(s) and/or newsletters. The data will be used in future related studies.

The McGill University maintains an Ethics Review Board for studies using human subjects. Any questions or concerns about your rights or welfare as a participant in this study should be referred to Lynda McNeil of the McGill Ethics Board at (514) 389-6831 or via email: lynda.mcneil@mcgill.ca. Thank you for considering this request.

Sincerely,
Ying Syuan (Elaine) Huang
Principal Investigator & PhD student
Department of Intergraded Studies in Education, McGill University
Email: ying.huang6@mail.mcgill.ca

Faculty Supervisor:
Dr. Anila Asghar, Associate Professor
Department of Integrated Studies in Education, McGill University
Email: anila.asghar@mcgill.ca
Phone: (514) 398-4527 Ext. 094194

Appendix 6. Semi-structured interview guides

First Round Interview

Introduction script:

Thank you very much again for agreeing to participate in this study. Your participation in this study is invaluable and would help future environmental education initiatives in Taiwan. During the following interview, if you do not wish to answer any of the questions, please don't hesitate to let me know. You do not have to answer any question that you are not comfortable with. Also, please note that there are no right or right answers in any of the following interview questions.

Do you have any questions before we begin? (wait for participant's answer)

If you have any questions at anytime during the interview, please do not hesitate to let me know. We may stop the recorder at anytime.

May I now start the recorder and begin the interview? (wait for participant's answer)

Questions:

1. Can you tell me a little bit about yourself?
   - What is your educational background?
   - How many years of experience in education do you have?
   - Before becoming a certified staff member, are there any experiences related to environmental education? If so, what are they? If not, what brought you to the field of environmental education?

2. How did you become a certified staff member?
   - Can you walk me through the certificating process for becoming a certified staff member?
   - What are the pre-requisite? What are the requirements?
   - How does the certifying process look like?
   - Which aspect(s) of the training programs do you find most helpful?
   - What are your perspectives on the training programs and the certifying process?

3. Can you walk me through a typical day as a certified staff member?
   - What are your main responsibilities as a certified staff member?
   - What are the types of your work that you are doing with teachers, students, and school administrators?

4. Can you share with me some resources that are available to support you in doing your work?
5. Have you encountered any challenges when doing your work?
6. Are you involved in any professional networks related to environmental education?
   - If so, what are they? How do you participate in these networks? How are they supporting you as a certified staff member?

7. Throughout your training process, have you had a chance to learn about Taiwan's environmental education policy?

- Are you familiar with any policies related to environmental education in Taiwan? If so, what are the documents? What do you know about them?

8. In your view, what do you think is the goal of environmental education policy in Taiwan? To what extent would you consider these goals being achieved?
9. Is there anything that you would like to add? Do you have any questions that you would like to ask me?

Second Round Interview

Introduction script:

Thank you very much again for agreeing to continue to participate in this study. During the following interview, if you do not wish to answer any of the questions, please don't hesitate to let me know. You do not have to answer any question that you are not comfortable with. Also, please note that there are no right or right answers in any of the following interview questions.

Do you have any questions before we begin? (wait for participant's answer)

If you have any questions at anytime during the interview, please do not hesitate to let me know. We may stop the recorder at anytime.

May I now start the recorder and begin the interview? (wait for participant's answer)

Questions:

1. Last time when we talked, you walked me through a typical day of your work as a certified staff member. This time, can you briefly describe your projects and give me an overview of your work last semester?
   - What was the main focus of the projects last semester?
   - Whom were you working with?
   - What was an example of a day of your work looked like last semester?
   - Did you encounter any challenges?
   - What are the feedbacks from teachers, administrators, or students?
   - Are there any new ideas you would like to try out next semester? If so, how would you approach it?

2. Last time when we talked, I learned a lot about the general organization of your work. This time, I'd like to invite you to share stories of particularly memorable experiences you've had on the job. In your _(years)_ of experience as a certified staff member, are there any experiences that most memorable for you? If so, can you share with me?
3. In your _(years)_ of experience, what do you think about the projects carried out by other certified staff? Can you share an example of other's work with me?
4. As a certified staff member, what goals would you like to achieve when engaging in environmental education? In what ways would you consider that you have met these goals?
5. As a certified staff member, are you in any forms evaluated?
   - If so, how? If not, what are your metric to assess the effectiveness of the projects carried out by yourself and others?

6. What environmental issues you are most familiar with? Are there other environmental issues concern you? If so, what are they?

7. Is there anything that you would like to add? Do you have any questions that you would like to ask me?
8. In your view, what does environmental education mean to you?

Third Round Interview

Introduction script:

Thank you very much again for agreeing to continue to participate in this study. During the following interview, if you do not wish to answer any of the questions, please don't hesitate to let me know. You do not have to answer any question that you are not comfortable with. Also, please note that there are no right or right answers in any of the following interview questions.

Do you have any questions before we begin? (wait for participant's answer)

If you have any questions at anytime during the interview, please do not hesitate to let me know. We may stop the recorder at anytime.

May I now start the recorder and begin the interview? (wait for participant's answer)

Questions:

1. In the previous interview, you mentioned that you have been engaged in _____ project as a certified staff member. Can you tell me more about it? What does it look like in practice?
2. What are your experiences of working with teachers, students, parents, or administrators in local schools? Can you tell me about your relationships with them?
   - Who else do you work with? What is the nature of your work with them?

3. In the previous interview, you mentioned that you are concerned about __(environmental issues)_ _. Can you tell me more about it? As a certified staff member, what would you suggest me to do to help solve these environmental issues?
4. In the previous interview, you mentioned that your goal is to _____ as a certified staff member. Do you think you have met your goal? If so, in what ways do you know that you have achieved this goal? If not, why?
5. In the previous interview, you mentioned that you encountered __(challenges)_ when doing your work. Can you tell me more about it? Are there any changes you would like to see at any points of this process?
6. In thinking about your role and experience as a certified staff member, what would a successful environmental education system look like?

Appendix 7. A detailed inventory of the artifacts

Participants	Artifacts Collected
Hao-ting	• Syllabus for the professional development courses • One published journal article as the single-author • Ten documentaries produced by the certified facility • One book produced by the certified facility
Fen-shou	• One published journal article as the single-author
Shan-yu	• Five articles from the online learning community • One curriculum unit plan
Ying-li	• A list of online learning communities commonly followed by school consultants • Observation photos, event agendas and handouts
Hong-bo	• One final report for the outdoor education project
An-li	• Policy recommendation memos to the EPA • Three final reports for the ESD projects of the centre • Promotion booklets and presentations of the centre • Six curriculum unit plans and guidebook of the centre • One published journal article as the single-author
Mei-sheng	• Photos and presentations of the environmental education courses in schools • Syllabus and presentations of the community college course • Photos and presentations of the professional development courses • Documents of the affiliated associations
Fu-long	• Drawings of the Environmental Education Fund system • Observation photos, event agendas and handouts
Jing-da	• Drawings of the relationship between different government agencies, universities, and regional environmental education centers • Proposal presentations prepared for the EPA • Policy recommendation reports prepared for the EPA • Published journal articles and translated book • Observation photos of the classes
De-wen	• Observation photos, event agendas and handouts • Policy recommendation reports • K-12 Curricula: Instruction Manual for Integrating Key Issues • Three published journal articles as the first-author
Shu-yu	• Photos and presentations of environmental education courses
Liang-wei	• Two magazines produced by the centre
Ning-li	• Observation photos, event agendas and handouts • Professional development materials
Qing-lin	• News articles of the company • Promotion booklets and presentations of the company and other certified centres • Curriculum unit plans of a certified centre
Bou-jie	• Official reports of ESD activities • Two conference presentation (Posters) and two scientific reports • One published journal article as the first-author • Observation photos and event agenda
Zheng-li	• Official memos from the Education Bureau in 2017