

**Training teachers in education for sustainable development (ESD)
approaches, principles and competencies: Case study in Central
Vietnam**

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I. EXECUTIVE SUMMARY

Education has essential contributions for the advancement of sustainable development, particularly in developing countries where citizens need to be empowered to change their mindsets and act in sustainability. Vietnam has experienced several milestones in mainstreaming sustainability themes nationwide since the launch of the UN Decade of Education for Sustainable Development (DESD) in 2005. Despite the establishment of organizational and institutional structures in Vietnam, most practical work in ESD to date has been carried out by NGO-led projects. Little is known about how ESD has been conducted across the educational system and how teachers are trained on ESD. This study first presents an overview of teacher education for sustainable development at the five prominent Teacher Education Institutions (TEIs) across the country. Then, a case study is presented to understand the role of different stakeholders for training teachers on ESD and to identify areas for improvement. Five research questions have been posed in the thesis as shown in Figure E.1.

Investigation at five TEIs	The case study
RQ1: How is ESD being implemented at TEIs in Vietnam in both formal and non-formal education? RQ2: What lessons can be learned from initial efforts in ESD implementation at TEIs nationwide?	RQ3: How does NFE contribute for training teachers in ESD? RQ4: What are NGOs' approaches in building key sustainability competencies for student teachers? RQ5: How can the youth-led organizations enhance student teachers' proactive performances in sustainability?

Figure E.1. Research questions

In 2014, the author conducted research during five field visits over a 14-week period to the five most prominent teacher education institutions in Vietnam. It was found that in terms of formal education, several sustainability-linked courses have been launched in teacher education programs that provide student teachers with basic understanding of sustainability themes. However, student teachers' ESD teaching capacity has not been effectively enhanced by formal education because of constraints such as the lack of practical and local knowledge related to sustainability, the prevalence of top-down pedagogy, large classes and poor facilities. Meanwhile, student interviews and focus groups showed that non-formal education (NFE) significantly contributes to improving student teachers' sustainability competencies through diverse activities by different stakeholders. Yet NFE was not linked with formal education and was not be paid relevant attention by university lecturers.

From 2015 to 2016, the author conducted six field visits over a 20-week period to focus on a case study of a teacher education institution in the central region of Vietnam, Danang Univeristy of Educaiton (DUEd). This is the first research to map the training teachers receive on ESD at a TEI, including organizations, teaching contents, applied pedagogies and the efficiency of the training. The research revealed that several stakeholders are involved in training student teachers on ESD in non-formal education at DUEd: 1. The Youth Union, 2. NGOs, 3. foreign education institutions, and 4. environmental clubs. By applying interactive training approaches and providing practical knowledge, NFE greatly contributes to building ESD teaching competencies of students.

Conversely, NFE's role has been undervalued in teacher education programs. This drawback results in three considerable issues: 1. weak community outreach, 2. lack of collaboration between formal and non-formal education for sustainable development, and 3. a lack of well-structured NFE activities.

Among those stakeholders, NGOs can be considered as the most professional ESD non-formal educators. Examining five NGO-led courses, the author found that their experiential learning helped student teachers understand sustainability-related problems. Students were also motivated by being awarded small grants to conduct their own projects, educational programs and public awareness-raising. Indeed, NGOs are leading actors for fostering key sustainability competencies: systems thinking, future thinking, values thinking and an action orientation. Moreover, they can also motivate teacher education institutions to improve their ESD teaching capacity by offering universities free data/information sources, employing pro-sustainability graduates and funding student sustainability activities at universities. Finally, NGOs can play an important role in promoting university outreach.

Despite the remarkable contributions of NGOs in training student teachers on sustainability and the potential benefits, university-NGO partnerships remain limited. The most important obstacle mentioned by the NGO and university interviewees is the lack of interest, influence and mutual understanding of the two sectors in terms of regulations, functions, operations and vision. As shown by the successful partnership between Frankfurt Zoology Society and DUEd it was found that in order to strengthen the partnership, there needs to be sustained, government-facilitated dialogue, selection of suitable NGO partners and more active participation by university members.

Another important stakeholder in student teaching training are student-led organizations such as the Youth Union (YU) and environmental clubs. At DUEd, YU has conducted four programs to raise students' awareness of environment, while the environmental clubs offer students diverse activities, including seminars, cleanup, group talking, recycle fairs, wild animal exhibition and environmental teaching. Questionnaire survey shows that though participating in environmental clubs enhance students' sustainability competencies more than with the YU, students do not frequently participate in activities organized by the environmental clubs because their efforts do not receive official recognition as they do from YU. Collaboration between YU and student-led clubs is essential to advance sustainability at university. The author proposed four steps to overcome the existing challenges of the mainstream of sustainability at the case study which are establish a hub of sustainability promotion, build sustainability leadership, construct a systematic action plan, and create a communication network.

Overall, this thesis is the first attempt to provide a comprehensive picture of teacher education for sustainable development across Vietnam. It figures out existing shortcomings of ESD implementation and proposes the appropriate recommendations to solve those shortcomings. Then, by focusing on the analysis of the case study, the research has identified the contributions of each organizations which are in many cases limited due to the weak collaboration. In particular, due to the poor community outreach, three important stakeholders that can involve in training student teachers on ESD, including schools, local communities and local authorities (e.g. Climate Change Coordination Office) were not paid attention by university. Thus, at the last chapter of the thesis, the author has proposed a framework which describes the prospective roles and feasible collaborations of various formal and non-formal educators in training student teachers for sustainability. That framework can provide a theoretical model of advancement for future implementation of ESD in teacher education.

Key words: Education for Sustainable Development, teacher education, Danang Univeristy of Education, formal education, non-formal education, competency

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IV. ACRONYMS AND ABBREVIATIONS

AASHE	The Advancement of Sustainability in Higher Education
ACCD	Action for the city
CCCO	Climate Change Coordination Office
CCE	Climate Change Education
CEREPROD	Centre for Research and Promotion of Education for Sustainable Development
DESD	Decade of Education for Sustainable Development
DRR	Disaster Risk Reduction
DRW	Danang River Watch
DUEd	Danang Univeristy of Education
ECs	Environmental Clubs
EfS	Education for Sustainability
EE	Environmental Education
ENGO	Environmental Non-governmental Organization
ENV	Education for Nature Vietnam
ESD	Education for Sustainable Development
FE	Formal Education
FGDs	Focus Group Discussions
FZS	Frankfurt Zoology Society
GAP	Global Action Program
GDP	The gross domestic product
GEC	Geo-Environment Club
GGC	Go Green Club
GS	Global Seminar
HCMUP	Ho Chi Minh University of Pedagogy
HEIs	Higher Education Institutions
HNUE	Hanoi National University of Education
HUEd	Hue University of Education
ICT	Information and Communication Technology
IGES	The Institute for Global Environmental Strategies
INGO	International Non-governmental Organization
ISCN	International Sustainable Campus Network
KIIs	Key informant interviews
MOET	Ministry of Education and Training
NFE	Non-formal Education
NGOs	Non-governmental Organizations
PACCOM	The People's Aid Coordinating Committee
QNU	Quang Nam Univeristy
RCEs	Regional Centres of Expertise
R&D	Research and Development
RQs	Research Questions
SA	SEEDs Asia
SD	Sustainable Development
SL	Sustainability Leadership
SLAs	Sustainability-linked Activities
SLT	Sustainability Literacy Test
SSIs	Semi-structured interviews

STARS	The Sustainability Tracking, Assessment & Rating System
TEIs	Teacher Education Institutions
TEPs	Teacher Education Programs
TMV	Toyota Motor Vietnam
TVET	Technical and Vocational Education and Training
UN	United Nations
UNESCO	United Nation Educational, Scientific and Cultural Organization
UNGOPs	University – NGO Partnerships
UNICEF	The United Nations Children's Fund
UNU-IAS	United Nation University – Institute of Advanced Studies
USM	Universiti Sains Malaysia
VUFO	The Vietnam Union of Friendship Organizations
VUSTA	The Vietnam Union of Science and Technological Association
VNGO&CC	The Vietnam Non-Governmental Organizations and Climate Change Network
WSSD	World Summit for Sustainable Development
YLOs	Youth-Led Organizations
YU	Youth Union

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CHAPTER 1: INTRODUCTION

1.1. Education for Sustainable Development

Rapid population growth and industrial development worldwide has led to an increase in environmental degradation and disasters, leading many people to begin to take seriously our human responsibility to conserve nature. Since the 1960s, when environmental education (EE) first emerged as part of environmental movement, there has been a growing awareness that knowledge of the environment needs to be embedded in the educational curriculum. EE became globalized with sponsorship of UN-linked international EE conferences in 1970s (the International Workshop on Environmental Education in Belgrade 1975 and the Tbilisi Intergovernmental Conference on Environmental Education 1977). EE evolved with the emergence of the sustainable development (SD) concept in the 1980s and 90s, then with the launch of the Education for Sustainable Development (ESD) concept.

After the first endorsement of the concept of sustainable development at the UN General Assembly in 1987, sustainable development was formulated as part of *Agenda 21* at the United Nations Conference on Environment & Development in Rio de Janeiro in 1992. Chapter 36 of the Agenda concerns the vital role of education: “Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues” (United Nations Sustainable Development 1992, 320).

After Agenda 21 other international meetings were held to underscore the growing commitment by the international community to advance ESD, including the international conference Environment and Society: Education and Public Awareness for Sustainability held in Thessaloniki in 1997 and the World Summit for Sustainable Development (WSSD), held in Johannesburg in 2002. Since March 2005, when the United Nations launched its Decade of Education for Sustainable Development (DESD), the ESD concept has garnered increasing interest by educators worldwide. After two decades of development, however, ESD, which is also described as education for sustainability (EfS), remains a broad, complex and evolving concept. In fact, a review of ESD definitions by Landorf, Doscher, and Rocco (2008) suggests that a widely used or accepted definition does not exist.

According to Fien (2004, p. 1), ESD is an educational paradigm that incorporates social, economic, and political contexts and aims to develop “citizen and institutional roles to facilitate in the transition to sustainability.” The Quality Assurance Agency for Higher Education (QAA) and the Higher Education Academy (HEA) (2014, p. 7) provided a more contextual definition for the tertiary education sector when they wrote that ESD is a process which equips students “with the

knowledge and understanding, skills and attributes needed to work and live in a way that safeguards environmental, social and economic wellbeing, both in the present and for future generations”.

United Nation Educational, Scientific and Cultural Organization (UNESCO), the most active agency for promoting ESD, in 2002 defined ESD as “an emerging but dynamic concept that encompasses a new vision of education that seeks to empower people of all ages to assume responsibility for creating a sustainable future.” It issued a more detailed definition: “Education for Sustainable Development (ESD) is a learning process (or approach to teaching) based on the ideals and principles that underlie sustainability and is concerned with all levels and types of learning to provide quality education and foster sustainable human development – learning to know, learning to be, learning to live together, learning to do and learning to transform oneself and society” (Education for Sustainable Development Unit 2016). This definition expands on the earlier definition of UNESCO’s four pillars of learning, as proposed in 1996 by the Delors report (Delors et al. 1996) and the fifth pillar suggested by a number of Latin American educators, as well as UNICEF (Black 1998). IUNESCO has also written that “ESD is far more than teaching knowledge and principles related to sustainability. ESD, in its broadest sense, is education for social transformation with the goal of creating more sustainable societies. ESD touches every aspect of education including planning, policy development, program implementation, finance, curricula, teaching, learning, assessment, administration. ESD aims to provide a coherent interaction between education, public awareness, and training with a view to creating a more sustainable future” (UNESCO, 2012, p. 33)

Since the first introduction of ESD, there have been conflicting interpretations and opinions on EE and ESD. ESD represents a wider range that not only focuses on environmental protection but also on climate change, disasters, gender equality, peace, human rights and other social issues, which may or may not be related to the environment, whereas EE focuses on enhancing learners’ understanding of environmental issues and developing their skills so they can participate in decision making and take actions to improve environmental quality (Kopnina 2012). A number of environmentalists and writers have argued that there are problematic aspects to the widely accepted definition of “sustainable development” (development is often interpreted as meaning growth which requires more resources from the earth and, also the term “meet the needs” may imply consumption for more than basic demands) and its educational implications. Some researchers have posited that ESD can result in an essentially anthropocentric paradigm (regarding humans as more important than other species) rather than one that is ecocentric (Kopnina 2012; Bonnett 1999). With this assumption in mind, Mckeown and Hopkins wrote “Some of our environmental education colleagues fear that ESD will become the agenda for EE and that ESD will dominate or overshadow many important aspects of the EE field” (2003, p. 122). ESD pedagogies aim to build trainee’s key

competencies to deal with global challenges while EE pedagogies aim to enhance trainee's consciousness to solve environmental issues.

The issue is whether this emphasis on "growth" in developing countries will simply reinforce past development patterns, and therefore deflect attention away from a more needs-based concept of development that would emphasize self-reliance, local initiatives, appropriate technology etc. And "meeting the needs" of the world's poor has to be linked to continued strong economic growth in developed countries, especially given the past record of resource depletion and environmental impact of this development. But there is also the issue of the exploitative nature of the relationship between many developed and developing countries.

Actually, EE and ESD can be mutually supporting rather than competitive because they share a common goal of sustainability. ESD aims to prevent problems from arising to ensure sustainable communities and societies while EE emphasizes how to solve current environmental problems (Stevenson 2006). ESD can utilize and adapt EE frameworks, case studies and lessons learned to boost its development and enhance the practice of EE as well (McKeown and Hopkins 2005). Generally, there is no argument that either EE or ESD is unequivocally better. Hence, depending on the local contexts, educational policy makers and educators need to identify the prevailing problems and prioritize educational themes. As McKeown and Hopkins noted, it is unnecessary and unimportant to question which umbrella is bigger, EE or ESD.

Regardless of the definitional differences and the EE-ESD debates, there is increased recognition of the essential contributions of education for advancement of sustainable development. ESD is necessary for developing countries to raise public awareness of SD. This is the first and foremost step to improve the standard of living in sustainable ways rather than replicating the environmentally destructive paths taken by earlier industrializing economies. Literature about ESD practices and initiatives across the world is expanding, particularly among higher education institutions (HEIs). A report of UNESCO at the end of the DESD notes that various sectors such as individuals, schools, HEIs, community-based organizations, NGOs and the private sectors have all joined in ESD activities (Buckler and Creech 2014). Yet, there remain considerable challenges, for instance, development of effective teaching approaches, to ensure pro-sustainability behaviors and to prolong transformation.

1.2. ESD: a review of achievements and challenges

Review of ESD movements identifies some key milestones indicating a strong commitment regionally and globally (figure 1). WSSD, held in Johannesburg 2002, emphasized the urgent need to change human behavior for SD. Agreement among the decision makers worldwide at this event allowed the UN to adopt Resolution 57/254 declaring the period 2005–2014 as the United Nations Decade of Education for Sustainable Development (UN-DESD), emphasizing the vital role of

education in achieving sustainable development, and designating UNESCO to lead the Decade (UNESCO 2007). It is worth noting that the UN-DESD (2005-2014) helped to bolster funding, regulatory frameworks and innovative programs and policies around the world. According to UNESCO report at the end of DESD, after 10 years of work, key findings and trends of ESD can be summarized for four domains: (i) ESD is gradually seen as an enabler for SD; (ii) ESD is motivating pedagogical innovation; (iii) ESD requires engagement of diverse stakeholders and; (iv) ESD has spread across all levels and areas of education (Buckler and Creech, 2014).

By the end of 2014, the most important achievements of the UN Member States were the mainstream of ESD via policies, curricula reformation in different fields and levels of education, and in the application of new teaching and learning approaches. Such endeavors have resulted in different teaching materials and evaluation frameworks have been deployed. With strong global commitment, networks and partnerships to advance ESD (Buckler & Creech, 2014, p.185).

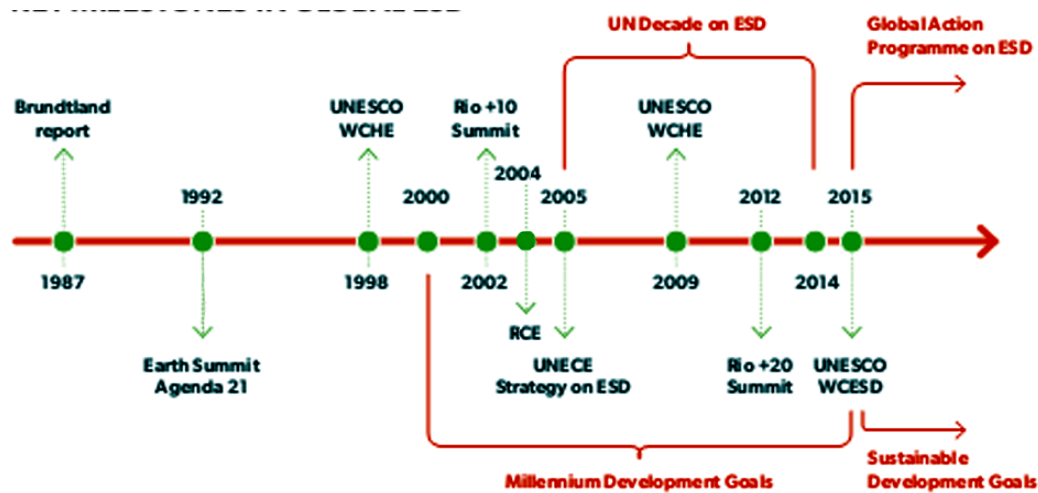


Figure 1.1. Key milestones in global ESD (Source: (Kapitulčinová et al., 2015))

Under the ESD umbrella, diverse sustainability-linked themes have been taught worldwide, including environmental protection, climate change, disaster risk reduction, HIV/AIDS, gender equality, sustainable livelihoods, sustainable consumption and production, peace and human security and, biodiversity and poverty reduction. Most efforts in the early stages of ESD aimed to ensure that SD contents were integrated into formal curriculum. But more recently there has been a shift to promoting ESD in the context of quality education, especially since the UNESCO World Conference in Bonn (2009) (Buckler and Creech 2014; Hopkins 2014). In fact, Hopkins (2014) identified the most significant outcomes of this conference to be: 1. the commitment of ministries of education to conceive a future plan for ESD; 2. the movement of ESD from the periphery to become a key part of quality education and; 3. more attention to new approaches to pedagogy instead of merely curriculum content.

There are numerous innovations that have been introduced around the world to enhance cognition of sustainability, of which key sustainability competencies and Regional Centres of Expertise (RCEs) can be seen as most critical in ESD implementation within the last decade. Determination of key sustainability competencies (Sterling 2015; de Haan 2010; Wiek, Withycombe, and Redman 2011) is requisite to lead educators in determining content and pedagogies applied in their teaching. Meanwhile, RCEs, a regional networking model to advance ESD implementation, significantly encourages the involvement of diverse stakeholders regionally to utilize human and financial resources. Those two innovations will be discussed in later sections of this chapter.

Despite initial achievements, various challenges remain to be solved. Unlike other educational movements, ESD was generated by the education sector, while SD has often been considered the responsibility of environment-related ministries, therefore educational sectors are often only engaged peripherally in ESD. “The key role of education in realizing sustainable development is often ignored, downplayed and underestimated or viewed in isolation from the other instruments of change” (Sterling, 2015, 94). In addition, “school systems are fiscally and politically restricted to make very limited adjustments or changes” (Hopkins, 2014, 118). These factors may explain the fact that until the end of the UN-DESD, the nature and potential of ESD was largely under-recognized by education stakeholders and policymakers (Sterling 2015).

ESD implementation presents its own challenges beyond those mentioned above. Consisting of the three pillars of environment, economy and society, SD is a very broad concept, hence ESD is obviously an ambitious approach. ESD requires a very interactive teaching approach, experiential learning and problem-based learning, for instance, to foster learners’ knowledge and skills to act sustainably. Teaching ESD is a complex process which takes teachers much time and energy. ESD embodies a long-life journey of learning and educating and the objectives of ESD require further critical reflection by the learner (Kopnina and Meijers, 2014). Long-term monitoring and evaluation to improve what is actually taught in school are required to ensure that school completers have the ability, competence, skills, attitudes and agency to address sustainability challenges (Lenglet 2014). A lengthy process is required to proceed from popularizing the term “sustainability” to implementing real actions to achieve it. This process needs vision, policy and sustained funding, which are not easy to attain in many countries.

On the one hand, ESD is open to a diverse array of disciplines and theoretical traditions. On the other hand, and there is no consensus on competencies to be fostered through ESD or education for sustainability (Mochizuki & Yarime, 2016, 13).

1.3. Applying ESD worldwide

ESD has been included in national policies in at least half (50%) of the 150 countries that responded to a UNESCO questionnaire at the end of the DESD (2014), including legislation such as the Law

on Education (2007) in Cambodia and the Kenyan government's Vision 2030 program (Buckler and Creech 2014). The Bonn Declaration (2009), which called for technical and vocational education and training (TVET) to play a key role (Hopkins 2014) is just one of many recent international agreements on ESD, enabling educators to bring ESD topics into both formal and non-formal education as overarching issues.

ESD is receiving particular attention in developed countries, with increasing government commitments to mainstreaming SD from preschool to higher education. A great number of both curricular and extracurricular projects and programs related to ESD can be found, ensuring that ESD is now becoming an integral part of annual school plans (UNECE Working Group 2014; Intelligent Energy Europe 2010). Some notable programs such as "ESD implementation across Carbon Detective Partner countries" (Intelligent Energy Europe 2010) and "the BLK Programme '21' in Germany" (De Haan 2006) have laid the basic foundation of different models of ESD. The recent expansion of community-based learning at schools may be seen as an indicator of increasing absorption of ESD ideas into the mainstream of advanced societies.

In Asia-Pacific region, Japan and Australia are among the most leading countries in ESD promotion. In Australia, EE has been gradually shifted towards education about and for sustainability. The Australian Research Institute in Education for Sustainability was established by the government in August 2004 to conduct research projects that reviewed curricula, identified how to mainstream ESD in all types of education and how to transform teacher education for sustainability nationwide (Tilbury 2004). In Japan, ESD movement "tends to take a cooperative rather than a confrontational approach to the government" (Nomura & Abe, 2009, p.485). Unlike many countries, ESD in Japan is the initiative generated by NGOs/NPOs of which the Japan Council on the UN Decade of Education for Sustainable Development (ESD-J) is one of the most influential organization (Actors 2009). ESD-J established partnerships with more than 100 organizations inside and outside Japan to advance knowledge and experience exchange of ESD, particularly in Asia – Pacific region. In school formal curriculum, ESD was introduced through integrated learning activities (Integrated Studies program) which allow ESD topics to embed in different subjects (National Institute for Educational Policy Research, n.d.). Countries in the ASEAN region are also implementing either EE or ESD via sustainable school programs such as Indonesia –Eco School (Adiwiyata), Thailand - Eco-Schools and the Philippines – Sustainable and Eco Friendly School (Mahat and Idrus 2016). Yet, the research and publications related to ESD in those countries remains few.

it can be seen that although there has been progress in developed countries ESD has not yet advanced in developing countries, which are often handicapped by weak tertiary institutions, inadequate funding and human resources, and a lack of prioritization for sustainability in the curriculum and teacher education (Ryan et al. 2010; Buckler and Creech 2014). A literature review

of the major international journals indicated that among 123 reviewed ESD related articles, the majority originated in Europe with 56 papers, followed by North and South America with 18, Asia with 11 and no publications from Africa (Karatzoglou 2013).

The population of developing countries keeps increasing and their citizens must contend with a wide range of environmental and economical stresses (Hopkins 2014). It can be argued that developing countries are particularly vulnerable to the worsening impacts of climate change and natural disasters, making ESD an especially critical approach for achieving sustainable development and enhancing the quality of education. This reality underscores the necessity of international collaboration to promote expertise and exchange and to identify suitable approaches towards ESD enhancement in such poor nations. Of these collaborative approaches, RCE has been recognized as one of the most successful models to advance ESD practices in formal and non-formal education.

1.4. Regional Centres of Expertise for ESD

It is widely recognized that networking and collaboration are key factors for promoting ESD around the world. Reviewing the literature on RCEs enables the author to understand to what extent TEIs in Vietnam have cooperated with other stakeholders in implementing ESD and to propose solutions to strengthen partnerships between TEIs and outside sectors for further advancement of ESD.

United Nations University – Institute of Advanced Studies (UNU-IAS) has promoted the establishment of RCEs since 2004 to allow participation by diverse local stakeholders (Mochizuki and Fadeeva 2008). RCE is defined by UN-IAS (n.d.) as “a network of existing formal, non-formal and informal education organisations, mobilised to deliver education for sustainable development (ESD) to local and regional communities”. As will be explained below, universities can be integral partners in RCE implementation.

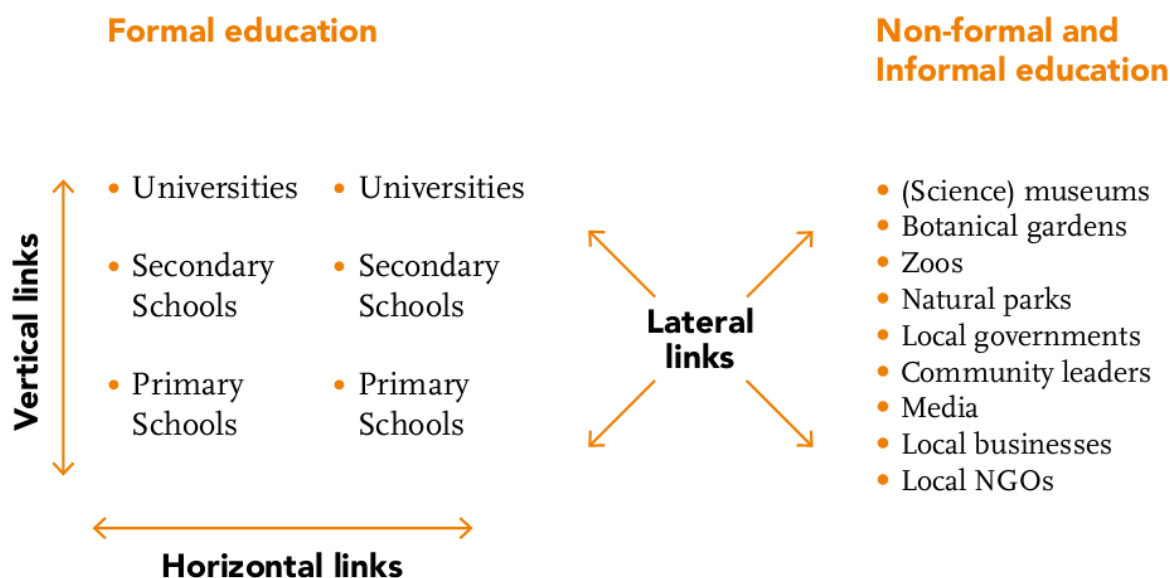


Figure 1.2. Collaborative links of an RCE (Fadeeva, Payyappallimana, Tabucanon, & Chhokar, 2014, p.22)

Since the first seven RCEs were declared at the UNU-UNESCO International Conference on Globalization and Education for Sustainable Development in June 2005 in Nagoya, Japan, their number has expanded to 55 (Mochizuki and Fadeeva 2008), then continued increasing to 129 in 2014 (Zinaida Fadeeva et al. 2014), and as of January 2016 there were 146 RCEs around the world¹. There are four core elements of an RCE: governance, collaboration, research and development (R&D), and transformative education (UN-IAS 2016). RCEs aims to ideally bring together various educators, including “school teachers, professors at higher education institutions, environmental NGOs, scientists, researchers, museums, zoos, botanical gardens, local government officials, representatives of local enterprises, volunteers, media, civic associations or individuals who work in the spheres of sustainable development such as economic growth, social development, and environmental protection, students and learners at all levels” at the regional/local level to advance ESD (UN-IAS 2016).

The number of RCEs has increased because it encourages action rather than theory (Fadeeva and Mochizuki 2010; Mochizuki and Fadeeva 2008). As explained by Mochizuki & Fadeeva (2008), RCEs have two crucial features that make it a unique contribution to the DESD. Firstly, RCEs facilitate the combination of all forms of education, including formal, non-formal and informal education. RCEs have given impetus to exchange knowledge between formal (school teachers, university lecturers) and non-formal educators (NGOs, national park staff, local communities). By generating partnerships, RCEs provides more learning opportunities and environments for students,

¹ <http://gpsen.org/rce-networks/>

not only in indoor classes but at national parks, botanical gardens or farms where they can be inspired and grasp the magnitude of sustainability. Secondly, by including the four core elements as aforementioned, RCEs can combine top-down and bottom-up approaches. Top-down policies are essential to sustainably institutionalize ESD, while bottom-up methods are imperative to include local concerns and interests in ESD that allow the students “think globally, act locally”.

Experience in RCE implementation suggests that efficient coordination is prerequisite to operation of RCEs (Z. Fadeeva and Mochizuki 2010). Thus, the elements of coordination and their organization must be well-defined at the initial stage of RCE mobilization. It is worth noting that HEIs are expected to play a vital role in advancing communication and coordination among RCE’s actors. Universiti Sains Malaysia (USM) is an example of an HEI actively playing a coordinating role in ESD in the RCE Penang (Zainal and Hamoon 2008). The university has established formal collaborative agreements with 11 regional stakeholders who are involved in sustainability-linked activities to carry out sustainable development-related programs (Zainal and Hamoon 2008). As a leader of the RCE, USM has generated various activities such as The White Coffin campaign (encouraged students not to use polystyrene-based containers in food packaging), a campus-wide recycling project, a citizenship program, a project entitled “Going bananas: lesson from sustainability,” a worm composting project and a university-community collaborative project. Such activities promoted the transfer of the university’s research and knowledge to benefit the community, which is the ideal outdoor learning space of students. “Going bananas: lesson from sustainability”, for instance, has brought together different faculties to introduce technologies to the community, enabling them to produce paper from the trunk of banana trees as a special material for creating handicrafts such as lampshades and lanterns. The project helps to generate income for the community while conserving the environment. Those productive activities demonstrate the significance of networking and collaboration to educate students and communities for ESD.

1.5. ESD in higher education

By fulfilling their three main functions of education, research and governance, HEIs can strongly affect society, contributing to human capital, social capital and economic development locally and regionally (Sedlacek 2013). Thus, HEIs play an important role in successful implementation of ESD by all countries, whether developed or developing nations. Educational functions allow HEIs to provide high quality human resources for society and graduates who are able to act towards sustainability. Universities can also collaborate with outside sectors to enhance public awareness on SD via training courses, exhibitions and campaigns. Research is consistent with education at universities since research generates new sustainability-related knowledge that will be transferred through education to students and society. Seen as multi-stakeholder institutions with expertise, universities may influence environmental and educational governance.

The role of HEIs in ESD is especially crucial in that they provide professionals and leaders that can transform society towards sustainability. Concurrently, HEIs engage “in the sustainable management of their institutions and procurement policies, ensuring that globally aware, ethically sound and environmentally balanced processes are introduced in order to provide an environment conducive to sustainable development” (Zainal & Hamoon, 2008, pp. 488-489).

As pioneers in ESD implementation, HEI affiliates account for a predominant proportion of the ESD-linked publications that encompass multiple dimensions of ESD. There is a consensus among tertiary educators that a “whole university” approach is a prerequisite for successful diffusion of ESD (Ferreira, Ryan, and Tilbulry 2006; Mcmillin and Dyball 2009; Buckler and Creech 2014; Pigozzi 2010). To create a culture of sustainability at universities, however, there need to be systematic linkages among types of education (formal, non-formal and informal education), and among curriculum, research and management systems or sustainable campus operations (Ferreira, Ryan, and Tilbulry 2006; Mcmillin and Dyball 2009). HEIs have promoted ESD since the early 1990s via various activities, including research, campus operations, strategic planning and community outreach.

Curriculum content and practice in higher education are widely considered to be fundamental factors that significantly influence whether ESD is embraced or rejected (Hegarty and Holdsworth 2016). The term “curriculum” typically refers to content, learning materials and activities under formal education (Hegarty and Holdsworth 2016). Curriculum change at universities can enable students to obtain the knowledge, skills and competencies to meet the demand of sustainability in their respective fields after graduation. At Liverpool John Moores University, for instance, a Sustainable Construction Curriculum Design model significantly improved students’ attitudes on environmental issues related to construction work (Cotgrave and Kokkarinen 2011; Murray and Murray 2007). Another large scale initiative regarding sustainability curricula is the Global Seminar (GS). The GS is facilitated by faculty and operated by students from 40 universities around the world, and it has been characterized as “international, interdisciplinary, innovative, and interactive” (Savelyeva and McKenna 2011). The GS course brings together students from different continents (America, Europe, Australia, Africa and Asia), and from different disciplines (agriculture, economics, education, art, medicine and soil science) applying advanced technology and videoconferences to foster various thematic discussions and interactions among participants (Savelyeva and McKenna 2011).

There has been some success in “greening the curriculum”, but there remain numerous difficulties still to resolve. Reviewing 123 articles published by sustainability-related international journals, Karatzoglou (2013) identified common barriers to implementation such as lack of incentives and time, inadequate financial resources, limited creativity, low appreciation of outreach activities

within academia, and emphasis on other more traditional priorities. Consisting of various stages-- planning, designing/redesigning course, implementing and, monitoring and evaluating - curriculum transformation consumes much time and requires plenty of adjustments during each stage. In addition, lecturers in higher education remain focused on their own teaching subjects and “do not yet share a common language about sustainability” (Savelyeva & McKenna, 2011, 91). De la Harpe and Thomas (2009, p. 77) suggested the following for successful curriculum reform towards sustainability:

- engaging in an intellectual effort to develop an agreed vision and shared understanding;
- gaining active involvement and ownership by senior leadership;
- providing opportunities to debate and discuss issues and to recognize and resolve concerns;
- providing professional development for staff to reflect on their conceptions of themselves, their profession and their work and their approaches to the curriculum;
- communicating widely and regularly the endorsement of the project, its goals, progress and outcomes;
- ensuring that tasks are completed by those assigned responsibility for them;
- demonstrating that change is worth the effort and results in superior outcomes;
- ensuring that systems and processes are developed or modified to support and monitor the change agenda.

Consulting academics from Australia and American countries, de la Harpe & Thomas (2009) pointed out important conditions for facilitating curriculum change in ESD as follows:

- developing both informal and formal support to form a powerful guiding coalition;
- developing an agreed vision or policy/programme to guide the institution’s change;
- providing resources for development and implementation;
- developing an implementation strategy.

Campus sustainability or green campus activities and events may also serve as “informal curricula” to enhance students’ awareness of SD (Müller-Christ et al. 2014). “The campus is the most readily available laboratory for hands-on projects, and acts as a shadow curriculum for the students to apply to the campus what they learn in the classroom” (Mcmillin & Dyball, 2009, 58). A report by the International Sustainable Campus Network (ISCN) in 2014 identified several best practices for campus sustainability worldwide. One example was a campus-wide geothermal heating and cooling system at Ball State University in the US which was expected to be able to cut its campus carbon

footprint nearly in half, allowing the system to serve as a platform for both research and education (ISCN, 2014, 8). Such physical models on campus are important to reinforce knowledge learned in the formal curriculum and to inspire students' initiatives for SD. It is clear that there is an increasing alignment among HEIs in linking curriculum transformation with outdoor experiential learning either on campus or in communities.

In most cases, it should be noted, green campus initiatives have tended to start with efforts by the administration to make the campus more sustainable with environmental management practices such as energy efficiency, reduction of waste and CO₂ emissions. Those activities are referred to as “hard” approaches which are relatively centralized. However, “soft” approaches can be more challenging, as they tend to involve different lecturers in reforming across curricula to realize infusion of sustainability contents in all faculties. Moreover, the outcomes of sustainability-related education are not as easily assessed as they are for operations management.

Therefore, it is necessary to have a relevant framework for HEIs to measure their sustainability performance according to “common criteria” and a holistic approach. In this context, the Association for the Advancement of Sustainability in Higher Education (AASHE) has developed The Sustainability Tracking, Assessment & Rating System (STARS). STARS provides a tool for looking at all facets of HEIs: curriculum and research, campus operations, planning and institutional capacity to advance strategic planning, encouraging cross-sector dialogue about sustainability on campus, and stimulating conversations and learning between institutions (AASHE 2016b). Up to May 2016, a total of 768 institutions have registered to apply the STARS tool to assess their sustainability performance (AASHE 2016a). Yet most of those registered institutions are located in the US (648 institutions), and it has been argued that the system applies indicators that may not be universal in applicability. For this reason, Hokkaido University has launched a self-assessment system with 158 indicators to be applied by Japanese universities that cover management, education and research, environment and local community. It is clear that campus sustainability assessment needs to be localized and contextualized to apply globally.

Even after sustainability-related assessment systems have launched, ESD educators still find it difficult to assess students' achievements after courses or programs. Two key ideas have been introduced to guide the educators in evaluation. The first is sustainability literacy. According to Murray and Murray's review (2007), sustainability literacy describes the qualifications of knowledge, skill, attitudes and values that a person needs to obtain to make the right decisions towards SD. In this context, the Sustainability Literacy Test (SLT) was suggested as a tool for testing the efficiency of a new course via a set of questions provided to students via email pre-, mid-, and post-course. The SLT is a knowledge-based assessment tool thus it must not be used as the single means to assess sustainability literacy (Kieu, Fernandez, and Shaw 2016).

The second key idea is identification of sustainability competence. (Wiek et al. 2016) synthesized six key competencies in sustainability:

- systems thinking competence;
- futures thinking (or anticipatory) competence;
- values thinking (or normative) competence;
- Strategic thinking (or action-oriented) competence;
- Collaboration (or interpersonal) competence and;
- Integrated problem-solving competence.

For each competence, there are three levels including novice, intermediate and advanced, that explicitly describe what students are able to do (Wiek et al. 2016). This framework is important for higher education teachers to reorient their sustainability teaching from a content-based to a competence-based approach. To assess different levels of competency of students, higher educators must consider “the practice of coordinating and aligning courses across the curriculum” (Wiek et al., 2016, p. 258).

Sustainability has gradually become an important topic in HEIs, as indicated by the increase of degrees, diplomas and certificate programs in this area. Yet, according to Hopkins (2014), there remain limited models of sustainable production, consumption or lifestyles for students across majors, who need to understand about the future situation of fewer natural resources and other global issues. It is required: (i) more research on longitudinal effects of ESD, (ii) research with coherent methodological direction, (iii) research with larger scale and comparison, (iv) research from non-native English speaking countries, and (v) research that engages different stakeholders in ESD (Sterling, Warwick, and Wyness 2016). There are many challenges but it is obvious that ESD approaches will offer HEIs opportunities to empower university educators and increase education quality.

...Higher Education’s most valuable contribution to sustainability lies in providing large numbers of graduates with the knowledge, skills and values that will enable business, government and society as a whole to progress towards more sustainable ways of living and working (Chalkley, 2006, p. 235).

1.6. ESD in teacher education

1.6.1. ESD teaching competencies

Teachers have been recognized as key agents for achieving a more sustainable society, providing students with the knowledge, competencies and values to enable them to act in sustainability

responsible ways. Accordingly, teacher training is an important focus in the effort to mainstream sustainable development. As Alam wrote, “Everything else starts with education, and what better way to start re-orientation of education for sustainable development than with the teacher education institutions (TEIs)” (2013, p. 3). Hence, teachers ought to achieve relevant knowledge, skills and action competence to not only transform themselves but also society.

A part of CSCT project (Curriculum, Sustainable development, Competences, Teacher training), a model of ESD competencies in teacher education was developed by researchers from eight countries (Sleurs 2008). The model (Figure 1.3) consists two parts: the red triangle refers to overall ESD competencies and the blue triangle refers to professional dimensions. In terms of ESD competencies, three major competencies are suggested, including teaching, reflecting/visioning, and networking. In professional dimensions, teacher is simply seen as an educator but as an individual in dynamic relationships with students and their parents, their colleagues at schools, and the society. There are five domains (knowledge, systems thinking, emotions, ethics and values and action) suggested in teaching and learning for ESD (Sleurs, 2008, pp. 26-29).

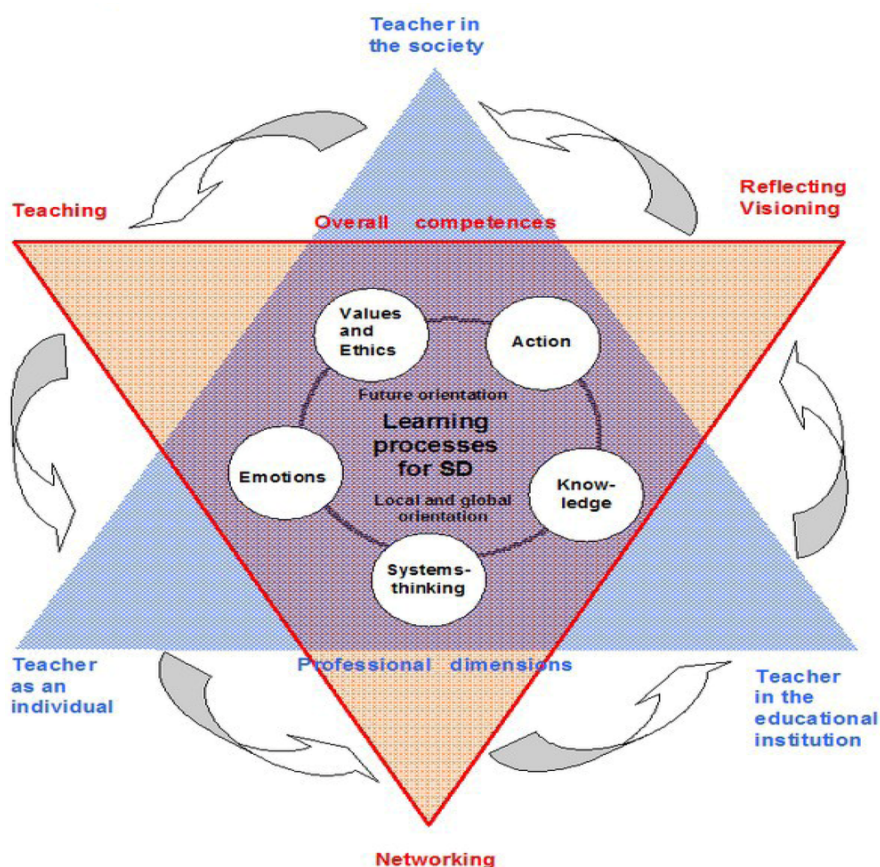


Figure 1.3. Model for ESD competency in teacher education (Sleurs, 2008, pp. 26)

With experiences in training teacher in sustainability and the literature review, Ferreira simply proposes five key competencies in teaching ESD (2011, p.3) are:

1. Knowledge and understanding of environmental issues and problems;
2. Environmental action skills to enable action to take place;
3. Critical thinking skills;
4. An ability to effectively utilize a wide range of pedagogical approaches; and
5. Teacher as professional skills such reflective practice.

This set of key ESD teaching competencies indicates that proficiency of ESD requires relevant knowledge and skills of sustainability and the unique pedagogical approaches to conduct sustainability education.

1.6.2. ESD pedagogical approaches

Pedagogy is the central concern of educators in teaching about sustainability, yet the literature on ESD pedagogy is still limited. ESD requires a holistic or integrated pedagogy which consists of four steps: (a). Academic learning, (b). Inter/multidisciplinary learning, (c). Multidimensional learning and (d). Emotional learning, which encourages learners to express their feelings to “activate processes of value and ethics clarification” (Eilam & Trop, 2010, 56). EE literature has suggested three prominent teaching approaches (Eilam & Trop, 2010):

- Student-centered learning: emphasizes the shift the focus of teaching from the teacher to the learner
- Minds-on and hands-on learning (incentivizing learners’ high order thinking and doing): engage learners in learning by doing a certain task and questioning themselves to explain the process.
- Active participation.

Popular interactive teaching techniques in ESD such as discussion, open debate, peer involvement, role playing, problem-based learning, engaging with role models, simulations, games, case studies/local examples, story-telling and appropriate use of multimedia should be frequently applied (Corney and Reid 2007; Shephard 2008).

Practical examples of training pre-service teachers demonstrate that student teachers need to learn not only SD knowledge but also pedagogies (Corney & Reid, 2007; Henze, 2000). Literature review by (Armstrong 2011) implies pedagogical strategies for ESD in six parts:

1. Reframing knowledge: to infuse sustainability across the curriculum. It is not by adding more content to existing subjects but embedding the interrelationships between social, environmental, and economic perspectives at local and global levels in the subjects.

2. Developing skills that support sustainable development: many of these skills are related to citizenship and stewardship such as interdisciplinary and transdisciplinary research skills, communication and civic engagement and values-focused thinking.
3. Developing values that support sustainable development: ESD researchers widely recognize that the encouragement of values in accordance with knowledge and skills will promote actions in sustainability
4. Modeling reality: to help learners with personal experiences that empower them to be able to take actions in reality
5. The ESD Educator: who play roles as “a facilitator, collaborator, and fellow learner on the journey toward sustainability, learner in tow” (Armstrong, 2011, p.5)
6. Authentic assessment: to evaluate the learners not only knowledge but skills, perceptions, behaviors, and values

In an investigation of student teachers’ learning about ESD, Corney & Reid (2007) write that student geography teachers need to learn six dimensions of ESD:

1. Understanding of the nature of sustainable development for teaching
2. Knowledge of approaches/ strategies for teaching about sustainable development
3. Awareness of preferred teaching stance related to personal views about sustainable development issues
4. Awareness of desired learning outcomes
5. Awareness of Geography Department practice in ESD
6. Awareness of a potential for cross-curricular work in ESD

This investigation also emphasizes that the partnership between university-based and school-based teacher educators is the vital factor to facilitate and sustain student teachers’ engagement in ESD teaching. Meanwhile, a study of different teacher training courses at universities in the state of Northrhine-Westphalia, Germany, Henze (2000) identified the most significant principles for “good teacher education examples” in sustainability, namely interdisciplinary, global learning, connecting education at the university level with schools and communities, development of reflexive competence, communicative competence, personal engagement and inter-subject co-operation. Indeed, innumerable conditions are necessary, of which human effort is the prerequisite towards ESD advancement.

The personal interest and engagement of the responsible university lecturers is shown to be a dominant factor in determining if sustainability content is included. Such personalities were

described by the university lecturers questioned as “pioneers” or “loners.” The importance of impassioned individuals in implementing ESD approaches was aptly described by one of the university lecturers interviewed: “When these people retire, the whole matter dies. There is nobody to take their places” (Henze, 2000, p. 285).

Three areas were identified by Gough (2009) as furthering EE and ESD in teacher education: 1. the ongoing shift in emphasis from increasing teachers’ knowledge of environmental content to improving pedagogy and a recognition of the need for changing worldviews, 2. a growing body of case studies on integrating ESD into the educational system and 3. continuing guidance from UNESCO, national governments and scholars. Two reference works in particular, *Quality Criteria for ESD-Schools: Guidelines to Enhance the Quality of Education for Sustainable Development* (Breiting, Mayer, and Mogensen 2005) and *Guidelines and Recommendations for Reorienting Teacher Education to Address Sustainability* (Hopkins and Mckeown 2005), have provided useful resources to teacher educators for reforming the teaching curricula and for creating, monitoring and evaluating ESD applications. There have also been efforts to promote domestic and international networks of teacher educators for sharing experience and innovations and facilitating their interactions with other sustainability stakeholders (Fien and Maclean 2000).

Overall, ESD literature has much advanced for the last two decades from conceptualization to implementation and evaluation. A great number of ESD publications targets at higher education level that will strongly influence society. Despite that abundance, the existing ESD teacher education literature remains few, particularly in developing countries where the burning question of sustainable development needs to answer presently. Thus, this study has been conducted to provide an example of how ESD teacher education is implemented in a developing country – Vietnam. By analyzing the roles of various stakeholders, some low-cost solutions were proposed to overcome the existing challenges of training teacher in ESD.

1.7. Conceptualization of key words

Some key words (formal education, non-formal education, student teachers and interactive pedagogy) in this study are conceptualized as following:

- *Formal and non-formal education in the context of Vietnam:* According to the Education Law 2005, the national education system consists of formal education and continuing education, which is widely understood as NFE (World Bank 2005). In order to compare with HEIs’ educational structure worldwide, the term “formal education” is used in this research to indicate the subjects/courses within teacher education curricula and researches under students’ theses. The term “non-formal education” refers to a range of extra-curricular activities that can influence student cognition of sustainability such as volunteering, short-term training courses, and short-term or planned events. Since the educational sector in

Vietnam recognizes only formal education and NFE (Tien 2009; Lam 2007), NFE in this study includes informal education, which remains a poorly defined concept in Vietnam.

- *Student teachers*: refers to those who are studying at teacher education institutions to obtain the bachelor of education in any discipline (i.e. Geography)
- *Interactive pedagogy*: refers to the teaching methods that apply interactive techniques (i.e. debate, discussion, hands-on, minds-on) that promote interaction and interrelation between teacher and students and among students

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CHAPTER 2: THE CONTEXT OF VIETNAM

2.1. Education system in Vietnam

Educational issues are better understood by examining national practice and experience, in this case, those of Vietnam, where education is a prominent focus in the society regardless of the long period of colonization, wars and difficulties during years of a closed economy. Since the political and economic transformation (Doi moi) initiated in 1986, rapid economic growth for three decades has permitted steady development of the education system, from the pre-education to higher education level, including textbooks, curricula, school teachers and facilities. The participation rate in general education has also increased. As for higher education, the number of students increased from 760,000 to more than 1.3 million from 1998-2004, with an average increase of 6.4% per year (World Bank 2005).

The structure of the formal education system of Vietnam is similar to most of South East Asian countries (Figure. 2.1). School education lasts for 12 years, and the primary level (the first five years) is free and compulsory. After graduating from lower secondary school, students can enroll either in upper secondary schools or in vocational training schools which provide them with job training courses consistent with general knowledge courses. Higher education institutions include universities, colleges and academic research institutes that provide different types of education and training lasting 2-6 years depending on specialization.

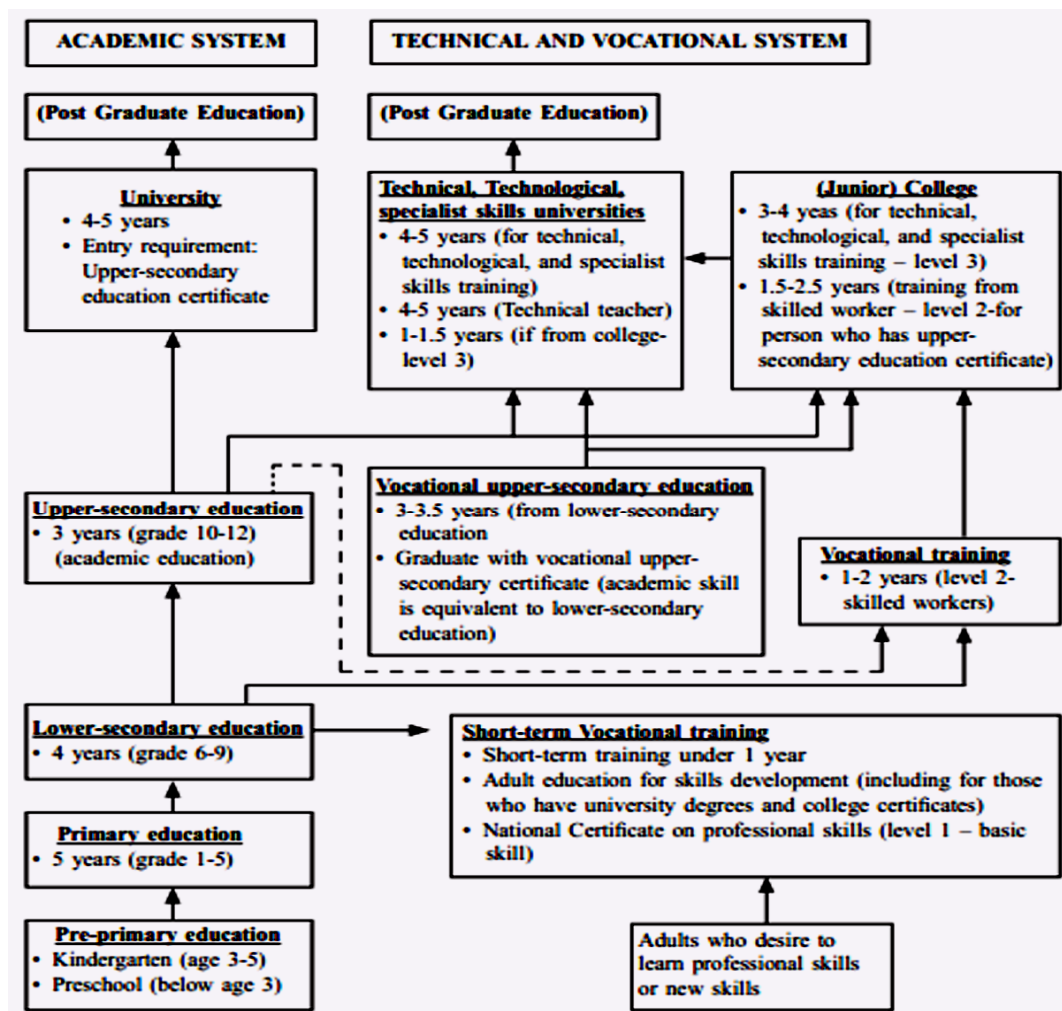


Figure 2.1. The structure of the education system in Vietnam (London, 2011, 20)

To meet social demands in the context of economic and population growth, new decrees and resolutions have been adopted in recent years. Encouragement of the private sector to enter the education field is one of the most important reforms. As a results, semi-public/private/people-founded² institutions were established and keep increasing rapidly in number (London 2011; UNESCO 2010; World Bank 2005). The educational system has also been gradually decentralized. Resolution 14/2005/NQ-CP (adopted on November 2, 2005), for instance, articulates the right to autonomy of HEIs in administration, training programs and curricula and budgetary management (Hayden and Thiep 2007).

Despite these achievements, the educational system in Vietnam has tended to lag behind those of other countries in the region according to quality of education (the school curriculum continues to

² People-founded institutions are founded by community groups such as trade unions, professional associations, youth organizations and women's associations (the term "people-founded" derives from the fact that these institutions are peoples' organizations) (Harman et al., 2010, 216)

encourage memorization rather than critical thinking and creative problem-solving) (T.P.H. Nguyen 2007) and higher education transformation (weak research capabilities of Vietnamese academic institutions) (Hien 2010). There remains a huge gap in education quality between urban and rural areas. Students suffer from overloaded curricula which target at knowledge-based memorization instead of skills. Tertiary education cannot produce graduates with essential competencies to meet the demand of labor market (Harman, Hayden, and Pham 2010). Participatory education is widely regarded as the most effective approach for building learners' skills and values but the Vietnamese education system has been largely influenced by Confucianism and a very top-down approach.

Perceiving these strong obstacles, the Vietnamese Communist Party passed Resolution 29-NQ/TW calling for reform in the educational sector (*Doi moi can ban, toan dien giao duc va dao tao*) on November 4 2013. It proposed a holistic approach to transform the whole education system. Some overarching solutions are: replacing passive by interactive teaching to equip learners with practical knowledge and skills, increasing collaboration in education reform and mitigating the gap among regions nationwide. Those tasks require strategic planning paired with realistic, concrete solutions to apply across sectors in order to avoid continuing current problems.

It is worth noting that education structure in Vietnam doesn't make a clear distinction between non-formal and informal education. Basically, the educational sector in Vietnam recognizes only formal education and non-formal education (NFE) (Tien 2009; Lam 2007). According to the Education Law 2005, the national education system consists of formal education and continuing education, which is widely understood as NFE (World Bank 2005).

2.2. Teacher education in Vietnam

Education in many developing countries has experienced profound change in recent decades to meet the demands of development, yet costs, quality, distribution and accessibility remain major concerns (Glewwe and Kremer, 2006; William L and Abdulatif, 1990). In terms of educational quality, it is widely recognized that reforming teacher training is a core requirement (Tarvin and Faraj 1990). Teachers in many low-income countries lack higher education (Glewwe and Kremer 2006). In addition, in many Asian countries where top-down teaching or teacher-centered learning has been the main pedagogical approach, students tend to be reluctant to participate in discussions or share their ideas (Hellsten and Reid, 2008; Pham and Renshaw, 2014). For this reason, this type of pedagogy is being replaced by more dialogical methods worldwide, especially in HEIs (P. Hartley, Woods, and Pill 2005).

As with other developing countries, Vietnam has achieved positive progress in education, such as increased student enrollment and diversification of educational models since the 1990 reforms (T. P. H. Nguyen 2007). According to the Ministry of Education and Training (MOET, 2011), TEIs are the main driving force behind this educational reform.

There were 133 TEIs nationwide in 2012, including 14 universities of education with 4,490 lecturers, 39 colleges of education with 3,543 lecturers and 79 teacher training centers (MOET 2013b). Currently, there are two types of teacher education programs (TEPs): one that lasts four years to supply teachers from kindergarten to high school and a three-year program to supply teachers from kindergarten to junior high school. Generally, TEPs comprise four main elements, as decided by MOET (MOET 2006):

- General knowledge: to provide students with basic knowledge in social and natural sciences
- Specific knowledge: to provide students with knowledge in their specialties such as geography, biology, teaching philosophy and pedagogical techniques
- Teaching practice: students are sent to schools for at least one month of practice teaching
- Graduation requirements: students can either conduct research and write a thesis or take classes to achieve enough credits for graduation.

Since the government promulgated Resolution 14 on the “Fundamental and Comprehensive Reform of Higher Education in Vietnam 2006–2020,” HEIs have been conferred with more autonomy in curriculum development (Pham, 2010). Accordingly TEIs have gradually modified their training programs to produce teachers with high-level pedagogical knowledge and skills that contribute to students’ success. However, despite recent attempts by MOET to reorient the curriculum to target skill building instead of in-depth knowledge as in the past and to reform teaching methods, the reform process remains slow.

Tertiary ESD can be regarded as lagging in Vietnam, and there are very few published papers on this topic. Currently, there is only one dedicated center, Centre for Research and Promotion of ESD (CEREPROD), formed to promote the teaching of ESD as a subject at Hanoi National University of Education (HNUE) (Doan 2013). NGOs have implemented several projects under the umbrella of ESD but so far there are no official projects targeting pre-service teacher education.

2.3. ESD development in Vietnam

Vietnam has experienced significant transformation of both society and economy since the Doi moi economic reforms of 1986. However economic growth has not always been accompanied by social progress and equity or protection of natural resources and the environment (Social Republic of Vietnam 2012). In the 1990s, faced with severe environmental degradation, Vietnam’s National Assembly approved a National Action Plan for the Environment and Sustainable Development (1991) and the Environment Law (1994). Subsequently, in 2001, the Prime Minister of Vietnam approved a project integrating environmental issues in general education, which enabled MOET to successfully mainstream EE in formal education curricula at all educational levels. In 2004 the national government established the “Strategic Orientation for SD in Viet Nam” (The Vietnam

Agenda 21) - which asserted the indispensability of sustainable development in Vietnam - and a National Council on SD was formed on 27 September 2005.

Recently Vietnam has been recognized as one of the world's most vulnerable countries to the effects of climate change (World Bank 2010), hence climate change-linked natural disasters have become an urgent concern in Vietnam. Since the Action Plan for the Education Sector's response to climate change from 2011-2015 and the Action Plan of the Education Sector for prevention and mitigation of natural disasters in 2011-2015 were approved, climate change education (CCE) and education for disaster risk reduction have been widely disseminated from the elementary to university level. However, most programs are not implemented in formal education but by NGOs and other civil society actors, such as youth unions and environmental clubs.

Vietnam has experienced several milestones in mainstreaming sustainability themes nationwide since the launch of the UNDES in 2005, including the establishment of the National DESD Committee in 2005. Following the Asia-Pacific Guidelines for the Development of National ESD Indicators (Tilbury et al. 2007), the Vietnam National Commission for UNESCO (NatCom) compiled a set of indicators and set up a national data collection mechanism to ensure policy support and implementation of effective national monitoring and reporting for ESD across all sectors. During the first half of the DESD (2005-2009), HNUE, with support from NatCom and the UNESCO Office in Vietnam, established the aforementioned CEREPD to promote ESD in academia and education at universities (Do and DeMaria-Kinney 2013). After helping to draft an ESD action plan nationwide and publicly endorsing the Bonn Declaration the government approved the National Action Plan on Education for Sustainable Development in Viet Nam 2010-2014.

From 2011 to 2013, several pilot projects were conducted to integrate ESD content at various school levels under a partnership between MOET and other stakeholders, mainly UNESCO and NGOs (Live&learn 2003). For example, as part of UNESCO-Samsung Group global collaboration, Vietnam launched a US\$1 million two-year project to develop, pilot and distribute multimedia teacher-training materials on ESD from January 2013. The project aimed to enhance climate change responses, disaster risk reduction (DRR) and biodiversity at the primary school level, starting in Thua Thien Hue province's Royal Citadel. This is the largest multi-sectoral ESD project in Vietnam, involving MOET, teachers, students and their parents and local communities (MOET, UNESCO, and Samsung 2014). At least 33 other organizations and institutions have conducted projects related to ESD across Vietnam (UNESCO Vietnam 2011). Their main thematic foci include environmental education, including sustainable agriculture, water resources management and biodiversity protection; gender education and HIV; health and hygiene education; CCE and education for disaster risk reduction.

Vietnam could point to a few notable achievements by the time the DESD concluded in 2014, particularly its success in embedding ESD principles in several national documents across sectors. However, despite the establishment of organizational and institutional structures in Vietnam, most practical work in ESD to date has been carried out by NGO-led projects. Researchers have noted that Vietnam faces similar challenges for ESD implementation as do other developing nations, including a lack of academic research and weak cooperation among different ministries and stakeholders (Do and DeMaria-Kinney 2013).

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CHAPTER 3: METHODOLOGY AND APPROACH

3.1. Research scope and objectives

There are several publications of environmental education but published research on ESD in Vietnam is relatively rare, particularly on teacher education. There were two main organizations established to advance ESD in Vietnam, in Hanoi and Ho Chi Minh City, respectively. In Northern Vietnam can be found CEREPROD, located at the Hanoi University of Education, one of the most prominent TEIs of Vietnam. Researchers affiliated with CEREPROD have published a few publications (written in Vietnamese) which focus on two main topics: students' ESD subjects at the department of Geography, Hanoi University of Education and opportunities to integrate sustainability into geographical subjects across curricula in general education (from grade 6 to 12) (T.T.H. Nguyen and Doan 2006; Doan 2013). Those first publications merely explained the significance and teaching contents of ESD and feasibility to embed its themes in curricula but did not describe design, implementation and evaluation or any concrete case study in ESD.

In accordance with HEIs, other organizations are also involved in raising students' awareness about SD. Of those organizations, NGOs are very active in working with students via various sustainability-related activities such as training courses. They are considered to be important non-formal educators in EE and ESD. However, there has been no study of NGOs' contribution in teaching ESD in Vietnam.

The thesis is the first study on ESD implementation in teacher education in Vietnam. It first examines how student teachers are educated about sustainability via formal and NFE at the five prominent TEIs. Then, a case study will be presented to understand the role of different stakeholders for training teachers in ESD. This study is an illustration of some of the challenges and opportunities for mainstreaming ESD pedagogy in the Vietnamese TEIs. Lessons learned and solutions drawn here can be regarded as applicable for other schools in developing countries.

3.2. Research questions and structure of the thesis

This study firstly examines the existing pre-service teacher education for SD at the five TEIs in Vietnam. Then it looks in more detail at a DUEd case study to search for a comprehensive approach to build ESD teaching competencies for student teachers in Central Vietnam. The following research questions (RQs) will be addressed:

- o RQ1: How is ESD being implemented at TEIs in Vietnam in both formal and non-formal education? (Chapter 3)
- o RQ2: What lessons can be learned from initial efforts in ESD implementation at TEIs nationwide? (Chapter 3)

- o RQ3: How does NFE contribute for training teachers in? (Chapter 4)
- o RQ4: What are NGOs' approaches in building key sustainability competencies for student teachers? (Chapter 5)
- o RQ5: How can the youth-led organizations enhance student teachers' proactive performances in sustainability? (Chapter 6)

The structure and flow of the thesis are summarized in Figure 3.1

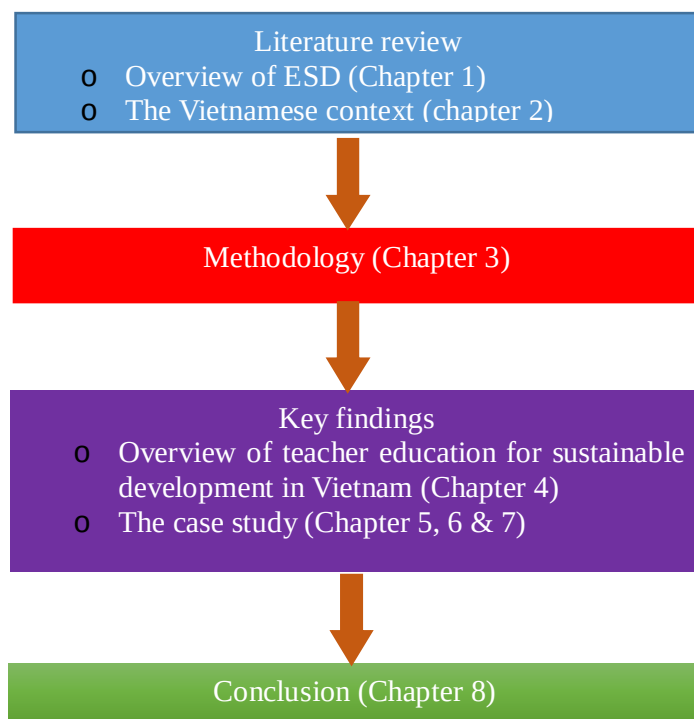


Figure 3.1. Structure of the thesis

3.3. Methodology

The author mainly applied qualitative methods, including focus group discussions, semi-structured interviews and key informant interviews, in this study. These qualitative methods reveal a wealth of detailed information via individuals' voices to explore problems related to non-formal education in training teachers about ESD.

From February 2013 to August 2016, a variety of methods were applied to collect data in this research, including desk review, semi-structured interviews, key person interviews, and focus group discussions (FGDs). As mentioned earlier, the research can be divided into two stages: the first stage to examine the existing pre-service teacher education for SD at the five TEIs in Vietnam and the second stage to focus on the DUEd case study. The framework of methodology is presented in Figure 3.2. Each method is described in the following sections in detailed.

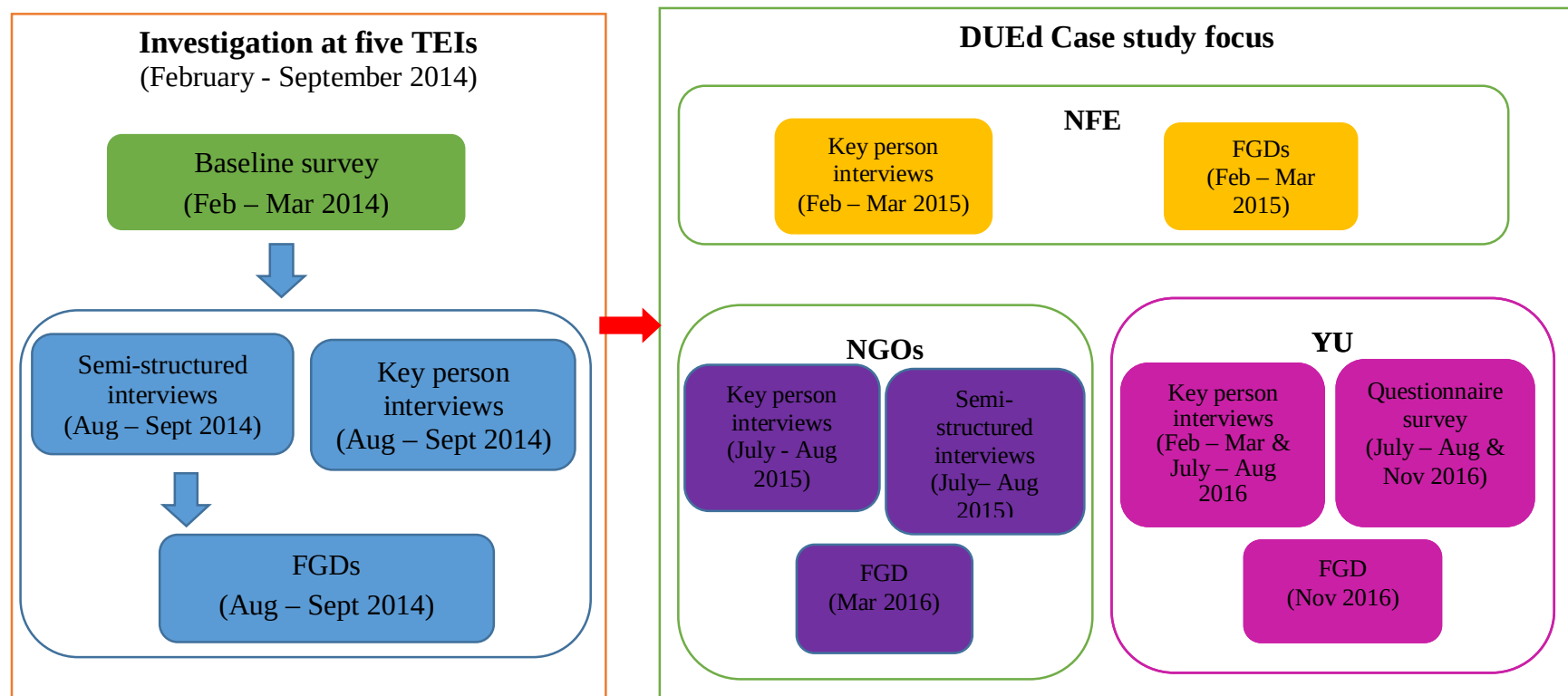


Figure 3.2. Methodology framework

3.3.1. Investigation at the five TEIs³

a. Desk review

A desk review was carried out early in the research to identify courses with ESD themes integrated into curricula and reports, strategies and policies for teacher education. Reviewing the syllabi of five TEIs across Vietnam also allowed the author to select interview subjects among university lecturers and student teachers.

b. Semi-structured interviews (SSIs)

At the first stage of the study, student teachers were interviewed about their experiences with ESD-linked activities, their impressions of ESD and their recommendations for improvement. A total of 75 students were randomly selected and interviewed (15 students at each university). All of them are fourth-year students of the faculties of geography and biology where ESD-related subjects are mainly taught. The questions were designed to assess ESD knowledge and competencies and receive feedback from students who had participated in ESD-related activities in formal and non-formal education and to elicit their recommendations.

c. Key informant interviews (KIIs)

The research attempts to analyze ESD implementation in formal education, including subjects/courses and research by which students can earn credits, and non-formal education, including all activities that students can participate in without obtaining credit. KIIs were conducted at each university with two lecturers who were responsible for formal education and another who is responsible for non-formal education. The questions aimed at understanding how ESD courses are being implemented, student research trends and constraints on ESD implementation for formal education. For non-formal education I sought to learn how ESD activities are being implemented at universities and changes in extra-curricular activities

d. Focus group discussions (FGDs)

Focus groups were organized at each university to extract a broader range of replies and to delve deeper into the individual interview questions. Each group comprised five to eight students who had provided varying responses or particularly thoughtful answers during the individual interviews. The focus questions were: 1. How have ESD-related activities influenced your knowledge, attitudes behavior? 2.

³ Description of the five TEIs will be presented in Chapter 4

What are the challenges for behaving sustainably? 3. What should be improved in ESD education at your university?

e. Analysis

Manual coding according to the streamlined code to theory method (Saldana 2012) was conducted for the interview data to identify themes and quantify the qualitative data for comparison. Similar ideas were labelled as the same code. The initial codes enabled the authors to distinguish between ESD-related activities conducted at the five surveyed TEIs and investigate their impact on students' knowledge, skills and attitudes or motivation. Subsequently, a second round of coding was undertaken based on the existing codes to identify connections and relationships among courses and between formal education and non-formal education.

Codes and categories arising from the codes were later input into Excel spreadsheets to provide a clear comparison among the five surveyed TEIs and students' perceptions. Graphs were also generated to present the data in visual form.

3.3.2. Investigation at DUEd case study⁴

a. Key informant interviews

To identify the existing and prospective contributions of various non-formal educators, the author conducted KIIs. Interviewees were selected who met the following conditions: (i) Had worked for an organization which had sponsored projects or activities related to sustainability/ESD; (ii) Had cooperated with DUEd or were able to cooperate with DUEd in the future in ESD. 13 interview subjects were selected, as follows:

Table 3.1. Description of key informant interviews

<i>Interviewee</i>	<i>Number</i>	<i>Interview themes</i>
YU leaders	2	- YU activities related to EE/ESD and students' demands - Collaboration between YU and other sectors to conduct extra-curricular activities
Leader of eco clubs	2	Sustainability-linked activities organized by environmental clubs
Faculty lecturer	1	- Existing formal and non-formal ESD - The advantages and disadvantages of non-formal ESD - How to strengthen relationships with outside stakeholders to promote ESD
Director of	1	- Teacher education programs and reform related to ESD

⁴ Description of the case study will be presented in Chapter 5

Department of Academic Affairs		- Collaboration with other stakeholders to implement ESD - How to strengthen relationships with outside stakeholders to promote ESD
NGO official	3	- Sustainability-linked training courses/activities - Collaboration with DUEd to organize ESD activities
School teachers	3	- Student teachers' ESD teaching competencies - Collaboration with DUEd and how to strengthen existing relationship
Danang Climate Change Coordination Office (CCCCO) official	1	- Sustainability-related projects conducted by CCCO - Feasibility of collaborating with DUEd to conduct ESD activities

To understand the youth-led sustainability activities at DUEd, the author next interviewed two university YU leaders, two faculty YU leaders and two leaders of student eco clubs in March and August 2016.

b. Focus group discussions

The authors organized a total of seven FGDs with DUEd student teachers who were the last year undergraduates of biology and geography discipline, university lecturers, NGO staff, school teachers, YU representative and city governmental officials. The details of each FGD are presented in Table 3.2.

Table 3.2. Focus group discussions of the research

Targeted groups	Participant number	Time	Discussion themes
Student teachers (experienced NFE)	18 (9 for each time)	March & August 2015	- Description of sustainability-linked non-formal learning students experienced and its influence on students; - The advantages and disadvantages of non-formal ESD; - Solutions to enhance non-formal ESD at DUEd
Student teachers (experienced NGOs' ESD-linked training)	8	August 2015	- Describe NGO-led ESD-related training courses (trainees, contents, training methods, evaluation and motivation) and how the courses influenced their pro-sustainable behaviors; - Explain the advantages and disadvantages of those courses and; - Suggest strategies to promote NGO involvement in ESD training at DUEd
NGO staff and university lecturers	9	March 2016	Challenges of university – NGO partnerships (UNGOPs) and how to overcome these challenges to increase collaboration between NGOs and universities
DUEd, QNU and HUEd	10	March 2016	- Student teachers' relevant competencies in teaching ESD-linked themes;

staff, CCCO official, school teachers, YU			- Roles of each stakeholders in building students' competencies; - Existing and prospective collaborations for training teachers in ESD.
Student teachers	12	November 2016	Youth-led sustainability activities at DUEd: existing implementation, constraints and solutions

Each focus group lasted approximately 70 minutes. The first 15 minutes was utilized for brainstorming to answer to research questions. Subsequently, each participant shared answers with each other. Conflicting opinions occurring were carefully discussed with assistance of a moderator.

It is worth mentioning that the two FGDs in March 2015 were organized under a workshop "Collaboration for Training teacher in Education for Sustainable Development" at DUEd. Within the workshop, participants were divided into two focus groups: one group of NGO and university staff to discuss about University-NGO partnerships and solutions to increase collaboration for further teacher education for SD and another group of diverse participants, including DUEd, Hue University of Education (HUEd) and Quang Nam Univeristy (QNU) staff, CCCO official, school teachers and, YU leader to discuss about the weakness of student teachers, essential teaching competencies related to EE/ESD and collaboration in teacher education for SD.

c. Semi-structured interviews

Semi-structured interviews were conducted to identify benefits, obstacles and solutions to promote university-NGO partnership in training student teachers about ESD. Two informal meetings of faculty of Geography and, Biology and Environmental Science enabled the author to select 12 lecturers who had collaborated with NGOs in ESD courses and other sustainable development activities. The faculty included six lecturers (under 35 years old) with master's degrees and six lecturers (over 35 years old) with PhDs. The author also interviewed eight NGO representatives who had conducted sustainability-linked courses at DUEd.

d. Questionnaire survey

In August and November 2016, the author conducted a questionnaire survey, utilizing both multiple choice and open-ended questions, to understand student teachers' participation in youth-led sustainability-linked activities at DUEd. A total of 143 student teachers from the faculties of Geography and, Biology and Environmental Science were surveyed. The description of surveyed students is shown in Table 3.3.

Table 3.3. Description of surveyed students

Faculty		Gender		Year of bachelor degree		
Biology	Geography	Male	Female	Second	Third	Fourth
83	60	19	124	24	75	39

e. Data analysis

To identify the contributions of NFE for training student teachers in ESD, two main topics were analyzed in this research:

- Advantages and disadvantages of NFE in ESD implementation, identified from key phrases emerging from a brainstorming section held as the first part of student teacher focus group discussions;
- Current and prospective collaboration among different stakeholders to promote ESD in DUEd, integrated in a framework based on the replies of key informants.

In terms of NGOs, the authors analyzed data from the student focus group discussion to understand the contribution of NGOs in training teacher students about ESD, with semi-structured interviews supplying supplementary information. A framework of key sustainability of (Wiek et al. 2016) was applied in order to understand NGO course outcomes. The framework suggested five key sustainability competencies: (i) systems thinking; (ii) futures thinking; (iii) values thinking; (iv) strategic thinking, and (v) collaboration. Objectives were described for each type of competence at three level: novice, intermediate and advance.

Manual coding was applied to analyze qualitative data. Codes, key phrases and paragraphs that had emerged from the semi-structured interviews were analyzed to identify weak areas of collaboration and to propose solutions to strengthen partnerships for ESD implementation in a teacher education institution. UNGOPs were analyzed according to the five levels of collaboration in a partnership suggested by Hogue (1993): no interaction at all, networking, cooperation, coalition and collaboration.

Data from the questionnaire surveys were statistically analyzed according to: (i) proportion of sustainability activities in student extra-curricular activities, (ii) types of activities by YU and student clubs, (iii) how the activities influence student teacher's performances in sustainability and, (iv) their demand related to sustainability activities.

3.4. References

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CHAPTER 4: EDUCATION FOR SUSTAINABLE DEVELOPMENT IN VIETNAM

4.1. Overview

The Vietnamese government has long been aware of the pressing need for improvement of education quality. During the period from 2001 to 2005, for instance, Vietnam devoted 21.4% of its total government expenditures on education (World Bank 2016). A variety of policies were adopted to transform education to meet the demands of society. Of those policies, two were widely deemed to be particularly effective: the new curriculum introduced in 2002 in general education and Resolution 14 adopted in 2005, conferring HEs more autonomy (World Bank 2005; Harman, Hayden, and Pham 2010; Hamano 2010) Teacher education reform is a

prerequisite for improving the quality of education. However, as noted in Chapter 2, the reform process, from targeting in-depth knowledge to competency building, remains slow. Conventional teaching methods and contents are still popularly applied. Lack of collaboration with outside stakeholders in training teachers is one of the factors that limit the amount of practical

Box 1. Key ESD principles and characteristics

- ESD promotes interactive pedagogies and, practical and local knowledge;
- ESD requires interdisciplinary approach;
- ESD engages all types of education (formal, non-formal and informal education);
- ESD promotes collaboration by involving diverse stakeholders;

knowledge taught at TEIs and the application of interactive teaching approaches such as problem-based learning and project-based learning. As mentioned in a recent draft program from MOET, many teacher educators in Vietnam have not updated practical knowledge, practiced interactive teaching methods, applied information technology, conducted research or collaborated with school teachers to reform curricula (MOET 2016).

In this context, ESD approaches can be regarded as embodying the spirit of the education reform movement in Vietnam. ESD consists of key characteristics and principles (Box 1) (Buckler and Creech 2014; UNESCO 2012; Adomssent and Thomas 2013) that may help overcome some of the existing drawbacks of education in Vietnam, such as lack of collaboration and undervaluing of the role of NFE. Thus, ESD may serve as a reform model to enhance education quality in Vietnam in general and in teacher education in particular.

TEIs play a significant role in ESD advancement. They “educate new teachers, they update the knowledge and skills of in-service teachers, create teacher-education curriculum, provide professional development for practicing teachers, contribute to textbooks, consult with local schools, and often provide expert opinion to regional and national ministries of education” (Hopkins and Mckeown 2005, 11). Indeed, ESD and teacher education can be mutually supportive. ESD facilitates teacher education reform while teacher education fosters ESD across the curricula. This “win-win” approach is suitable not only in Vietnam but also other developing countries where quality of education and SD are the most pressing concerns.

4.2. The five investigated TEIs

Currently, Vietnam has 133 TEIs, which has already exceeded the actual demand. Hence, MOET has recently decided to establish a network of the eight most prominent TEIs nationwide. That decision allows further investment and research to improve teacher education quality. In this research, the author conducted investigation at four of those TEIs, including Hanoi National University of Education (HNUE), Hue University of Education (HUEd), Danang University of Education (DUEd) and Ho Chi Minh University of Pedagogy (HCMUP); and one provincial TEI, QNU. This investigation aims to understand how ESD is being implemented at TEIs in Vietnam in both formal and non-formal education. An overview of those five TEIs is presented in Table 4.1.

Table 4.1. Overview of the five TEIs⁵

	HNUE	HUEd	DUEd	QNU	HCMUP
Year of foundation	1951	1957	1994	2007	1976
Employees	1262	441	381	355	500 (lecturers)
Students	8896	10430	9342	6430	15044
Faculties	23	12	11	12	22
TEPs	24	17	11	10	21

The locations of the surveyed TEIs are shown in Figure 4.1.

⁵ Information taken from websites of the five TEIs on June 22 2016 (the detailed links are presented in the reference section)

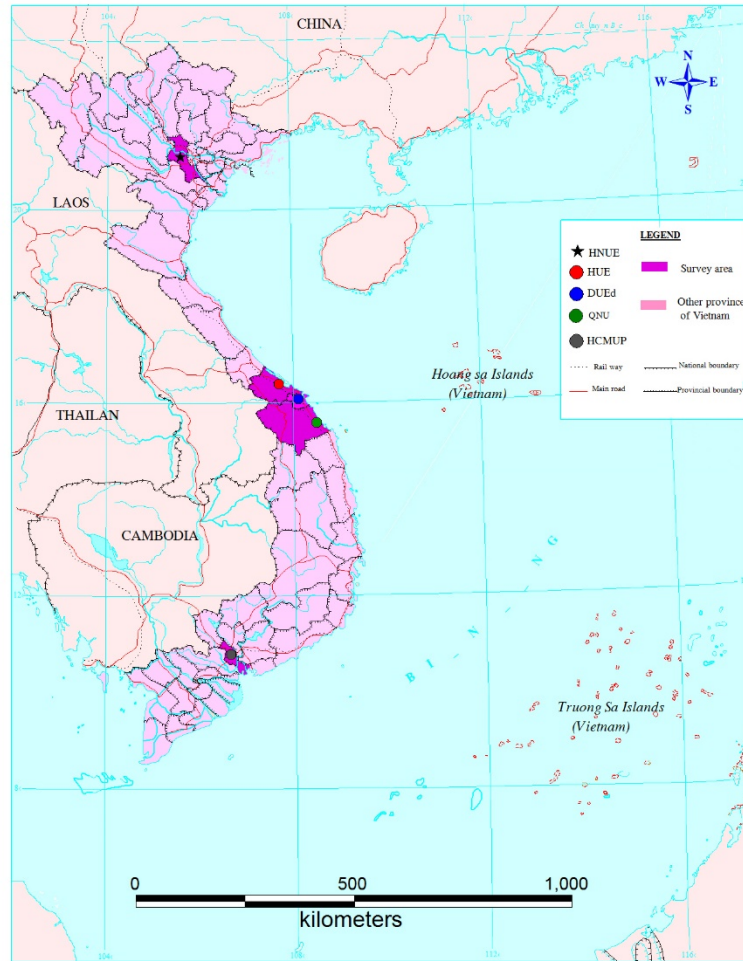


Figure 4.1. Locations of the five investigated TEIs

4.3. Results

(Results of this chapter emerged from the data collected and analyzed as described in Section 3.3.1 of Chapter 3)

4.3.1. Current ESD implementation at TEIs

a. Formal education

• ESD in curricula

A review of course syllabi of the five universities first allowed the author to identify several courses with sustainability content (as presented in Table 4.2) and secondly two lecturers teaching those courses for interviews.

Table 4.2. Courses with sustainability themes integrated into curricula at the five surveyed TEIs

University	Name of course (credits)	Teacher Education Program
HNUE	Education for sustainable development (2)	Geography
	Population education (2)	Geography and Biology
	Climate change (2)	Geography
	Globalization of economy (2)	Geography
	Ecology (2)	Biology
	Environmental protection and Biological control (2)	Biology
HUEd	Economics (2)	Geography
	Population education (2)	Geography and Biology
	Environmental education (2)	Geography and Biology
	Resources and Environment (2)	Geography
	Ecology, Environment and Biodiversity (3)	Biology
	Environment and human (2)	Biology
DUEd	Environmental Science (2)	Geography
	Environmental education (2)	Geography and Biology
	Gender and population education (2)	Geography and Biology
	Ecology (2)	Biology
	Biodiversity (2)	Biology
	Education for risk reduction (2)	Biology
QNU	Ecology (2)	Biology
	Environmental Education (2)	Biology
	Natural resources and Environment (2)	Geography

HCMUP	Population Education (2)	Geography
	Economy and society (2)	Geography
	Disasters in Vietnam (2)	Geography
	Biodiversity (2)	Geography and Biology
	Environment and sustainable development (2)	Geography
	Ecology and environment (4)	Biology
	Population and gender education (2)	Biology

As can be seen in Table 4.2, each university currently offers four to six courses related to SD topics. Each teacher trainee is expected to obtain from four to six credits from studies in sustainability. Despite minor differences in course name across the TEIs, the content of courses with a primary focus on issues such as gender, population, environment, and economy are similar. These courses were developed during the period from 2000 to 2006 by university lecturers under MOET guidance. Since the passage of Decision No.43/2007/QĐ – BGDDT (MOET 2007), a credit system has gradually replaced a structured subject-based model. The model was expected to support students in choosing elective instead of compulsory courses and in pursuing double majors. Courses under the credit system thus were slightly modified to encourage self-study by student teachers. This change will provide more opportunities to introduce sustainability-linked elective courses as well as more opportunities for student teachers from different majors (not only biology and geography) to learn about ESD.

HNUE, home to the Centre for Research and Promotion of ESD, is considered to be a pioneering institution in curriculum development for sustainability learning. It has introduced two new courses on ESD and climate change, respectively. The ESD course examines the history of SD; SD strategies, policies and progress in Vietnam; ESD content and history and an overview of ESD implementation worldwide. DUEd and HCMUP also both added one new course in their training program called Education for Risk Reduction and Disasters in Vietnam relatively recently, reflecting the emergence of climate change-related natural disasters as urgent challenges in Vietnam. Although climate change and disaster risk reduction do not appear in the name of courses like Environmental Education or The Environment and Humans, lecturers at DUEd and HCMUP have integrated the new themes into their teaching content. However, according to faculty interviews in HUEd and QNU, lecturers remain focused on teaching about the physical environment.

The syllabi review and lecturer interviews suggested that geography is the discipline that offers the most instruction to student teachers about the three pillars of sustainability. Students of geography not only learn about environmental issues (environmental structure and functions, natural resources, pollution, degradation and environmental education) and social issues (population and gender equality) but also economic content (normative concepts and theory, regional development and history of the economic development of Vietnam). Meanwhile, the training program for teachers of biology tends to concentrate on problems in the physical environment (environmental structure and functions, pollution, biodiversity and ecology).

In terms of pedagogy, according to the interviewed lecturers, teaching methods are predominantly lecture-based (50%-70%), although the use of more interactive methods has been encouraged by MOET. When asked about obstacles for implementing active pedagogies such as group discussions or seminar-style learning the top responses were: 1. high class enrollments, often exceeding 50 students in a class; 2. limited facilities (videos, projectors, crowded rooms) and 3. heavy curriculum requirements. Lecturers are required to submit highly detailed content-intensive teaching programs and schedules for university approval.

Evaluation for courses for student teachers at the five surveyed universities is in general based on three factors: 1. attendance and participation by students (10% to 20%); 2. mid-term examinations, including essays, presentations or written tests (20% to 40%); and 3. final examinations (50% to 70%). Written tests remain the most common means of evaluating students, accounting for 70% of all final grading. A few of the lecturers noted that although they felt that only testing students' knowledge is not appropriate for assessment there were many constraints against change, particularly in terms of teaching facilities and human resources, as stated by one lecturer:

I teach the Environment and Humanity course, which has more than 100 students in a class. In the last two years, I organized student group presentations for the final examination but it took me a lot of time to observe and evaluate each class, especially since I had two hours for teaching every week and only two hours for the final examination at the end of semester by the university. I even had to organize extra classes on the weekend, which was also difficult (L2 lecturer).

Despite the latest policies for reforming the educational system of Vietnam, which aims at developing competencies of students through 2020 (MOET 2011), improvement in teaching pedagogies, evaluation and applying information technologies remains slow. The principal reasons, according to the lecturers, are: 1. the large number of students in a class, 2. the limited educational facilities, 3. a lack of qualified lecturers and 4. constrained financial resources available for students' scientific research.

- *Scientific research*

Scientific research is an important part of a student teacher's study. As several lecturers noted, students gain many benefits from doing research, such as promotion of creativity, self-study capacity and better understanding of course content. In the interviews, the lecturers stated that in the last five years, the volume of scientific research in general and sustainability-related research in particular has increased at TEIs. At the National Scientific Research Conference for Teaching Students, held in October 2014 in Danang, 13 of the 235 student researchers made presentations about environmental issues (Department of Science and International Cooperation (Danang University of Education) 2014). Responses of interviewed students about their research presented in Figure 4.2 also suggest that students have an interest in sustainability topics.

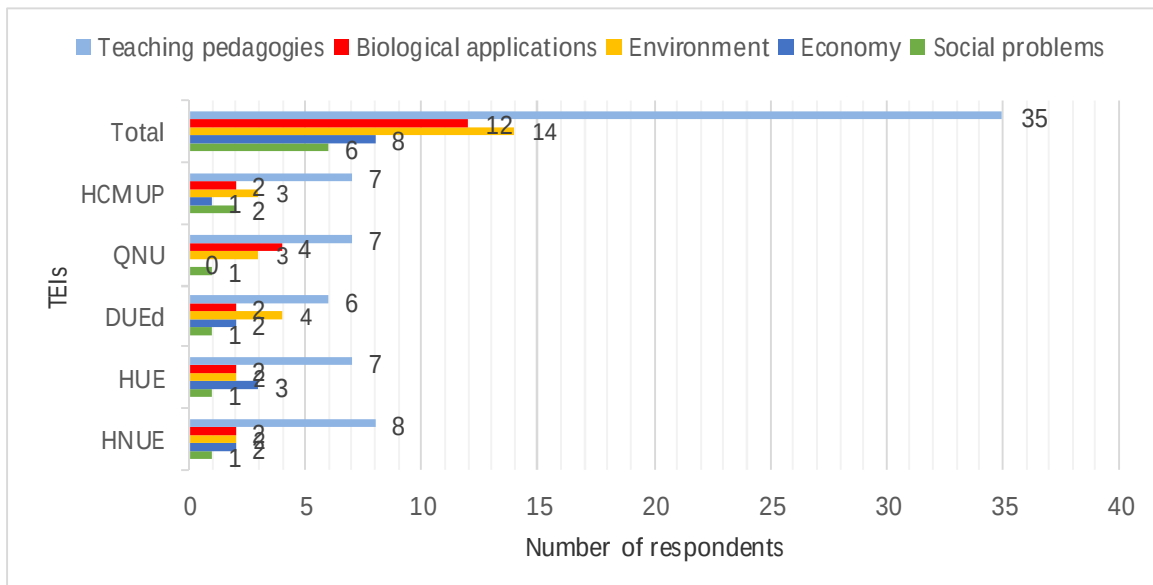


Figure 4.2. Scientific research themes of interviewed students

While teaching pedagogies remain the main topic of student teachers' research, the focus is expanding to include environmental education and social issues. Reviewing the list of thesis titles of students of five surveyed universities, there has been an increase in ESD-linked topics in student research at HNUE and DUEd since 2009. "Design of biology lectures integrating climate change and disaster risk reduction for grade 10, high school", for instance, is one thesis title. Interviews indicated that their supervisors and lecturers largely influenced student teachers in choosing research topics.

b. Non-formal education

In addition to academic study, “out-of-class” activities make up a valuable part of the students’ experience. The surveyed students were asked to list all activities that they were involved in outside of formal education. In Vietnam, if young people aged 16 to 30 years old demonstrate active contributions to society, they will be nominated to be members of the Youth Union (formally known as the Ho Chi Minh Communist Youth Union), a socio-political organization of Vietnamese youth affiliated with the Vietnamese Communist Party. Currently more than 90% of student teachers are members of the Youth Union. For this reason, the Youth Union is the main actor in planning and administering extra-curricular activities for students at the university. At the five TEIs, activities commonly sponsored by the Youth Union include 1. volunteer activities (charitable activities such as blood donation, helping people in rural areas, environmental protection, and fundraising) 2. recreation (camping, art performances and sports) 3. knowledge and skill development (training courses and competitions) and 4. career promotion. For the past 10 years, the Youth Union has made a great effort to diversify its activities, and environmental activities currently account for a considerable proportion. Overall, due to the fact that the youth union is monitored and guided by the Central Committee of the Youth Union, the types of activities sponsored by the Youth Union differ only slightly among the five universities.

Besides activities of the Youth Union, students also have opportunities to become involved in activities conducted by different sectors such as NGOs, foreign universities, local communities and their own clubs. There were eight categories of activities listed by the interviewed students as shown in Figure 4.3.

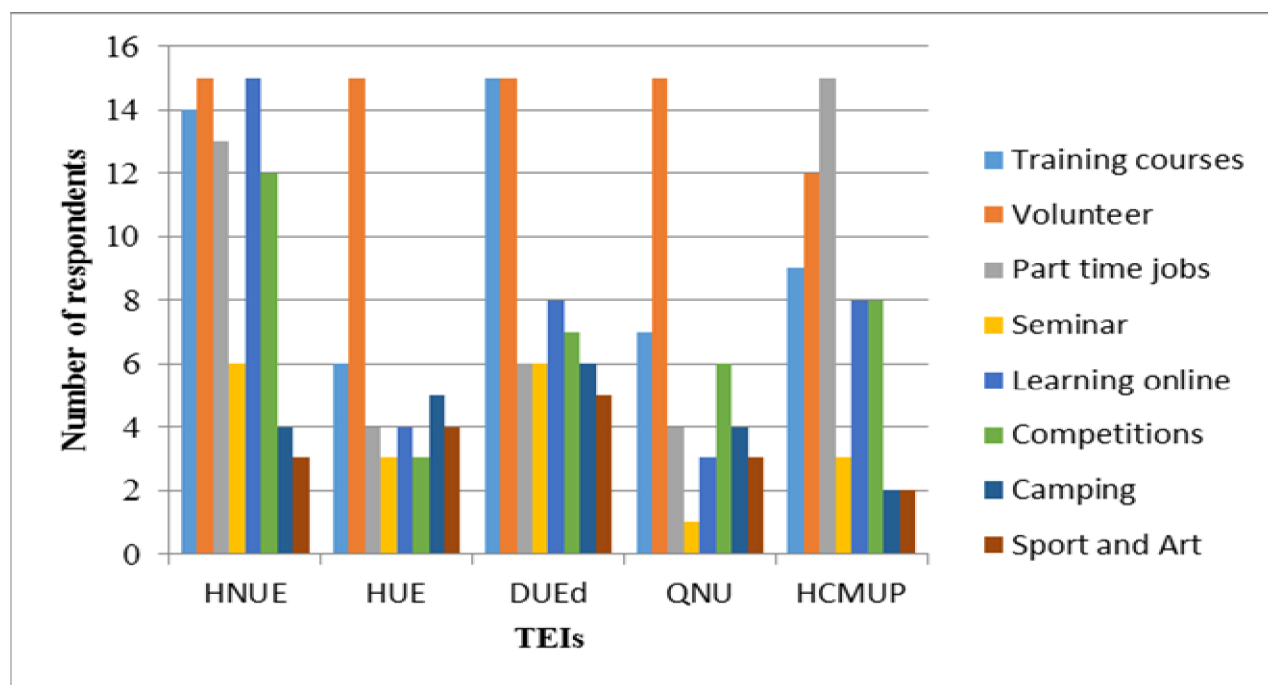


Figure 4.3. Non-formal activities by the five TEIs

Of the interviewed students, 96% were involved in volunteer activities, of which 56% were linked to the environment. Students also mentioned campus environmental clubs which conduct regular environmental activities like litter clean ups, raising public awareness, Earth Hour and Earth Day ceremonies, and cycling for the environment at each university. Another notable point generated by the interviews is the involvement of NGOs in training students about sustainability at the five TEIs, as indicated by Table 4.3.

Table 4.3. Involvement of NGOs at the five TEIs

NGO	Category	Activities at TTIs
	(D: domestic; I: international)	
Live & learn	I	Organizes training courses on EE, climate change, sustainability, how to conduct an environmental event
Education for Nature-	D	Trains students about biodiversity, endangered species, how to protect biodiversity

Vietnam (ENV)		
Frankfurt Zoological Society	I	Organizes field work in the forest to educate student teachers about natural conservation
SEEDs Asia	I	Organizes training courses on Education for Disaster Risk Reduction
Challenge to Change (CtC)	I	Youth Innovations to response to climate change
The Flemish Association for Development Cooperation and Technical Assistance (VVOB)	I	Teaching pedagogies
Action for the City	D	Promotes self-study and active learning among student teachers

4.3.2. Student teachers' reflections and recommendations

In order to understand the effectiveness of ESD implementation at the five TEIs, students were asked what specific sustainability-linked knowledge, skills and attitudes they had gained from formal and non-formal education. The responses of students reflected their understanding of current environmental problems; they included, in order of frequency, environmental degradation, biodiversity loss, a shortage of energy and natural resources, population growth, low awareness of the public, the relationship between humans and the environment, climate change and sea level rise, gender equality and gender balance. It is notable that 73% of the responses concerned the physical environment, while only 1% (three responses) were about economic aspects (ecotourism) (Figure 4.4). The latter include two students' replies from DUEd and one from HUE about local income generation in tandem with environmental protection. All three students were doing scientific research on ecotourism. Said one student:

I am worried that Danang City is developing tourism too quickly. New resorts and entertainment zones are being built in places that had been home to various wild animal species on Ba Na mountain or the Son Tra peninsula. But tourism can provide livelihoods for many local residents, so ecotourism should be seen as a suitable solution - it is much better than developing heavy industries (D3 student).

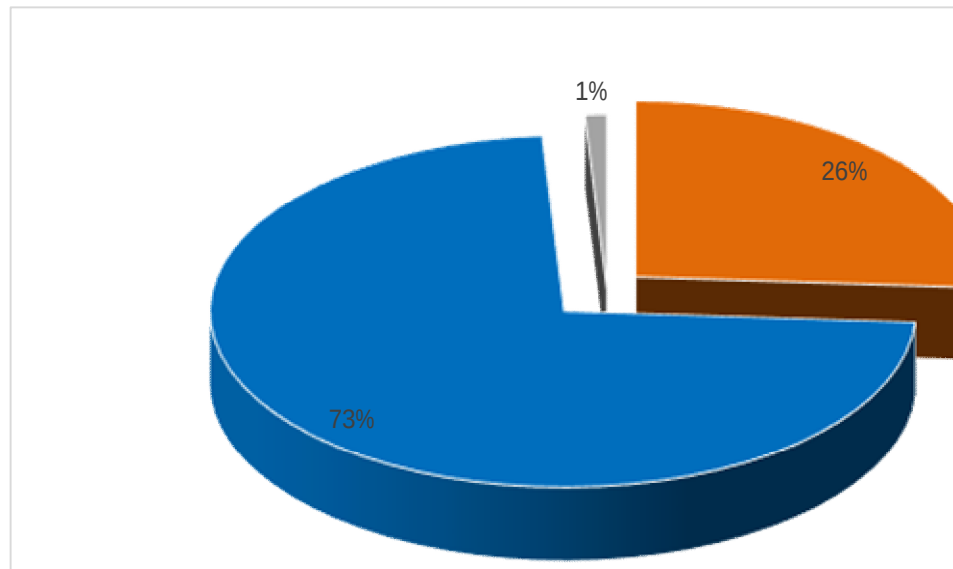


Figure 4.4. Sustainability-linked knowledge of students

Results from the focus groups also revealed that when asked about sustainability-related issues they had studied, students tended to mainly think of environmental issues. Responses of students from HNUE where an ESD course is taught were slightly different. The students gave more diverse responses about educational aspects of sustainability, including ESD teaching content (save energy and natural resources for next generations, eco schools, environmentally friendly habits) and applying e-learning for public education and leadership.

In terms of skills that were learned, the most frequent responses were for general skills like group work (100%), presentations (85%), and searching via the Internet (73%), as shown in Figure 4.5. Only a few specific skills were mentioned during the interviews, and they were by students who were involved in many extra-curricular activities.

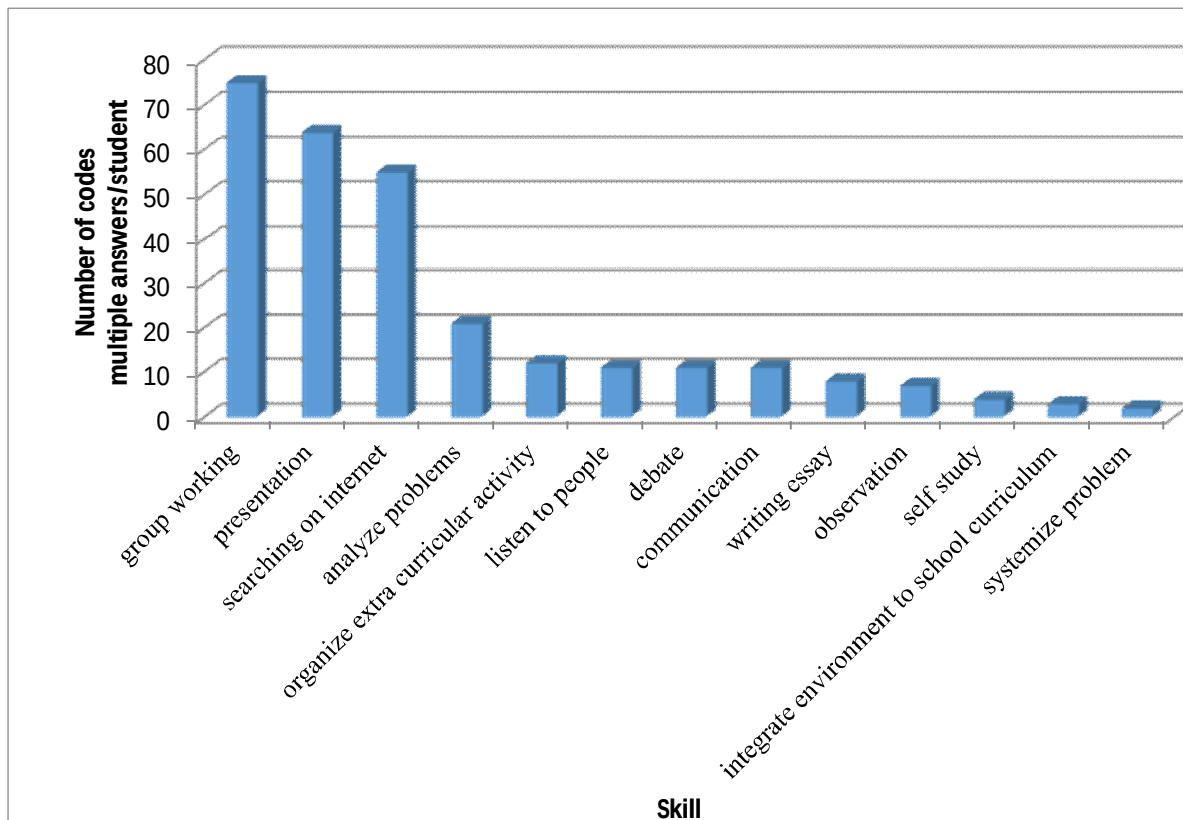


Figure 4.5. Students' skills related to ESD

After participating in ESD-related activities, many students indicated that they had come to respect nature and landscapes and were more aware of the need to save natural resources for future generations. Students also engaged in more sustainable daily practices such as energy saving, reduced food consumption, and practicing the 3Rs (reuse, reduce and, recycle waste). Yet despite the knowledge and skills they had gained, most of the students said they were unsure how they can apply their knowledge of sustainability in their future careers as teachers. Only two of the 75 interviewed students had experience in conducting environmental education at an elementary school, and this was because the two student teachers had conducted research on integration of environmental issues into education.

Among the five TEIs, students from HUEd and QNU showed less developed knowledge and skills in sustainability, while students from HCMUP and DUEd mentioned more specific personal skills (self-study, listen to people, observation and integration) and students from HNUE evinced the greatest knowledge of sustainability (as shown in Figure 4.6).

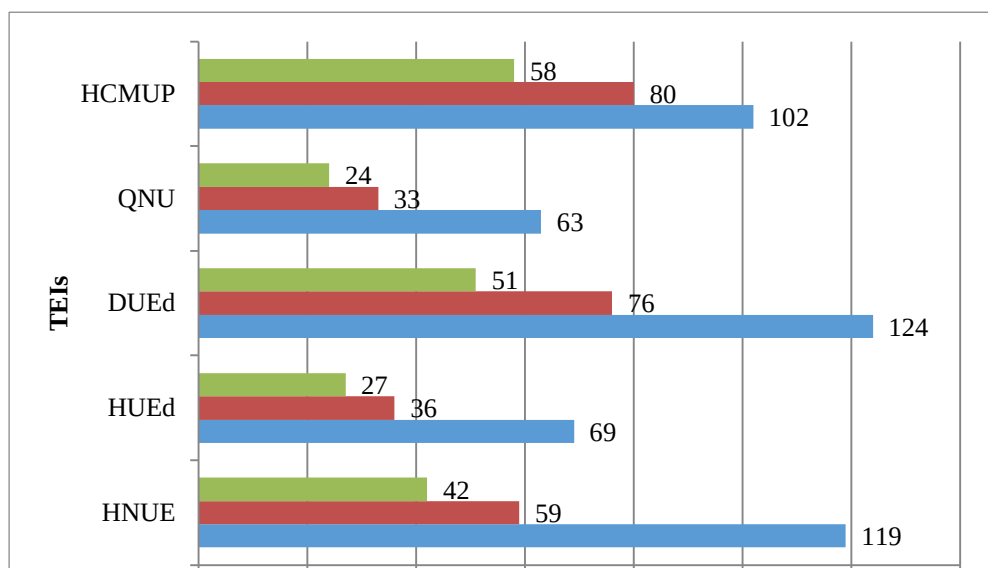


Figure 4.6. Sustainability-linked awareness of students by the five TEIs

In the focus groups, students expressed their desire to enhance public awareness of sustainability as well as to conduct environmental education, but they did not feel confident in implementation, not only because they lacked knowledge but also due to a perceived lack of communication skills and practical experience. Students provided direct and often critical feedback concerning the sustainability courses they had attended.

Table 4.4. Students feedback on ESD courses

Negative feedback	Number	Positive feedback	Number
Teaching methods:	135		
Many lectures	65	Introduction of videos	14
Lack of active participation by students	72	Learned debate techniques	4
Lack of interesting teaching materials	26	Field visits	6
Lack of instruction in self-study or group discussion	37		
Contents:	110		
Too heavy	62	Covers current problems	14
Lack of practical knowledge	31		
Doesn't cover local problems	17		
Poor means of evaluation	21		
Poor facilities:	176		
Small classroom	54		
Many students in a class	24		

Low quality of projectors	22
Lack of active teaching tools	43
Lack of room for teaching practice	33

There were 480 responses for students' feedback on their university's sustainability related courses, of which 92% were negative. Poor educational facilities were most commonly mentioned, with 176 responses, followed by 135 responses about teaching methods. Most of the students claimed that the courses had not been interesting due to the lack of interactive teaching and learning, excessive content and poor facilities. Notwithstanding the frequent use of the term "self-study capacity" in many MOET educational reform policies, students were very confused about how to study effectively by themselves. With very low reading skills and familiarity with passive learning at lower grades, student teachers found it difficult to broaden and update their knowledge. Although possible sources of information such as the Internet are diverse and accessible, their sustainability knowledge was mainly achieved via university courses. These responses are consistent with problems commonly identified in higher education in Vietnam (Pham and Renshaw 2014), as in many other developing countries (Glewwe and Kremer 2006).

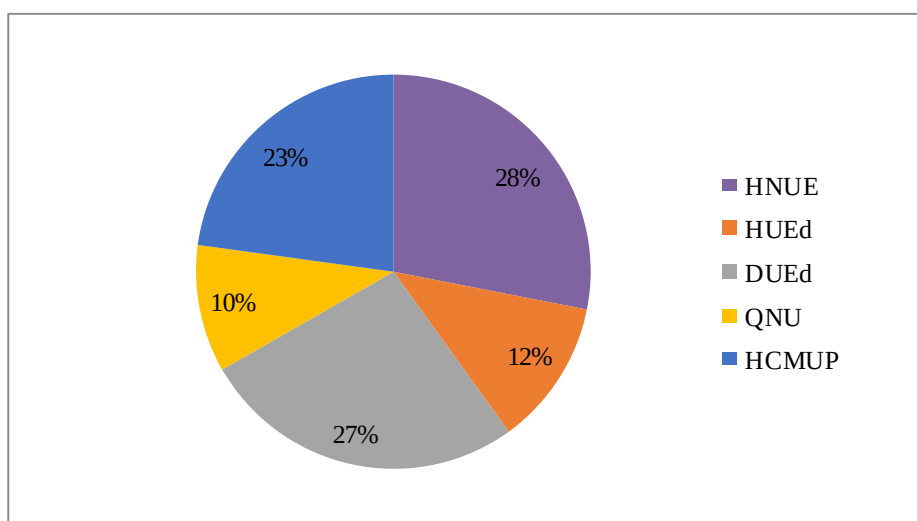


Figure 4.7. Distribution of negative feedback of students by the five TEIs

Students were asked to recommend improvements in ESD training. The greatest number of responses related to a desire for more interactive pedagogies. In addition, they recommended more local field trips to increase understanding of local environmental problems. They proposed that lecturers of the environmental education course promote increased opportunities for students to conduct environmental

education at the schools. Students also requested varied approaches for course evaluation, such as grading presentations, for instance, instead of paper-based tests, saying that this would encourage attendance in class and more active group discussions and presentations instead of students merely memorizing sustainability content to pass the course.

Students at HNUE, DUEd and HCMUP made numerous comments during the focus group discussions, but students from HUEd and QNU provided less feedback (Figure 4.7), suggesting that increased knowledge and skills lead to higher expectations of course quality by students. Indeed, students were able to give negative feedback because they had experienced several ESD-related training courses organized by NGOs applying interactive, learner-based approaches.

4.4. Discussion

4.4.1. Lessons learned from the five TTI case studies

In response to the UNDESd, sustainability themes were introduced to the disciplinary content at TEPs across Vietnam. Besides the conventional topics covering the physical environment, current global issues have been embedded in some courses. Interviews with students and faculty at the five TEPs revealed that although environmental education remained focused mostly on the physical sciences, students are also being encouraged to consider lifestyle, behavior and other societal aspects. These results suggest that curriculum change is a prerequisite for advancing ESD at the HEIs (de la Harpe and Thomas, 2009). Sustainability-related courses remain one of the most important means of enhancing students' sustainability literacy.

Lecturers can revise ESD-linked curriculum through proposing and implementing new ESD courses or by adding the latest information on climate change and sea level rise to environmental courses. Of the five surveyed TEIs, interviewed students in HNUE, DUEd and HCMUP showed the greatest gains in knowledge of sustainability because lecturers at those three institutions have encouraged them to conduct studies about sustainability topics. They also greatly influenced students through personal communication. Under the guidance of their supervisors, several students conducted research on sustainability, deepening their knowledge and improving their confidence about future application in their teaching.

Non-formal learning via NGO training courses, the Youth Union activities and environmental clubs can play a crucial role to infuse environmental friendly practices into students' daily habits. These activities help the universities become more open environments and facilitate outside organizations to conduct ESD related activities. A primary step for promoting ESD would be to create a campus greening plan of

action. Campus greening initiatives can gradually build a culture of sustainable action university-wide and influence the curricula shift (Savelyeva and McKenna 2011).

A number of challenges for ESD implementation were identified through this research. Despite some new curriculum and policies fostered by MOET, all five universities have not yet established any priorities or strategy for mainstreaming ESD in teacher education, unlike in several other developing countries in Asia Pacific region such as India, Malaysia and Philippines (Ryan et al. 2010). The relative neglect of sustainability in HEI institutional management leads to limited collaboration or communication among lecturers. At the five universities ESD is considered to be the province of environmental educators. However, in order to promote ESD, university lecturers ought to think about sustainability in relation to their disciplines and teaching courses (Reid and Petocz 2006), integrating social, economic and environmental issues to improve students' systematic thinking competency.

There remains a large gap between MOET's orientation to replace top-down teaching by more interactive pedagogies and the current status quo. Although some new ESD courses were launched, interactive pedagogies have not been widely applied at the TEIs. Lecturers continued to prioritize sustainability literacy instead of action. The lack of practical examples and job orientation are other obstacles to educating students to become sustainability instructors in the future. As noted in the literature, ESD requires creative pedagogies which are more dialogical and practical to "acknowledge the different ways that people think about sustainability and to provide space in which their ideas can be developed" (Pavlova 2013, p.105). Indeed, the existing ESD teacher education cannot promote key competencies for student teachers, particularly competency in self-motivation and motivating others, because "a teacher cannot teach towards sustainability effectively solely by obtaining information on environmental concerns, by studying environmental science" (Fien and Maclean, 2000, p.38).

Other issues that have constrained ESD advancement are evaluation of ESD courses. The evaluation should focus more on attitude change and motivation instead of the memory capacity of students. Teaching and evaluation are mutually related: Diverse teaching methods will produce better evaluations and vice versa. Overall, according to Sterling's model of progressive engagement and deeper learning (2015), ESD teaching remains in its first stage, focusing on knowledge and cognition but not values and capacity-building.

Despite the abundance of sustainability-related extra-curricular activities found on campus, most of them are autonomous. Except for annual events like Environmental Day and Earth Hour, the Youth Unions have not systematically planned environmental activities, except for Green Sunday, a cleanup activity on any Sunday of the month, which has been successfully implemented for more than 10 years.

NGOs in many cases conduct ESD at universities as a part of their projects but ESD ceases at the same time the project ends. Student environmental clubs share similar constraints, especially when fund-raising fails.

4.4.2. Solutions for a comprehensive approach in ESD promotion

Vietnamese TEIs are now facing similar challenges to other HEIs worldwide in embedding ESD in the curriculum. Lessons learned from preceding cases indicate the necessity of integrating ESD into institutional management of the HEIs to sustain educational activities (Corcoran and Wals 2004; Dawe, Jucker, and Martin 2005; Ryan et al. 2010). ESD objectives conform to the overall objective of education reform policies in Vietnam, to create global citizens. For this reason, institutionalizing sustainability should be an achievable objective that will create and strengthen collaboration within TEIs.

At HNUE, with support from UNESCO, initial institutionalization led to the creation of a center of education for sustainable development, and the establishment of partnerships with governments and donors which allowed HNUE to receive relevant budget for training courses. The university could then launch an ESD course and involve university lecturers in research on ESD. However, the initial institutionalization has not resulted in significant motivation among student teachers because of barriers common to all five TEIs under review, particularly the conventional education curricula and didactic approaches instead of competency-oriented education.

In order to motivate student teachers in ESD, it is necessary to:

1. Revise syllabi to shift from content-based to competency-based teacher education for sustainable development
2. Find more opportunities to involve students in ESD-related practices
3. Include practical knowledge to existing ESD-related courses
4. Enhance pedagogies to increase student teachers' participation in educational process.

Those requirements can be achieved by:

1. Promoting knowledge exchange among lecturers. In fact, most ESD related lecturers at TEIs are experts either in environmental or sustainability sciences. The literature indicates that in order to conduct effective ESD or EE, active teaching methods must be applied to narrow the gap from knowledge to responsible behavior (Kopnina and Meijers 2014; Pavlova 2013; Yavetz, Goldman, and Pe'er 2009). It is widely known that knowledge alone is not enough to promote sustainable changes in behavior towards the environment (Bruyere et al., 2011;

Kollmuss and Agyeman, 2002). In Vietnamese TEIs, active pedagogies are taught to students by lecturers specializing in pedagogy, so it would benefit both pedagogic lecturers and ESD-related lecturers if they could share their expertise. ESD lecturers can learn from their colleagues to improve their teaching skills as regards interactive teaching techniques, content, monitoring and, evaluation, while pedagogic lecturers can integrate newly obtained sustainability knowledge into their pedagogical practices. The conventional education model will gradually be replaced by a more interactive model, allowing student teachers to obtain specific competencies for their future career as learning outcomes.

2. Initiate and intensify cooperation among university departments and other university groups. The interviewed faculty members attempted to include sustainable development problems in their TEP curricula but did not pay much attention to the important role of campus-based non-formal education. Investigation across the five TEIs reveals that various university departments and sections can teach students about sustainability: the Department of Academic Affairs can provide ESD-related courses in formal education, while the Department of Student Activities and the Youth Union can support ESD in extracurricular activities. This collaboration will create an integration of formal and non-formal education in teaching ESD which is strongly recommended by UNESCO. The connection between formal and non-formal education for SD is a crucial link (Wals and Nolan, 2012) that provides students with more opportunities to become involved in ESD-related practices .

3. TEIs must also be more active in increasing external collaboration. Experience from EE mainstreaming in Vietnam indicates that networking with many stakeholders, including NGOs, local communities and international organizations (World Bank, UNESCO) can broaden participation in and effectiveness of EE. In the context of TEIs, it is apparent that currently NGOs are playing a pivotal role in training student teachers on sustainability themes. To provide a more systematic approach TEIs should establish a clear mechanism for working with NGOs in terms of time, duration, content, and human and financial resources. In interviews students indicated the significance of practical and local knowledge which lecturers can supplement by promoting community outreach. Mochizuki and Fadeeva (2008) have identified success factors from several case studies which involved multiple stakeholders to promote ESD at HEIs that might be replicable in the Vietnamese context. The partnerships can result in an establishment of regional teams to support both lecturers and student teacher in practical knowledge, research and motivation.

Overall, effective ESD requires effort from TEIs as well as students to achieve internal and external collaboration for a better educational enhancement. Nevertheless, the abovementioned solutions may be appropriate solutions in the context of a developing country demanding low-cost initiatives.

4.5. Summary

Teacher education is expected to significantly contribute to ESD implementation worldwide. After UN DESD, TEIs across Vietnam obtained initial achievements in ESD implementation by embracing inclusion of sustainability content in teacher training curricula and some support for sustainability research and behavior by students. Non-formal education with diverse participation by NGOs and the Youth Union has greatly encouraged students to enhance ESD cognition.

However, there remains a wide gap between ESD awareness and ESD teaching capacity due to the systemic problems inherent to TEIs in developing countries, including the prevalence of top-down pedagogy and teacher-based learning, large classes, and poor facilities. Additionally, university lecturers remain focused on content-based teaching which requires student teachers to memorize sustainability-related knowledge rather than on competencies.

Focus group discussion indicated that students lack relevant competencies regarding ESD that would enable them to implement sustainability learning in their work. Although non-formal education which found to notably contribute to enhancing student teachers' awareness and skills related to ESD it was rarely integrated into formal education by university lecturers.

In order to facilitate ESD, TEIs need to include ESD in institutional management to promote use of active pedagogy and cooperation among faculties and offices. Each university should also strengthen collaboration with non-formal stakeholders such as NGOs and local communities to utilize outside funding and human resources. These low-cost approaches can enable TEIs in a developing country like Vietnam to keep pace with HEIs in developed countries in realizing sustainable development.

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Links for websites of the five TEIs

<http://hnue.edu.vn/Gioithieu.aspx>

<http://www.dhsphue.edu.vn/default.aspx?run=intro/gioithieu.htm>

<http://ued.udn.vn/tong-quan.html>

<http://www.qnamuni.edu.vn/?cID=1&ID=1>

http://hcmup.edu.vn/index.php?option=com_content&view=category&layout=blog&id=95&Itemid=41&lang=vi&site=0

CHAPTER 5: THE CONTRIBUTION OF NON-FORMAL EDUCATION FOR TRAINING TEACHERS IN EDUCATION FOR SUSTAINABLE DEVELOPMENT IN VIETNAM: A CASE STUDY

5.1. Overview

Building teaching competencies is a prerequisite for improving the quality of education for sustainable development (ESD), a universal approach promoting behavioral changes towards sustainable development. While ESD teaching competencies are frequently discussed in the context of formal education, recent publications have also highlighted the contribution of non-formal education (NFE) to honing ESD teaching competencies among student teachers. By expanding NFE, universities can overcome many of the obstacles to effective ESD implementation in higher education, such as curriculum overload, limited staff awareness and expertise, a lack of qualified instructors and limited funding (Ferreira, Ryan, and Tilbulry 2006; Drayson, Bone, and Agombar 2013; Dawe, Jucker, and Martin 2005; Murray and Cotgrave 2007). In the developing world, particularly, funding- and personnel-deficient universities can collaborate with varying stakeholders to draw on their expertise and practical experience to advance ESD.

This chapter presents a case study of a teacher education institution in the central region of Vietnam that promotes ESD utilizing NFE alongside the formal educational system. The authors investigated the following questions:

- How is non-formal education currently contributing to ESD in teacher training?
- How are stakeholders collaborating to train student teachers?
- How can collaboration for ESD promotion at teacher training institutions be strengthened and broadened?

The chapter will first look at the existing contributions of NFE conducted by diverse stakeholders in ESD in a Vietnamese teacher education institution. Subsequently, it will analyze the stakeholder contributions to ESD at the institution and identify the current collaborations among those stakeholders. Then it will present an ideal collaborative framework to strengthen connections between the institution and other stakeholders as a solution to ESD promotion in developing countries.

5.1.1. The Importance of Non-formal Education in Teaching ESD

According to Brennan (1997), flexible and diverse non-formal education plays an important role as a complement, an alternative and a supplement to the formal education system. NFE enriches learning environments and promotes the learning of essential skills and competencies (Festeu and Humberstone 2006). A 2010 OECD report underscored the crucial role played by NFE and informal education when examining the educational systems of 22 countries, including Ireland, Korea, and Mexico (Werquin 2010).

Madjar and Cohen-Malayev (2013) attributed the positive contribution of NFE to four core characteristics: voluntarism, which allows learners to flexibly and autonomously participate in training processes; multiplexity, which promotes a broad scope of activities to strengthen physical and social skills as well as academic abilities; symmetric interactions, referring to reciprocal and equal relationships among participants; and a post-NFE moratorium, which allows learners to postpone their formal learning for a period of time to obtain more experience. NFE thus complements well-structured formal education to enable individuals to continue learning under varied conditions and with input by NGOs and other stakeholders. Indeed, NFE has been lauded as a timely mode of education in the postmodern world (Romi and Schmida 2009).

Although there has been little published research until recently (Rogers 2004), NFE has long been implemented to raise public awareness of the environment. As stated at the Tbilisi Declaration (1978), environmental education (EE) must be delivered in both formal and non-formal environments (Wright 2002). Programs and activities such as talks, exhibitions, drawing and coloring competitions, clean-up campaigns, tree planting, seminars, workshops, and other environmental trainings have been conducted in many countries (see Hassan, Osman, and Pudín 2009; Nomura 2009; Soykan and Atasoy 2012). Research has shown that even brief learning experiences can have an important influence on subjects' attitudes and behavior (Ballantyne and Packer 2005).

Since the official launch of the UN Decade of Education for Sustainable Development (DESD), NFE has achieved expanded importance in education. It is widely recognized that education for sustainable development (ESD) must “do more than simply build the learner’s critical awareness and understanding of environmental sustainability issues” (Haigh 2006, 328); it should lead to sustained change in the learner’s behavior. EE experience has proven that classroom lectures or classes alone cannot result in responsible changes in behavior; students need to be involved in activities outside the classroom to deepen knowledge and perceive how that knowledge is applied in reality. UN-DESD has fostered many

non-formal ESD initiatives and resources targeting youth that have raised awareness of sustainable development issues (Buckler and Creech 2014).

Higher education (HE) inevitably plays a key role in ESD promotion (Lugg 2007; Littledyke, Manolas, and Littledyke 2013; Buckler and Creech 2014). “Greening curricula” and “Campus sustainability” initiatives ensure that sustainability is embedded within many HE institutions. Recent publications on ESD in HE (see Littledyke, Manolas, and Littledyke 2013; Lugg 2007; Hopkinson, Hughes, and Layer 2008) provide ample evidence that outdoor experiential pedagogy and other NFE approaches can result in positive environmental attitudes, and it inspires students to apply the scientific knowledge they’ve acquired. NFE also suffers from some disadvantages compared to formal education (Taylor and Caldarelli, 2004). Coombs & Ahmed (1974, cited in Rogers 2004) write that NFE is often conducted through disparate and unrelated educational activities ((Cited in Rogers, 2004), and it suffers from lower social prestige (Rogers 2004), which is often significantly influenced by formative formal educational experiences. NFE also suffers from concerns over inconsistent teaching quality, as NFE educators may be NGO staff or national park officers rather than trained and licensed educators.

5.1.2. University Partnerships

ESD has recorded considerable achievements, but it faces significant challenges in implementation in developing countries with limited funding and human resources. Some of these constraints may be overcome by building partnerships between different sectors in both formal and non-formal education, a major stated objective of the UN-DESD (Zainal and Hamoon 2008). There is a need for HEIs to reach out beyond academia and forge links with society in a participatory education approach, an educational model in which students are given as much of a voice as their instructors or leaders in determining curriculum and activities. This approach extends beyond the limited period of tertiary education, engaging with and supporting the later-life learning of former students (Korže 2005). In the context of the case study under review, the authors will discuss partnerships between universities and community and university and NGOs.

a. Community collaborations

Mutually beneficial partnerships between HEIs and community have been recognized and promoted worldwide (Ng and Chan 2012; Dulmus and Cristalli 2012; M. Hartley and Huddleston 2010; Hart and Wolff 2006). Partnerships can be forged based on well-set purposes and overlapping interests between university and community (Baum 2000). Such partnerships may involve research conducted at a

university whose findings are implemented in the communities, benefitting both sides (Dulmus and Cristalli 2012; Baum 2000).

In the field of education, the common practice of service-learning is another kind of partnership between HEIs and the community. Although community residents are often regarded as non-professionals, they possess practical knowledge that can assist university educators in effectively implementing research findings and lectures. Bringle and Hatcher (2002, 504) note that “experiential and active learning strategies (e.g., service-learning, internships, participatory action research) have placed greater emphasis on providing students with opportunities for hands-on learning experiences in communities”. Such approaches can enhance the students’ realistic and practical perspectives and empower those students to make their understanding more applicable to real life.

The importance of community-based experiential learning in promoting student action has been recognized by many scholars. After analyzing different pedagogical approaches to EE/ESD, Eilam and Trop (2010) found that experiential and emotional learning enables students to interact with local communities, to construct profound knowledge and to adopt behaviors towards sustainability. Hence it can be argued that community-based participatory education significantly expands ESD in both scope and quality.

HEIs define the term “community” variously to include schools, Parent-Teacher Associations, local residents and local groups like church congregations (Prins 2005; Baum 2000). Among those stakeholders, schools are the most relevant sector for teacher education institutions (TEIs). The school-TEI partnership allows schools to receive training and consultation on teacher development, while TEIs can advance their teacher training as well as their research opportunities (Ng and Chan 2012). Obviously, this successful partnership will benefit student teachers in expanding their school-based experience.

Despite the usefulness of the university-community partnership, in many cases it is difficult to maintain collaboration, particularly when their relationships are built within term-delimited projects. A literature review suggests that these partnerships often face a lack of clear objectives, weak leadership and other challenges (Baum 2000; Hart and Wolff 2006; Prins 2005). HEIs have historically tended to treat communities as “pockets of needs, laboratories for experimentation, or passive recipients of expertise” (Bringle, Games, & Malloy 1999, 9, cited by Bringle and Hatcher 2002). HEIs must establish a clearly delineated, long-term mechanism to sustain community participation in education.

b. NGO collaboration

NGOs have proven to be effective agents for EE as well as ESD (Haigh 2006). With both a global outreach and strong local ties they can involve many stakeholders in environmental protection and empower communities and policy makers (Haigh 2006). NGOs enable local residents to participate in decision-making processes to conserve nature (Palmer and Birch 2003) and they have been active in promoting ESD through environmental education, development education, and peace education initiatives (Hopkins 2014). They have been able to conceive of compelling projects that have successfully expanded public knowledge of sustainability worldwide.

In developing countries, NGOs play a vital role in such areas as health care, family planning, environmental conservation and education to mitigate gaps between rural and urban development and the gaps between those countries and industrialized countries. With a lack of financial and human resources a common issue across developing countries, NGOs' provision of sustainability education have been critical in building community capacity for coping with environmental changes and more broadly in improving environmental management and planning. For example, in a review on non-formal environmental education for adults by Hassan et al. (2009), awareness-raising campaigns conducted by NGOs in Sabah, Malaysia were found to be effective in promoting environmental protection among adults via diverse NFE such as eco-talks, exhibitions, waste composting and campaigns. NGOs have effectively developed non-formal environmental education in Turkey through mainly diversifying and increasing the quality of environmental education practices by establishing environmental education centers to serve communities and involving environmentalists to maintain regular non-formal environmental education (Soykan and Atasoy, 2012).

The input of NGOs to sustainability practice in the developing world has been significant, and NGO momentum has often helped to stimulate sustainability engagement in HEIs (Ryan et al. 2010). By collaborating with NGOs, universities enlarge opportunities for funding and for engagement in practical environmental implementation (Haigh 2006). NGOs can provide universities with expertise, resources and community support for applied research, and NGO staff often serve as field assistants (Haigh 2006). On their part, universities can enhance NGO academic offerings and support NGO proposals and ESD project implementation. This partnership can greatly promote public engagement with sustainability.

5.2. Introduction of a Case Study: Danang University of Education

The research questions mentioned in section 5.1 concerning the role of non-formal education for training teachers in ESD will be applied to examine a case study of Danang University of Education.

5.2.1. Overview of DUEd

The University of Danang-University of Education, one of eight members of The University of Danang (DU), commonly known as Danang University of Education (DUEd), is located in Danang, a rapidly urbanizing city in the central region of Vietnam. DUEd is one of the eight most prominent teacher training institutions nationwide. The university provides 27 undergraduate programs, of which 12 are for a bachelor's degree in Education and 17 are for a bachelor's degree in Science, and it comprises 12 faculties. DUEd also provides 9 postgraduate programs for different disciplines including ecology and organic chemistry (DUEd 2015).

In 2014, DUEd employed 257 permanent lecturers and had a total population of 8,764 undergraduate students and 578 graduate students (Department of Personnel and Administration 2014). DUEd was selected as one of seven universities to participate in a program of comprehensive curriculum reform from 2015 by the Vietnamese Ministry of Education and Training. As part of this program, lecturers are required to apply interactive pedagogy and evaluation in their teaching, which has led to observable changes in pedagogical approaches. For example, 40% of the courses have changed from being based solely on examination performance to being conducted as seminar courses.

5.2.2. DUEd partnerships

The university has established partnerships with various stakeholders to advance training and research in ways that may differ from university practices in developed nations. In this chapter, the author focuses on partners that have demonstrated the greatest potential to contribute to ESD implementation.

a. Community

DUEd has attempted to expand its relationship with diverse sectors of community, including local residents and enterprises, but these connections are generally intended to facilitate bachelor science programs to promote job training. For student teachers, the most important partner is the local school. During the last year of education, student teachers are required to spend at least six weeks in service teaching in schools, typically as part of a group of about five student teachers supervised by one school teacher. For the first two weeks, student teachers observe classes, then they lead classes themselves, with their performance evaluated by both university lecturers and school supervisors.

b. NGOs

As with most other TEIs in Vietnam, DUEd is relatively open to collaboration with NGOs in education and training. In most cases, NGOs initiate contact with DUEd via the Department of Personnel and Administration and/or Department of Science and International Cooperation. They may propose

institutional collaboration based on a memorandum of understanding (MOU), which typically involves offering training courses or project-based activities lasting at least one year, or they may contact administrative departments in order to organize their own activities for students. The latter can include short-term or one-time training courses, campaigns, or events. In some cases, however, NGOs directly promote participation of students in activities implemented outside the university. Currently, there is inadequate information on the activities conducted by NGOs in DUEd, and very limited assessment of the activities.

c. Foreign educational institutions

Building partnerships with foreign educational institutions such as universities and research centers is one of the top priorities of DUEd. The main objectives are academic exchange and training via research projects, workshops, symposia and seminars and enhancement of students' capabilities via student exchange and educational projects. Additionally, because graduate education is still developing in Vietnam, these relationships with foreign universities help Vietnamese lecturers to promote their foreign graduate study. According to the Department of Science and International Cooperation, there were 27 international visits and collaborative activities at DUEd in 2014 (Department of Science and International Cooperation 2015).

d. ESD in teacher education in DUEd

In conformance with the policy of the Ministry of Education and Training (MOET 2006), teacher education programs (TEPs) in DUEd consist of four main elements:

- General knowledge: to provide student teachers with basic knowledge in social and natural sciences
- Specific knowledge: to provide student teachers with knowledge of their major fields such as geography, biology, teaching philosophy and pedagogical techniques
- Service teaching: student teachers must serve as student teachers for six weeks
- Graduation requirements: student teachers can either conduct research and write a thesis or take classes to achieve enough credits for graduation.

These activities are managed by the Department of Academic Affairs. Each student teacher is required to complete 135 credits of academic work.

After the decision was made by MOET to integrate environmental education into formal education curricula at all educational levels in 2001, environment-related courses were introduced for teacher

education programs. In 2004, Vietnam's Agenda 21 was approved and followed by the establishment of the National DESD Committee in 2005 (Do and DeMaria-Kinney 2013). Subsequently, the government promulgated a National Action Plan for Education for Sustainable Development in Viet Nam 2006-2014 to further collaboration across ministries, business sectors and civil society for ESD implementation. Notably, the government identified active teaching and learning methodologies, a national curriculum review and development, teacher education and professional development as the main targets of the second half of the UNDESD in Vietnam (UNESCO Vietnam 2010).

Accordingly, several ESD courses have been developed, mainly in the faculty of biology and environment and the faculty of geography. They include compulsory courses, including environmental science, environmental education, gender and population education, ecology, biodiversity and elective courses such as environmental pollution and education for disaster risk reduction. In addition, in recent years there has been some transition from focusing only on pedagogy to include environmental and social issues as research titles for student teacher theses.

Despite recent reforms, however, NFE offers students more diversity in terms of content, types of education and educators than does formal education. The term non-formal education sometimes is understood as extra-curricular activities in Vietnam, but it can include NGOs, foreign university partnerships, student clubs and activities of the Department of Student Affairs, including the YU. Among these different sectors the YU, a socio-political organization for Vietnamese youth, is undoubtedly the most important actor. Currently, 98% of the students at DUEd are members of the YU. Typical sustainability-linked activities sponsored by the YU mainly include volunteer activities such as blood donations, helping people in remote areas, environmental awareness raising, traffic instruction and charity. For the past 10 years, YU has made great efforts to diversify its activities, and environmental activities currently account for a considerable proportion.

5.3. Key findings of the case study

5.3.1. Existing Contributions of Non-formal Education in ESD

Results from student focus group discussions⁶ indicate the significant contribution of NFE in enhancement of their understanding of sustainable development. After sharing individual opinions, students summarized the advantages and disadvantages of NFE as indicated in Table 5.1.

⁶ see Section 3.3.3 for detailed information of focus groups discussion

Table 5.1. Advantages and disadvantages of non-formal education

<i>Advantages of non-formal education</i>	<i>Disadvantages of non-formal education</i>
• Improves skills (18) • Widens social networks (12) • Reinforces acquired knowledge on environment and sustainability (10) • Improves their understanding of sustainability (7) • As they aren't graded they can express their ideas more freely and creatively (7) • Diversity in approach (training courses, events, campaigns, game, etc.) and content (7) • Students can participate actively and flexibly (participate when they have time) (6) • Enriches their social and cultural knowledge (5) • Leaders of sponsoring organizations are passionate about environmental protection or sustainable development so students feel inspired (3)	• Students cannot obtain course credits (5) • Despite interest, often only 20 or fewer students can participate (4) • May be irregular in terms of time (duration) and frequency (3) • The information and knowledge provided may not be accurate (2)

Students' focus group comments revealed that NFE was rated as quite attractive, with only five of 18 students discussing the disadvantages of NFE. Discussion results imply that NFE provides students with important opportunities to widen their perspectives on sustainability, particularly in practical sense and skills. As stated by one student:

It was hard for me to write opposing arguments of non-formal learning because of its attractive advantages. In my hometown, I just joined villagers to clean up street litter sometimes but by joining university activities, I had a chance to visit Son Tra peninsula and stay a week in Kon Ka Kinh national park to understand about biodiversity (4th year student, female).

All of the participants agreed that NFE can significantly improve their skills, including those considered as intrinsic to ESD teaching such as communication skills, leadership, problem- solving skills and autonomous learning skills. Another outstanding advantage of NFE is broadened social networks that allow students to share information about job opportunities, current information and learning experiences. In terms of knowledge, NFE helps to reinforce and improve students' understanding of sustainability, particularly practical knowledge. A senior school teacher who supervises student teachers during their service teaching at her school stated:

I have supervised six-week service teaching of student teachers for more than 10 years and I have realized that students who have experienced diverse extra-curricular activities are usually more confident in teaching a class. These students have helped our school to arrange environmental activities, including game shows, picture drawing competitions and eco-camping (school teacher, female).

5.3.2. Analysis of Stakeholder Contribution to ESD

To understand how non-formal ESD is carried out at DUEd, this section will provide an example from each of the four main actors: the YU, NGOs, environmental clubs and foreign universities.

a. YU activity: Green Sunday

Environmental protection is an important focus of YU activities nationwide (YU 2013). As with other YU units, the YU at DUEd has organized a large number of voluntary activities, including Green Sunday, which is mainly known as a litter campaign. These activities are usually conducted during the weekend once a month at different scales in terms of the number of participants. For example, a group of approximately 30 students may be organized to collect trash or clean classrooms or public spaces on campus. At other times, a huge number of students may be asked to participate in litter campaigns. For example, from March 7 to 11 of 2015, approximately 1,000 DUEd students were mobilized to join a litter campaign under the theme of Year of Culture and Urban Civilization 2015, sponsored by Danang City's YU. Students were asked to clean the pedestrian walkway and pavements along the road where DUEd is located. They also removed flyers and posters that had been pasted on university exterior walls to not only improve the appearance but also to enhance public awareness of the importance of environmental protection in urban areas. Their efforts were acknowledged on the DUEd website.

The DUEd YU representatives stated that Green Sunday is one of the most successful environmental activities of YU, as it has become well-known in the community and receives considerable publicity. However, given that nearly all university students join YU events, it is unclear as to whether an activity with near-compulsory participation makes a significant contribution to raising sustainability awareness. This issue seems to be recognized by the YU representatives. One noted:

We want to diversify extra-curricular activities for our students. Students from different faculties have different interests. In our universities, students of Biology, Chemistry and Geography pay much attention to environmental activities. Therefore, last year, we started a pilot model of volunteer assessment. Students are required to participate for at least 14 days in wherever activities they have interest in at any organization, even in local communities. Subsequently, students are assessed by the organizations and this assessment is submitted to YU. This is just a pilot model and we need to verify if it is a good way to evaluate students' non-academic contributions (Vice secretary of DUEd YU).

Although the main themes of the activities of the DUEd YU follow the broad directives of the Danang city YU, it's clear that there is an effort to diversify NFE for students and give students more autonomy to decide their extra-curricular activities.

c. Environmental clubs

Since students' interests are not always served by YU activities, some have started their own clubs to obtain autonomy in determining members, contents, and schedules for their extracurricular activities. Environmental clubs were launched at DUEd in different contexts and their operations differ as well. A total of five environmental clubs have been formed at DUEd since 2010. The first club was Go Green Danang, a branch of a national environmental group called Go Green with member sites in Vietnam's major cities. Most of the initial members were students of the biology and environment faculty. Another club, called Love Nature in Danang, was formed in September 2011 with the assistance of the conservationists in Danang city. However, during discussions, students indicated that these two clubs are currently inactive, at least on campus, due to a lack of enthusiastic leaders. Currently active groups include the Geo-Environmental club in the geography faculty and another club named Danang Riverwatch in the biology and environment faculty. Basically, they were launched by students after consultation with faculty lecturers.

The activities of all of these clubs have typically targeted raising environmental protection awareness among students and other youth via seminars, collecting trash and cleaning beaches. Danang River

Watch club, for instance, organizes regular water monitoring along rivers in Danang city. Its members take water samples at different points of rivers of the city and analyze water quality. They share results with each other and try to disseminate the results to the community to encourage public participation in water conservation.

b. NGOs: Education for Nature Vietnam

Education for Nature Vietnam (ENV) is one of the first NGOs working with DUEd to not only raise student awareness of wild animal conservation but also to involve students in reporting illegal consumption of wild animals to ENV via a hotline. In order to conduct their activities with DUEd students, ENV needs to submit documents to the university concerning plans, schedule and contents of training courses. After receiving approval, representatives of DUEd, usually YU staff, support ENV staff in terms of securing facilities (e.g. rooms, educational equipment) and informing students. ENV training courses first aim to increase students' recognition of wild animal species, biodiversity and its importance in Vietnam, and national regulations on wildlife protection. Secondly, the courses train students to report illegal consumption of wildlife via the hotline and provide communication skills for raising public awareness.

In their intensive 2-3-day training courses, ENV educators apply interactive pedagogies, including presentations, films and debates. At the end of each course, a group of students is asked to perform a comedy on campus about erroneous community perceptions related to consumption of wildlife ("bush meat"), including traditional medicinal products like bear gall. The performance entertains while providing students with information that corrects prior impressions of the benefits of consuming wild animal meat. After the training course, ENV recruits volunteers to help arrange exhibitions and campaigns at DUEd to promote student commitment to wildlife conservation.

d. Summer school course led by foreign institutions

In many Vietnamese universities, there are agreements with universities in developing countries to transfer technology and knowledge through courses led and organized by foreign instructors. A course was initiated in July 2014 under an agreement between the Business Academy Aarhus of Denmark and DUEd. The course contents, schedule and number of participants were discussed and decided by lecturers from both institutions. In order to take part in the course, DUEd students were required to demonstrate a basic understanding of environmental studies and English. A total of 22 students took part, half from each institution. During 12 days of training, students acquired diverse environmental knowledge of the following topics (i) environmental problems in Denmark and Vietnam; (ii)

community-based environmental management: a case study of Cu Lao Cham island in the central region of Vietnam; (iii) model of sustainable ecotourism development in Hoi An town; (iv) environmental monitoring; (v) heavy metal detection in vegetables growing near Hoa Khanh industrial zone and (vi) applying economic tools in environmental management.

During the course, students were able to practice environmental monitoring, sampling and analyzing water samples, marine samples and interviewing the local community. Students were expected to actively participate in the course and make informed presentations on promoting environmental management in either Vietnam or elsewhere. Because the course contents were developed by lecturers from two institutions with critical evaluation and the commitment to conduct the course annually, the course was approved for accreditation for participants by the rector of DUEd.

Focus group discussions and interviews allowed the authors to analyze each educational sector's contributions to ESD at DUEd as synthesized in Table 5.2.

Table 5.2. Analysis of stakeholders' contribution in ESD non-formal education

Organization	ESD related contributions	Strengths	Weaknesses
<i>NGOs</i>	• Training courses • Exhibitions • Volunteer activities	- o Experience and practical knowledge of sustainability - o Funding (for projects) - o Good relationship with local communities	▪ Relies mainly on term projects (i.e. duration, frequency of activities); ▪ Lacks long-term vision for collaboration ▪ Infrequent occurrences, limits on participants
<i>The YU</i>	• Environmental volunteering: litter campaigns, ESD campaigns, charity • Environmental events: Earth Hour, Environmental Day	- o Large number of members - o Young and enthusiastic members - o Can quickly disseminate information and mobilize student participation in ESD activities - o Experienced in	▪ Has other priorities ▪ Lack of funds ▪ Participation may be compulsory ▪ Lack of education or awareness promotion ▪ Lack of assessment after

		student extra-curricular activities o Can involve other outside sectors in ESD activities o Can obtain permission of the city government for big events o Community trust	each activity
<i>Environmental clubs</i>	• Environmental volunteering: clean-ups, campaigns, cycling for the environment, etc. • Generates ideas for environmental activities • Raises public awareness	o Takes initiative o Know students' demands and interests o Closely works with students o Has young and enthusiastic members	▪ Spontaneous in operation ▪ Lack of funds ▪ Not sustainable (time, preparation, implementation)
<i>Foreign universities</i>	• Training courses • Seminars	o Academic knowledge o English speaking o Long-term collaboration o Funds for activities	▪ Infrequency ▪ Limitation in number of participants

It is apparent that each organization has its own strengths and weaknesses in conducting non-formal education for sustainable development. YU is the most prominent sector in student NFE because of its stability and position at the university. Indeed, every student teacher is assessed based on his or her performance in non-academic activities by YU and that assessment is part of his or her graduation requirements, along with academic scores. Nevertheless, the student group discussions revealed that the YU environmental activities seem to be dominated by “big events”, involving a huge number of students but not providing significant education towards sustainability. Therefore, “eco” students have gathered and established their own clubs to organize environmental activities themselves. Meanwhile, NGO and foreign university-sponsored sustainability activities look more attractive to students. Yet the fact that the training courses can often accept only a very limited number of participants can limit their appeal for some students.

5.3.3. Existing Collaboration in ESD Implementation among Sectors

It is important to investigate how different educational sectors collaborate with each other to implement ESD. A framework incorporating existing collaborative links among sectors is illustrated in Figure 5.1.

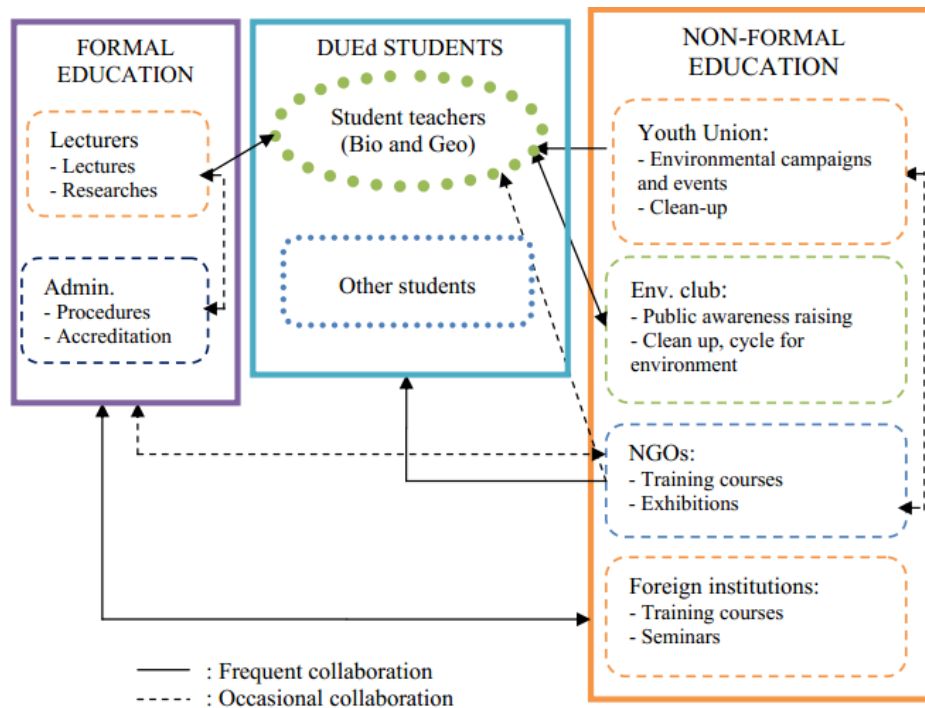


Figure 5.1. Framework of existing collaboration in ESD among sectors

Some drawbacks, as seen from the framework, are the weak collaboration between ESD formal education and NFE, between DUEd and outside stakeholders, and collaboration within DUEd sectors. Compared with foreign institutions and with the YU, NGOs in many cases have had fairly weak collaboration with university lecturers to date. Instead, NGOs receive major support from the university in terms of facilities (rooms, electricity, etc.). Despite a considerable number of ESD-related activities implemented at DUEd, the contribution of NGOs has not been sufficiently recognized by the university.

The interviews and group discussions reveal a lack of collaboration for ESD-related activities that are specifically targeted at student teachers. Even sustainability-related courses conducted by collaboration between Vietnamese lecturers and foreign HEIs tended to target students of the geography, and biology and environment faculties but not specifically student teachers.

5.4. Discussion

5.4.1. Lessons Learned Concerning ESD Implementation in Non-formal ESD at DUEd

NFE significantly contributes in building ESD teaching competencies of students by promoting their skills and sustainability-linked knowledge through frequent activities conducted by diverse sectors. These results reflect the vital role of NFE as a supplement to the formal education system that provides varied learning environments (Brennan 1997; Festeu and Humberstone 2006). An analysis of the four characteristics of NFE identified by Madjar and Cohen-Malayev (2013) reveals that voluntarism is an important component of NFE at DUEd, as students can flexibly participate in training courses by NGOs, YU and environmental clubs (although it should be noted that participation in NFE activities organized by YU may be compulsory), as is multiplexity, which emerges from focus groups and interviews as the most important advantage of NFE in that it provides students with social skills and competencies. In addition, by allowing students to speak out freely and creatively without concern about negative assessments by lecturers NFE promotes symmetric interactions. Yet because students cannot obtain credits by participating in non-formal courses NFE does not allow students to satisfy requirements for educational programs.

The results imply that NFE's role has been undervalued in teacher education programs. Insufficient attention to NFE at DUEd has resulted in several problems in education in general and ESD in particular: 1. weak community outreach that constrains DUEd from practicing the important ESD approach of community-based experiential learning. Students have few opportunities to practice their teaching at schools except for six weeks of service-teaching 2. lack of collaboration between formal and non-formal education for sustainable development and, 3. lack of well-structured NFE activities can lead to uncertainty and infrequency that in turn limits students' participation.

5.4.2. Promoting Collaboration for ESD

Adverse effects due to weak connections among stakeholders in ESD training in DUEd are commonly found in Vietnam, where HEIs are not yet familiar with the role played by civil society organizations in NFE. NGOs lack the prestige, funding and academic acceptance of foreign universities. Lecturers also have not comprehensively perceived strong benefits for their universities in establishing collaborative links. However, recent policies of the Ministry of Education and Training (MOET 2013a) request that universities invite outside scholars to teach and instruct students to conduct research related to their majors. The autonomy of the university provides opportunities to create stronger collaboration among diverse organizations and individuals within those organizations as shown by Figure 5.2.

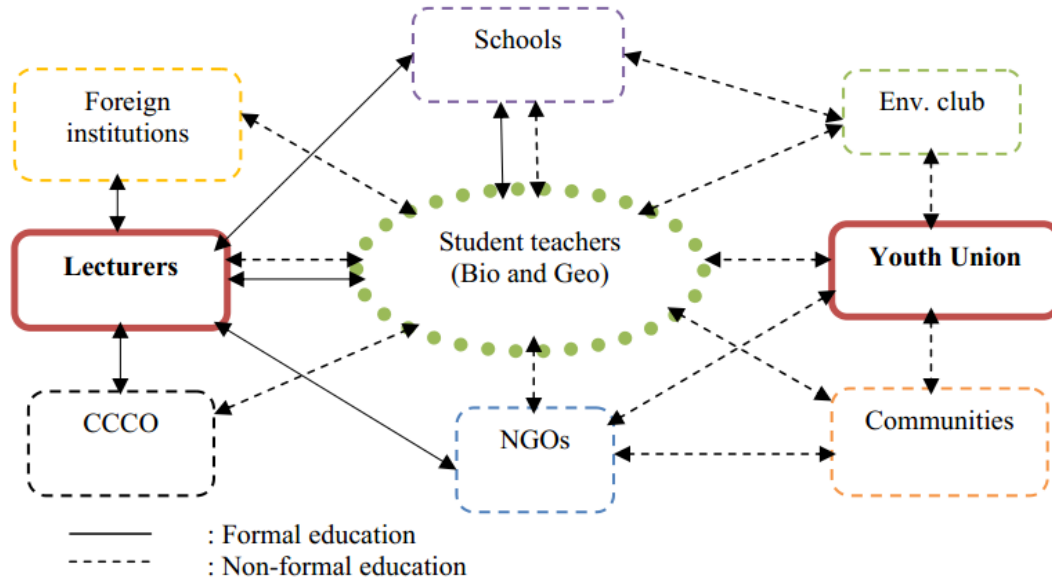


Figure 5.2. Framework of ideal collaborations

In this framework, the solid arrows represent the ideal for DUEd lecturers to collaborate with scholars from outside organizations to teach courses related to ESD within the formal education systems. These scholars are expected to possess master's degrees and expertise in the field of sustainability, particularly in ESD. This sustainability-related academic exchange will enrich the practical knowledge of student teachers and increase ESD teaching experience between DUEd lecturers and outside experts. Meanwhile, the dashed arrows represent potential collaboration among organizations providing NFE. Student teachers will be able to participate in many non-formal activities such as training courses and environmental campaigns organized by different educators.

Existing collaboration has missed important connections between schools and DUEd in ESD implementation. For example, it would be desirable for student teachers to apply their sustainability literacy to conduct EE and ESD during their training period at schools. Moreover, those student teachers would be able to inspire school students to think about sustainability problems.

Student teachers are young, creative and enthusiastic. Therefore we hope that these students will teach and support our junior students to conduct environmental research as participants in a national science and technology contest that aims to create global citizens promoting sustainable development (High school teacher, female)

Domestic NGOs in Vietnam are increasingly active in environmental protection and conservation (Singer, Pham, and Hoang 2014); therefore they can support universities to reach communities, and to understand their projects as case studies for lecturers as well as students. One way to improve collaboration would be for universities to sponsor internship programs, which are starting to be recognized by Vietnamese universities. There are several NGOs, both international and domestic, now working on EE or ESD content which would be appropriate hosts for student teachers to conduct internships (“List of ESD Change Agents” 2015). Via an internship program at NGOs, student teachers can gain experience on how to conduct interesting extra-curricular educational activities, for instance. Internships allow student teachers to not only work at schools but also work at other educational organizations like NGOs. A memorandum of understanding could be signed so as to institutionalize the collaboration between a NGO and the university, as noted in by Haigh (2006).

Although DUEd has established relationships with many foreign institutions, the number of collaborative activities for student teachers remains very limited. Notably, there has not been any ESD-related activity for student teachers independently sponsored by DUEd. This would seem to be an area where DUEd needs to expend more effort to keep pace with global trends in teacher education.

Another new organization in the suggested collaboration framework is the Danang Climate Change Coordination Office (CCCCO), a governmental office established in 2011 by Danang City government with the assistance of ISET, an international organization working in the social and environmental field. The Danang CCCO is responsible for improving local government planning, decision-making, and policy implementation for climate change resilience and adaptation. By involving this office in either lecturing or internships student teachers at DUEd can learn more about practical projects related to climate change and sustainability.

Despite the possibility of diverse ESD-NFE, implemented by various organizations, there is not yet an established linkage and articulation between formal education and non-formal education in the Vietnamese education system (Tien 2009). It is now difficult to accredit student teachers in their participation in ESD-NFE activities. What is required is to create a designated office to link different stakeholders in ESD and to integrate NFE into formal education, for example, by enabling students to earn credits for taking relevant training courses by outside stakeholders.

Independent activities by various departments and staff stymie effective collaboration between formal and non-formal education. The Department of Science and International Cooperation and faculty members should strengthen relationships with outside sectors to allow university lecturers to learn more about the training courses offered by NGOs, CCCO and other

organizations, and to integrate such NFE activities into formal education. Additionally, leaders of those organizations who possess masters' degrees can become visiting lecturers at DUEd to co-teach courses that are closely linked to their expertise. I believe that this simple step will be effective in facilitating ongoing collaboration. (Director of Department of Academic Affairs)

Cognizant of these potential benefits, DUEd should play a central role to create and sustain a network among diverse stakeholders to promote ESD implementation. DUEd needs to institutionalize non-formal education for sustainability activities. Accrediting non-formal training courses and student internships, for instance, can be first steps to encourage student teachers' participation. The YU of DUEd should also issue certificates to award students' involvement in ESD activities as parts of their non-academic activities.

Lecturers and YU leaders are crucial enablers to link stakeholders and facilitate joint discussions. "Communicating about ESD within teacher-education institutions is important to the progress or lack thereof related to change" (Hopkins and Mckeown, 2005, p.30). That communication will promote information exchange and updated ESD among DUEd staff that combines formal and non-formal education, and it will allow them to determine the scope of work when networking with outside stakeholders.

5.5. Summary

Non-formal education provides great opportunities for TEIs to train teachers in ESD by diversifying learning environments and educators. Student focus groups and interview results indicated that NFE improves student awareness of sustainability through interactive pedagogies. Currently, there are four types of organizations involved in non-formal ESD at DUEd: the YU, NGOs, foreign educational institution.

Each non-formal educational sector provides notable contributions to ESD promotion at DUEd. The YU, ubiquitous at Vietnamese universities and boosting nearly universal participation, was found to play an important role in fostering sustainability awareness. Conversely, weak collaboration between stakeholders also hampered overall effectiveness of non-formal education for sustainability, especially the relationship between NGOs, sustainability experts, and the university.

Therefore, it is necessary to consider a framework to intensify the existing connections and involve potential stakeholders, including schools and the Danang CCCO. This framework may serve as a model for utilizing outside funding and human resources to promote ESD in training teachers across developing countries. DUEd lecturers and YU staff, in particular, can play a central role in maintaining

this collaboration by accrediting non-formal ESD training courses and recognizing the participation of student teachers in ESD-related activities.

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CHAPTER 6: INVOLVEMENT OF NGOS IN TRAINING TEACHERS ON EDUCATION FOR SUSTAINABLE DEVELOPMENT IN VIETNAM: A CASE STUDY

6.1. Introduction

Non-governmental organizations (NGOs) and higher education institutions (HEIs) are among the leading agencies in ESD advancement. Therefore partnerships between the two stakeholders can be expected to actively promote education for sustainable development (ESD) initiatives and stimulate local sustainable development. For universities in developing countries, in particular, NGOs can help compensate for limited finances and capacity at HEIs by offering students courses and training in ESD. NGOs can also cooperate with university educators to develop curricula and increase community outreach, and they offer potential employment for university graduates. Despite this promise, however, establishing and operating university-NGO partnerships (UNGOPs) are challenging tasks. In order for these partnerships to expand, both groups must appreciate each other's interests, resources and expertise and be able to transcend existing barriers to implementation.

In order to augment the scant existing literature on this collaboration, this chapter presents a case study of NGO involvement in training teachers in ESD at a Vietnamese teacher education institution, Danang University of Education (DUEd). The chapter will first examine how NGOs have been involved in training teacher on ESD at DUEd and will determine the drawbacks of the existing partnerships between DUEd and NGOs. Then it will seek to identify roles played by NGOs and gaps in collaboration that emerged before suggesting means of improving UNGOPs.

6.1.1. NGO contribution in ESD

NGOs can be defined as well-functioned civil society organizations that not only support development but are also involved in decision-shaping and decision-making (Ulleberg 2009). NGOs play a very active role in the field of education. Through innovations at the micro level, for instance, working with schools, NGO can make changes as a “bottom-up” process (Ulleberg 2009). In some cases, those innovations have been mainstreamed in education transformation by influencing government's policies. Moreover NGOs are considered more efficient, less corrupt and closer to the community than government (Egnbol-Martinussen and Engberg-Pedersen 2003). Thus, NGOs have been involved in and made significant contributions to the Education for All (EFA) movement, a global commitment to provide quality basic education for all children, youth and adults.

Among different education themes, NGOs are paying particular attention to EE and ESD. They were recognized as one of the two key sectors for EE (Haigh 2006) and as pioneers in carrying out the early work on ESD (Hopkins 2014). In fact, NGOs with participatory and interactive approaches have gradually become important non-formal environmental educators. Reviewing a variety of publications indicates that NGOs generated diverse initiatives in knowledge-oriented and/or action-oriented programs. Typical initiatives include the following:

- Creating a data bank including EE booklets, pamphlets and documentary films, environment-related teaching guidebooks and good practices, and creating an information distribution network to provide those resources to residents (Turnock 2004; IGES 2004; Yeshodhara 2005)
- Applying interactive pedagogies during training process such as slide/video show, essay, debates, dialogues, radio for lectures (Turnock 2004; IGES 2004; Yeshodhara 2005) and promoting hands-on or experiential learning by field work, field camps, field-project experience, problem-solving, action and change, and role-playing (Turnock 2004; IGES 2004; Yeshodhara 2005; Haigh 2006; Jia-nan 2012);
- Increasing learners' expressive output via poetry, paintings and songs (IGES 2004);
- Utilizing information and communication technology (ICT) to advance knowledge exchange, discussion and action plan among between students from a developed country (Netherlands) and developing countries (Indonesia and Zimbabwe) towards a sustainable society (IGES 2004);
- Promoting follow-up activities via establishment of eco-clubs, tree-planting and teacher capacity building (IGES 2004; Yeshodhara 2005).

Those interactions even within a short period can quickly create a very powerful and influential momentum that affects learners' cognition of environment and sustainability (Haigh 2006). First, NGOs widely apply experiential pedagogy, a primary methodology to build sustainability leaders, to involve learners in the training process. Secondly, with expertise, experience and information resources, NGOs solve existing shortcomings of formal environmental education, which continues to be characterized by knowledge-oriented approaches that do little to encourage behavioral changes. The popular themes of NGO training also replicate the environmental teaching content in the formal education system, comprising such topics as ecosystem and biodiversity conservation, air pollution, forest conservation, urban environment, environmental awareness programs, nature conservation, pollution control and sustainable development.

Nevertheless, there are several constraints that impede NGO training programs. According to a review of the status of EE in 36 Asian countries (Bhandari and Abe, 2001) and in-depth analysis of the case in Indonesia (Nomura and Abe, 2001) (cited in IGES 2004), there are four main limitations of NGO activities: (i) lack of capacity, including lack of organizational management skills, lack of EE skills/knowledge, lack of human resources, and inadequate funding/ dependence on funding agencies; (ii) insufficient information-dissemination system; (iii) unfavorable political conditions, and (iv) diversified problems involved in nation's social/ economic development stages. Hence, building partnerships with government, "outdoor" supporting parties (e.g. national park), educational institutions (schools, college) and other NGOs is the appropriate solution to sustain and enhance the quality of EE/ESD (IGES 2004; Yeshodhara 2005)

6.1.2. University - NGO partnerships

Many NGOs have acted as partners for universities in promoting human rights and sustainable development, with efforts to improve living conditions in poor communities, increase social justice and secure cultural and environmental protection (P. A. Reddy and Reddy 2006; Palmer and Birch 2003). This varied participation by NGOs allows university educators to access valuable sources of information about funding opportunities, practical knowledge and field experience (Hama et al. 2005). According to Haigh (2006, p 343), "NGOs are also able to offer a useful vehicle for shaping self-sustaining links between the academy and the wider community". Recently, NGOs have been seen as informal educators that provide university students sustainability education and research opportunities, including internships and training courses.

In turn, NGOs can utilize university facilities and human resources. Partner universities, for example, may allow NGOs to use classrooms or meeting rooms, audiovisual equipment and public space to carry out promotion and activities. Secondly, universities can support NGOs with current information, provide experts as consultants or project and training staff and can offer courses for enhancing competencies of NGO officials (P. A. Reddy and Reddy 2006). Moreover, NGOs can arrange for student volunteers to assist their activities or conduct basic research.

As regards environmental education, most of these environmental NGOs cooperate with other institutions (e.g. universities) and have repeatedly had successful bids in state- and EU-funded competitive programs since the late 1990s (Turnock 2004).

The fundamental principles of University – NGOs partnerships (UNGOPSs) are that the University and NGO sector are responsible for research, development, evaluation, monitoring,

and community service. This basic scheme has numerous variations depending on the risk allocation between the university and NGO sector. The utilization of student service for the development of community through NGOs is the philosophy of UNGOPS (Vasudeva Rao, 2006, 63).

UNGOPS also face serious challenges, including a frequent lack of funds and committed efforts from both sectors (P. A. Reddy and Reddy 2006). Although they share such characteristics as flexible decision-making and effective communication and coordination (Vasudeva Rao 2006), there remain some differences between them. Differences in operational/managerial regulations (e.g. financial procedures), culture and unequal power relations have been identified as common barriers to successful UNGOPS (Brohman, Gannitsos, and Roseland 2003). NGOs complain that universities sometimes interfere with their activities (P. A. Reddy and Reddy 2006), while universities sometimes find NGOs difficult to trust due to their unstable management and unhealthy dependence on sponsors or donations.

NGOs are always campaigning groups, even if their campaigns may be limited to fund-raising. They tend, therefore, to be media hungry, to court publicity and political attention, sometimes in high-risk ways that can be potentially harmful to any associated academic (Haigh 2006, 343)

6.1.3. Overview of NGOs in Vietnam

The first NGOs in Vietnam were international NGOs (INGOs) mainly working for humanitarian and emergency support. Domestic NGOs first emerged in the early 1990s with enactment of a legal framework for operation of INGOs by the central government. Subsequently, the People's Aid Coordinating Committee (PACCOM) was established in 1996 under the Vietnam Union of Friendship Organizations (VUFO) to mobilize, coordinate and administer humanitarian and development activities of NGOs in Vietnam (Bach 2003; Dang 2009). Since that time NGOs have exerted a profound and growing influence in Vietnam. According to PACCOM's 10 year-report (2003-2013), approximately 990 INGOs were active as of 2013, conducting 28,000 projects throughout every province of Vietnam with total funding of about \$2.4 billion (PACCOM 2013a).

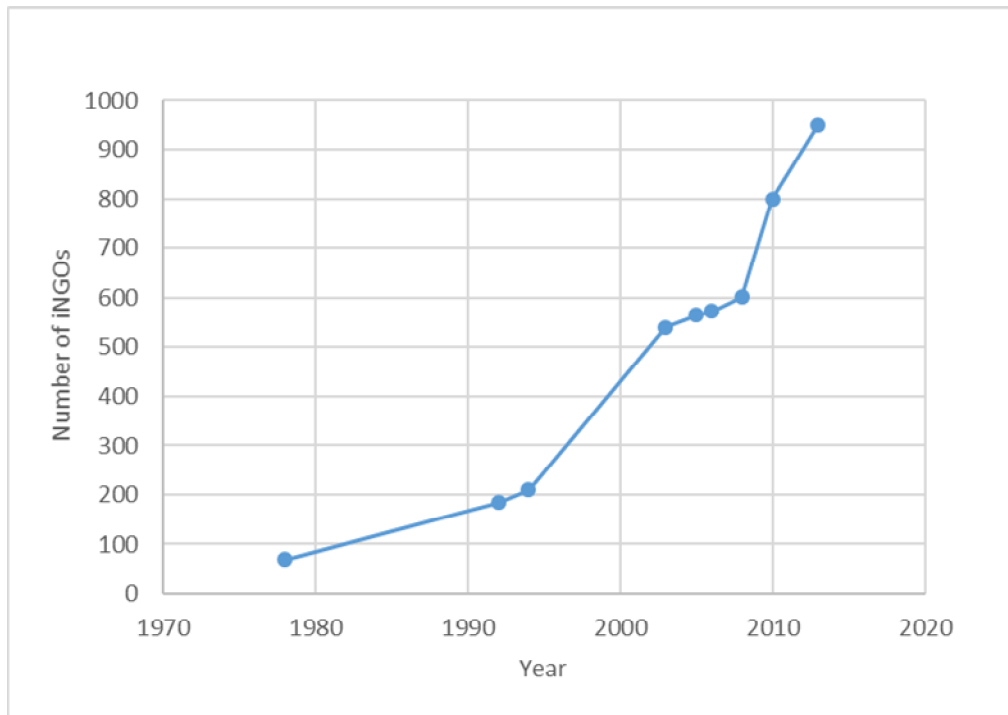


Figure 6.1. Number of international NGOs in Vietnam between 1978 and 2013 (Source: (PACCOM 2013b; PACCOM 2013a))

There has been a concomitant increase in the number of non-profit Vietnamese NGOs that have articulated clear social objectives (Singer, Pham, & Hoang, 2014, p.96). All domestic NGOs and other civil society organizations must register with the Vietnam Union of Science and Technological Association (VUSTA) (Singer, Pham, and Hoang 2014). Activities of domestic NGOs are similar to those of INGOs, with most related to community development, environment and sustainability, education and health. Leaders of the most prominent organizations are frequently former government officials or former INGO officials with strong networking skills who can procure funding and assistance from diverse sponsors (Singer, Pham, and Hoang 2014).

Despite their rapid growth, there has been no clear legal definition of domestic NGOs and governing regulations have changed frequently. It is difficult to estimate an accurate number for domestic NGOs in VN since many organizations with limited scope and credibility register as or proclaim themselves to be NGOs for fundraising purposes. Many NGOs are small, with limited funding, operated by young and inexperienced staff with a high turnover (Singer, Pham, and Hoang 2014).

Many NGOs suffer from a contentious relationship with the government. They are often regarded as unreliable, attention-seeking groups. On their part, due to the lack of a clear legal framework many NGOs are reluctant to initiate contact with authorities, especially at the local level, where governmental

officials may be poorly informed about NGOs. Local authorities often consider NGOs and other civil society organizations as entities that need to be controlled rather than encouraged (Taylor et al. 2012).

Vietnam has recently achieved middle-income economic status in terms of per capita GDP, a laudable milestone yet one that implies future heightened competition among local NGOs to secure diminishing pools of foreign official development assistance funding. In this context, boosting collaboration with universities, which are considered prestigious organizations, could enhance NGO opportunities for securing funds and grants and boost their professionalism in the future.

In light of recent recognition that Vietnam is one of the world's most vulnerable countries to climate change impacts and disaster risks, NGOs are paying increasing attention to promotion of sustainable development. The Vietnam Non-Governmental Organizations and Climate Change Network (VNGO&CC) was formed in 2010 to foster and share knowledge and experience in climate change responses in general and sustainable development in particular by building youth capacity and leadership. By providing training courses and involving youth in environmental campaigns, NGOs have been effective in implementing environmental education and ESD across Vietnam.

A study of ESD implementation at the five most prominent TEIs in Vietnam revealed that NGOs could play a crucial role in training student teachers about ESD via non-formal education (Kieu, Singer, and Gannon 2016). The case study presented here seeks to deepen understanding of these partnerships to advance educational and research collaboration of universities and NGOs.

6.2. Results

6.2.1. NGOs' approaches in training teacher on ESD

The burgeoning role of NGOs in empowering Vietnamese youth was underlined by the multifaceted involvement of student teachers at DUEd in activities organized by different NGOs. From interviews and focus group discussions, the author identified seven NGOs conducting sustainability-linked awareness-raising at DUEd. This chapter examines five NGO-led courses with differing approaches to explore the ways in which NGOs can contribute to training teachers in ESD. An overview of the five training courses, including ESD themes, pedagogies and motivation, is presented in Table 6.1.

Table 6.1. Overview of NGOs' contribution in training teacher students on ESD

Name	ESD-related activities/the mes	Targete d group	Pedagogies applied	Evaluation	Motivation
Frankfurt Zoology	10 day- on course	DUEd students	Lectures by FZS staff/ experts in	Participation and report	Funding 5 proposals for research or

Society (FZS)	primate and biodiversity conservation	(18 – 20 participants)	biodiversity; group discussions: 5 day-experiential learning in forest		raising public awareness
SEEDs Asia (SA)	Two day-course on education for disaster risk reduction	42 student teachers and 4 young lecturers of DUEd	Lectures by SA staff and school teachers, group discussion, experiential learning (hazard mapping and teaching material)	Participation and presentation	No
Live&learn	4 week-course to build youth leadership towards sustainability	100 participants aged 18 to 25 from across Vietnam, including 6 DUEd students	Lectures by famous speakers, group discussion, journal entries, project and problem based learning	Participation and proposals	Funding of best proposals from participants, creation of website for trainee exchanges
Greenviet	2-day course on education for nature conservation	50 volunteers of Greenviet (11 DUEd students)	Lectures by Greenviet staff and group discussions	Participation	Joining program for elementary, secondary students to protect environment, nature in Son Tra peninsula
Action for the city (ACCD)	4 week-course on sustainable development	35 university students (5 from DUEd)	Lectures by famous speakers, group discussion, project and problem based learning	Participation and pilot project implementation	Fund students' projects, support student clubs to organize sustainability activities, create Facebook page for trainees

Although there was considerable variation in content, duration, evaluation and motivation, all the courses featured interactive pedagogies. These included inviting school teachers to share with trainees practical experiences on integrating disaster risk reduction into curricula and creating teaching materials (SA), recruiting trainees from diverse disciplines and promoting mutual exchanges over a four-week course (ACCD), inviting noted sustainability experts and public figures to talk to trainees (ACCD and Live&learn), fieldwork (organic farms, forest) (ACCD and FZS), and motivating trainees with such follow-up activities as projects, educational programs and public awareness-raising.



Figure 6.2. Student teachers participated in NGO's training course

*** Focus on *Hoi An Sustainability Field School***

One course that was especially well-regarded by participants was sponsored by the Hoi An Sustainability Field School. The course was implemented by Action for the City (ACCD), a sustainability-related NGO established on December 22, 2006 under VUSTA. Under the project title “From university to community: preparing a generation of professionals in sustainable development”, the course was implemented from January 2014 to July 2015 with funding from Irish Aid, the bilateral assistance agency of the Republic of Ireland. The course was designed for students from varied disciplines in central Vietnam to prepare them for careers that foster sustainable development.

The program offers a summer course in July and a winter course in January with a combined total of 35 students. The training program focusses on public space, eco-tourism, environmental education and organic agriculture. Each course also applies three main teaching principles: experiential learning, collaborative learning and autonomous learning.

Experiential learning was applied by requiring students to either practice what they learned in each training session or to do exercises. For example, after learning basic skills for working with communities, students were sent to an organic farm to “make friend with farmers”, work with them and interview them to generate a proposal. For collaborative learning students were divided into small groups from varying disciplines. They were encouraged to work together to promote understanding of

the need for mutual assistance to solve problems. As for autonomous learning, the course administrators attempted to hone student motivation and participation by including a warm-up activity before each session, encouraging students to interrupt educators with questions, requiring them to write journal entries each day, and preparing outdoor learning venues such as farms, village space and playgrounds.

Planning and implementation of the intensive course comprised four steps:

- Course preparation (around three to four months): documentation and promotion; course curriculum planning, recruiting expert educators with experience and proven leadership skills; arranging for student homestays, teaching venues, field sites and, facilities.
- Trainee recruitment (around one month): collaboration with university lecturers to screen applications and interview and select trainees.
- Course implementation (two – four weeks): equip students with requisite knowledge and skills for pro-sustainability actions.
- Workshop (one – two weeks): at the end of the course, students share their proposals with other stakeholders such as lecturers, local authorities and communities and discuss to make those proposals more applicable.

Follow-up projects not only provide students with opportunities to apply their learning but also help NGOs, universities, businesses and local governments build networks for research and training in sustainable development. In addition, after each course, students were encouraged to form clubs to continue their activities. Three clubs were formed; KICODO, focusing on preserving traditional cultural spaces and design of public spaces (Hue University of Architecture), Vien Gach Hong, established to create play spaces for children (Hue University of Science) and Danang River Watch, which monitors the water quality of Danang city and develops urban riverside bicycle tours (DUEd). ACCD helped these clubs to obtain grants for maintaining their activities and to create opportunities to turn projects into sustainable social enterprises.

6.2.2. Influence of NGO courses on student teachers' sustainability competencies

The student focus group discussions revealed that students had predominantly positive impressions of the NGO-led training courses. Students claimed that they benefitted not only from the useful knowledge and sustainability practice purveyed by the courses but they had also improved personal skills such as group work, communication, financial management and self-orientation. Though such courses were not intentionally designed to improve trainees' teaching skills, three last-year students revealed that they had learned about and been familiarized with ESD pedagogical approaches that were applied. According to the student teachers, lectures featured practical knowledge rather than abstract theories, speakers

provided interesting lectures with ample opportunities to ask questions, and group discussions were organized creatively by applying such techniques as student storytelling, brainstorming, think-pair share, role-playing, problem-based learning, and experiential learning by participating in projects or visiting field sites. Course evaluation was mainly based on the students' active participation during the course, as judged by NGO officials and sometimes by other trainees. Noted one student:

The ACCD course provided me with innumerable impressive and new experiences. I met well-known figures who taught us about sustainable development and individual motivation (e.g. author Nguyen Ngoc, journalist Ta Bich Loan). This was my first time to meet and work with the farmers engaged in organic agriculture. It was the first time to stay with students from various regions of Vietnam in a homestay. We were awarded 4 million VND to realize our proposal of an organic school garden at Nguyen Thi Luu junior high school. It was absolutely unforgettable (female student, 4th year)

When asked about the influence of the courses on their cognition of sustainability, several students lauded the follow-up activities after the courses as being most beneficial, in that it allowed them to apply what they had learned. To evaluate the core sustainability competencies that students have achieved by participating in NGO courses, the author applied a framework of Wiek et al. (2016):

- o *Systems thinking*: the students obviously had gained an understanding of the complexity and challenges facing sustainability and cause-effect chains. Comments included: “organic products are environmentally friendly but usually more expensive than other products so it is difficult to increase organic food consumption in impoverished areas”; “staying in the forest enabled me to have a comprehensive understanding of ecosystems, the role of each species and the persistent connection between nature and human”, and “serious beach erosion in Hoi An is the certain consequence of hydropower dams and the loss of mangrove forests of Nipa palm”.
- o *Future thinking*: Students expressed their concerns about many ongoing issues in Vietnam such as corruption, climate change, food safety, environmental pollution and socially alienated lifestyles for young people (“chemical compounds that have been overused in Vietnam will lead to many diseases of which cancer is the nightmare of thousands of families”, “I feel worry for the future of Vietnam because many young people are spending a lot of time on Facebook or games”)
- o *Values thinking and action-oriented*: Students understood the need to adopt more environmentally friendly behavior (“I perceived the alarming cumulative impacts of

societal and environmental problems. We young people must reorient our lifestyles and inspire each other to save the earth”; “ I feel more responsible because even small changes in my daily habits like using water or energy can help mitigate climate change”)

During the discussion, students explained about their own post-course behavioral changes, mainly changing their daily habits to reduce consumption of water and energy and planting vegetables in small planters. Some also mentioned that they were involved in environmental campaigns or charity work organized by either university or outside sectors but few of them were able to work with local communities as they had done during the NGO-led courses because of their busy academic schedule and remote locations.

Students increased their sustainability-related competencies but not their ESD teaching competencies, mainly because the courses were not specifically designed for student teachers. As future teachers, students need to obtain pedagogical competence and have more practices in engaging others to learn and act towards sustainability.

Students identified a few drawbacks such as overly ambitious course schedules, a lack of supervision during the follow-up activities, lengthy lectures and misleading trainee recruitment. Since the NGOs bore all costs for the training courses and widely recruited trainees, only a few outstanding DUEd students could participate. Additionally, because NGOs like Live&learn did not coordinate their class schedules with those of DUEd, some students had to miss university classes without the permission of faculty members to participate in courses. During discussions students explained that they had purveyed additional critical comments to the NGOs after each course.

6.3. Analysis of partnership between DUEd and NGOs

The level of collaboration achieved by partnership between DUEd and the five NGOs in planning and implementing their training courses can be assessed according to Hogue’s five-level categorization (1993) as follows:

- No interaction at all (Live&learn): conducted the course independently, no contact with DUEd;
- Networking (Greenviet): individual communications between Greenviet staff and DUEd lecturers, all decisions were made independently, no defined roles;
- Cooperation (SA): provided information to each other, formal communication, somewhat defined roles (DUEd: facilitator and SA: implementer), most decisions were made independently, but communication was limited;

- Coalition (ACCD): shared information and resources, frequent communication, shared decision-making (course design, content and trainee recruitment), and defined roles clearly (via MoU);
- Collaboration (FZS): shared information and resources, frequent and prioritized communication, shared decision-making, defined roles clearly (via MoU), and established collaboration office at DUEd with long-term vision.

According to DUEd, university faculty have engaged in some kind of sustainability-related collaboration with 11 different NGOs (9 INGOs and 2 domestic NGOs) as trainees, trainers or consultants. Among the 11 NGOs, only four NGOs officially organized sustainability-training courses through DUEd, while the others mainly involved hiring university lecturers as consultants based on their personal relationships with NGO staff.

Coded data from semi-structured interviews of 12 faculty members and eight NGO officials indicates that both NGOs and the university recognized that UNGOPs promise many benefits, as shown in Figure 6.3 (a total of 107 initial codes generated by lecturers were divided into 9 categories and 66 codes from NGO staff were divided into 8 categories. The number of codes are presented in the bars at right.)

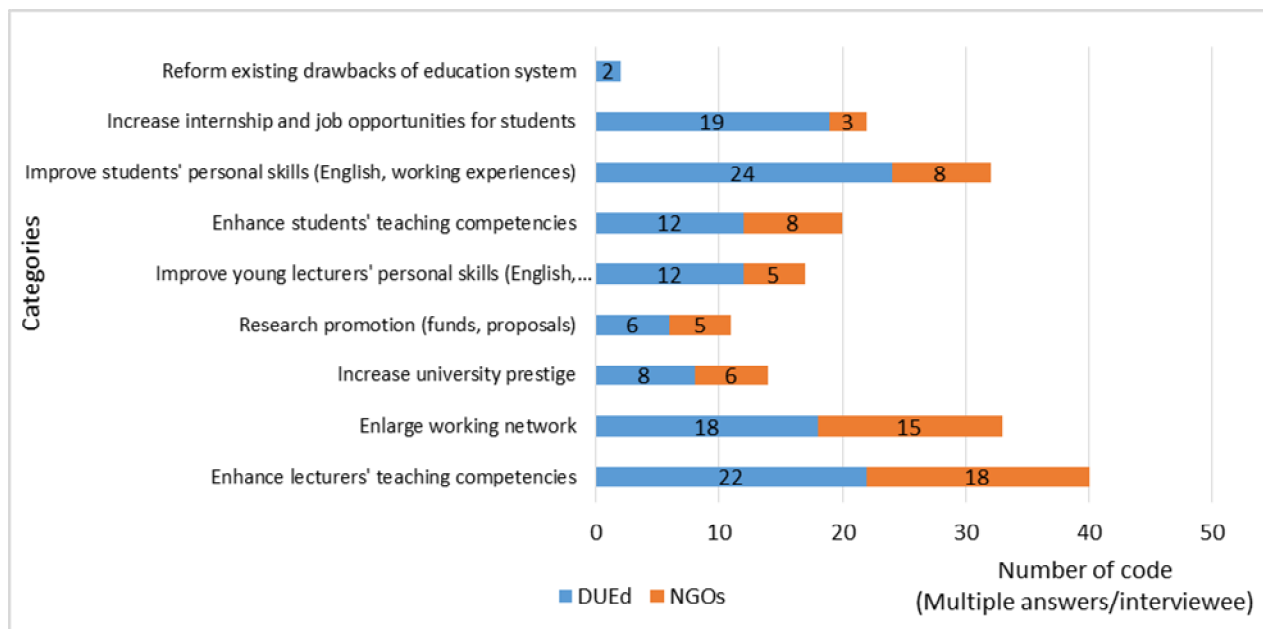


Figure 6.3. Benefits for DUEd from UNGOPs

All the interviewees agreed that working with NGOs can enhance the ESD teaching competencies of DUEd lecturers and students. DUEd lecturers could mention a greater number of benefits for their respective institutions than did NGO staff for their organizations. The most important benefits claimed

by the interviewees were the enhancement of teaching competencies of lecturers; and strengthened communication skills of students and young lecturers. Interactive teaching techniques are always required in NGO courses hence participating in those courses enables lecturers to improve their teaching practices, especially as trainers. For young lecturers and students, such participation provides them with valued experience that can help them obtain academic scholarships and overseas study or work opportunities in the future. Two of the lecturers even mentioned that promoting NGO courses can help universities to address many of the existing drawbacks of the educational system.

Meanwhile, the most important benefits that NGOs purportedly received from collaboration with DUEd was use of their facilities and manpower needed to implement their projects. However, six of eight NGO staff stated that the DUEd students, like other Vietnamese undergraduate students, lacked the relevant practical capacity to work as assistants for NGOs, even as volunteers, and that the students would need training. As shown by the lower number of total mentions in Figure 6.4, however, it is worth noting that NGO officials did not realize as many benefits as the DUEd lecturers.

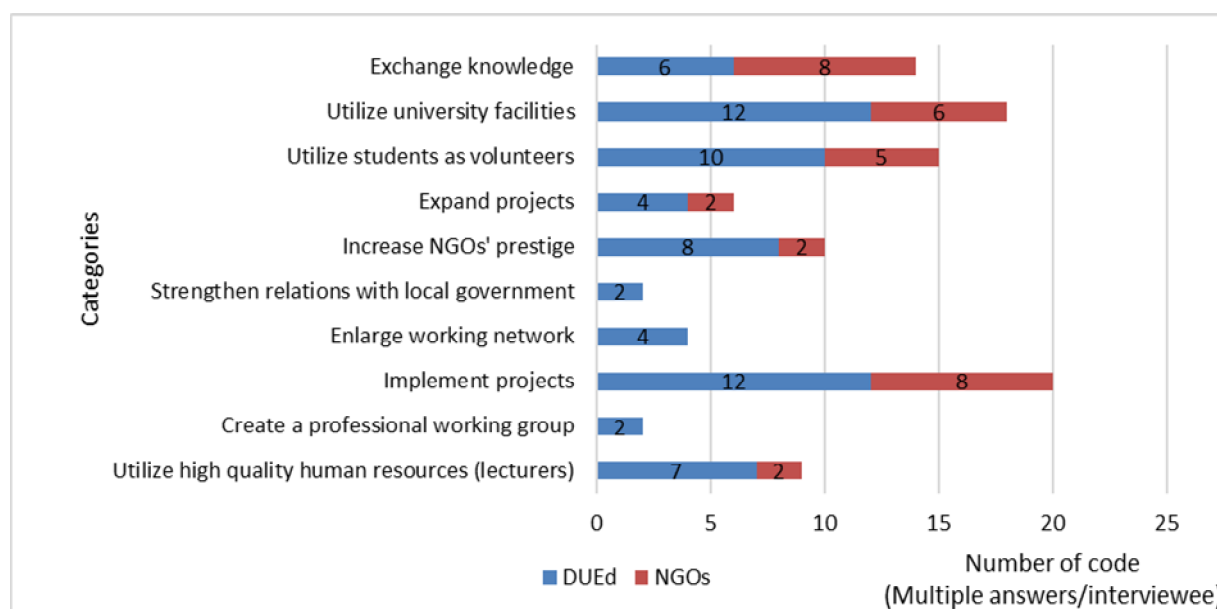


Figure 6.4. Benefits of NGOs from UNGOPs

Despite the aforementioned benefits, UNGOPs are hampered by many obstacles. The most important obstacle mentioned by the interviewees is the lack of mutual understanding of the two sectors in terms of regulations, functions, operations and vision. University faculty admitted that collaboration with DUEd may involve uncertainties and a lack of responsiveness. Faculty members explained that it is not easy for a university lecturer to cooperate with NGOs because it takes a lot of time and energy. As for

the NGOs, they face their own challenges, particularly the constant pressure of fund raising, which may increase pressure to produce positive reports on NGO activities. In addition, in most cases the UNGOP terminates when a project comes to an end. Among NGOs, only FZS has established a collaboration office at DUEd and organizes an annual training course (on primate conservation).

Both NGO and DUEd interviewees suggested some possible approaches for bridging the gaps between the two sectors. The lecturers all stated workshops or meetings should be held between NGOs working on sustainability and DUEd to help achieve mutual understanding and identify common interests and purposes. Specific ideas included: (i) each faculty should nominate a lecturer who could be responsible for promoting university outreach, including cooperating with NGOs; (ii) a memorandum of understanding should be agreed to by the university and the NGO to facilitate long term collaboration; (iii) NGOs should be allowed to set up space or offices at university or faculties; (iv) there should be efforts to improve English skills of lecturers so they can collaborate with NGOs; (v) lecturers should be encouraged to generate initiatives and collaborate with NGOs for fund raising, thus improving their leadership skills; (vi) highly qualified NGO staff should be invited to give lectures at the university and; (vii) NGOs need to be more active in sharing their experience, plans and information about their sustainability-linked projects with the university to create and strengthen bilateral relations. NGO staff suggested that university members should be more active and open to collaborating with NGOs in programs related to sustainable development.

I believe ESD activities provide a good opportunity for Vietnamese universities to apply new methods in teaching and learning, so universities need to be open and more active in cooperate with NGOs in this task. However, both sides should understand what roles they can play. It is worth noting that NGOs officials are activists but not researchers. Therefore university lecturers need to understand the objectives of our activities and not be overly critical when collaborating with us (NGO interviewee, 30).

*** *Successful and sustainable partnership between DUEd and FZS***

The Frankfurt Zoology Society is the sole NGO whose involvement could be categorized within Hogue's 1993 framework as true collaboration. The partnership began with a chance meeting between DUEd students on a field trip to Cuc Phuong National Park and an FZS staff member, Tilo Nadler. The talks with students prompted him to take action to address a serious shortage of nature conservation professionals in central Vietnam. With the assistance of local staff FZS signed an MOU implementing exchanges with the University of Danang (DUEd's umbrella university) in 2006 and began educating DUEd students with annual training courses. After the first five successful years of collaboration, FZS

staff and DUEd faculty decided to establish a collaborative office at DUEd to promote other activities besides the training course such as student research, seminars and recruitment of volunteers.

In order to broaden collaboration, FZS recruited a staff member to oversee activities of the office and hold regular discussions with faculty members three days per week. They also began holding two meetings per year between FZS and faculty lecturers. The year-end meeting aims to review activities and identify difficulties or problems occurring within the year, while a new year's meeting aims to conceive a master plan for the year with input from lecturers and FZS staff. On average, FZS spends around 5,000 USD to operate the office with supplementary support from DUEd (e.g. facilities, water and electricity).

According to one FZS interviewee, the core factors that sustain the partnership between FZS and DUEd are: the enthusiasm of young lecturers; regular communication between the two organizations; the patient approach of FZS in trying to understand the administrative procedures of DUEd and the efforts of both organizations to generate collaborative activities.

With a small budget (5,000 USD/year), we always try to think about low-cost but effective activities such as seminars, onsite training and education, and promoting students' research-linked readings. These activities keep us working together to propose more research and identify promising grants or funding. (FZS staff, male)

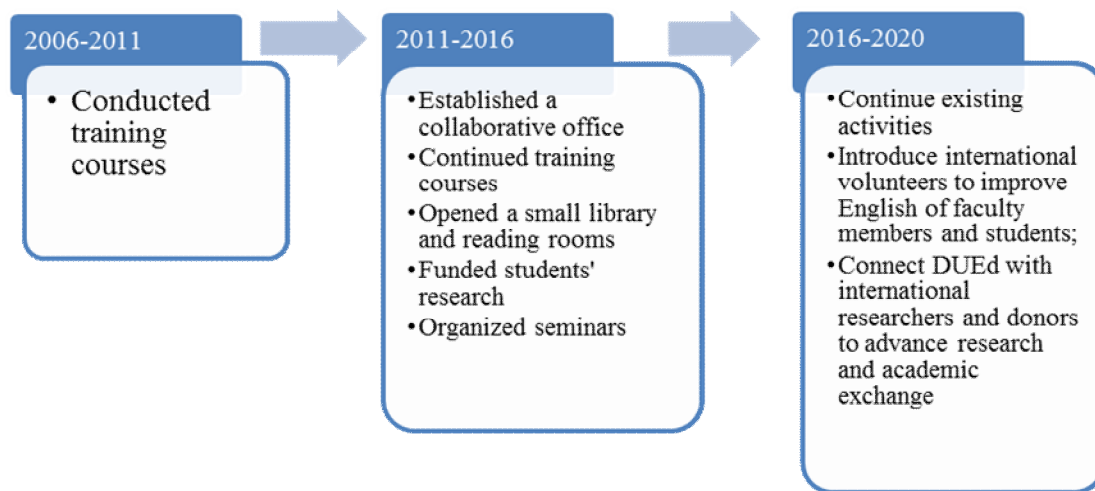


Figure 6.5. Evolution of DUEd/FZS partnership

DUEd obviously obtained considerable benefits from this partnership. Students and young lecturers have studied with conservation experts in the wild to increase their expertise. FZS has also advanced

research at DUEd by awarding small grants for outstanding research proposals by students and sponsoring regular seminars, often led by noted researchers in biology or environmental studies. The establishment of a small library has helped to improve knowledge and exchanges among faculty members and students.

6.4. Discussion

6.4.1. Analyzing roles for NGOs in ESD at teacher education institutions

NGOs in Vietnam are playing a growing role in ESD, but NGO partnership remains a novel concept for many university lecturers. In addition, it is difficult for oversubscribed university lecturers to harness the necessary funding, time, manpower and diverse field sites to organize courses like those offered by NGOs, and they may not be comfortable with the active learning approaches that are commonly applied. NGOs obviously serve as crucial non-formal educators of sustainability. In fact, the results from the DUEd case study imply that NGOs have significantly contributed to fostering sustainability-linked competencies and inspiring student teachers to consider implementing active learning pedagogies in their future teaching. Although many of the courses were of limited duration, NGOs create good conditions that empower students towards behavioral change (e.g. data bank of sustainability, funding students' proposal, etc.). At the end of the FGD, students made a comparison between NGO and DUEd sustainability-linked courses as presented in Table 6.2.

Table 6.2. Comparison between NGO and DUEd sustainability-linked courses

Comparison aspect	NGOs	DUEd
Teaching duration	Short and intensive (several days to 4 weeks)	Several semesters
Teaching contents	- Short, updated and concise with local & practical knowledge - Target at building skills	- Important and basic concepts & principles but too heavy (mainly theory-based) - Target at memorizing knowledge
Teaching methods	Very interactive (enquiry-based, experiential learning)	Lectures (70% - 80%), seminars & group discussion (20% - 30%)

Evaluation	-Competency-based evaluation via participation, proposal & final products (i.e. videos, booklets) - No accreditation	Knowledge-based evaluation via writing test, assignments & presentation at mid-term and end of semester
Motivation	- Allow trainees to become volunteers - Network trainees via facebook/website/mail group - Encouraged trainees to form clubs to organize sustainability-related activities - Fund trainees' mini-projects and/or introduce them to other sponsors	Not clear
Number of trainees	- Very few (10 to 20), only active & outstanding students - Different majors	- All students - Same major

It is worth noting that these results had been shared with six of 12 interviewed lecturers who experienced NGO training courses (as trainees and trainers) and they concurred with these assessments. Interviewed lecturers claimed that some of teaching approaches of NGOs have been applied at DUEd, including updating global contexts of sustainability, increasing skill-based teaching and collaborating with foreign education institutions to promote knowledge exchanges, organizing field trip (only one field trip for a four-year education program) and inviting governmental officials to talk about environmental issues. Yet they admitted that novel approaches can't yet meet student demand because of large-sized classes, time and energy required, and willingness of lecturers (as mentioned in Chapter 3). Hence, other initiatives of NGOs such as bringing students from diverse disciplines to work together, sending students to stay and work with farmers, and the motivation/follow-up activities are very unique and useful to build and improve students' sustainability competencies.

Indeed, NGOs can not only teach ESD courses, they can also motivate teacher education institutions to improve their ESD teaching capacity. Firstly, as explained earlier NGOs can serve as a data bank (Turnock 2004; Yeshodhara 2005) that provides TEIs sustainability-related knowledge and practices as well as ESD pedagogical source material on online websites like thehebenbung.com or vidothi.org. Although ESD has been embedded in teacher education curricula, lecturers continue to mainly focus on equipping students with knowledge of sustainability (Kieu, Singer, and Gannon 2016). Hence, by participating in NGO training activities, university lecturers and teacher students may gain valuable opportunities for learning experiential education strategies to apply in teaching about environment and

sustainability. Secondly, most NGO course participants are outstanding students and frequently leaders of clubs or student association, thus they are able to promote extra-curricular activities on campus. Thirdly, once a university regards NGOs as prospective employers, they may encourage faculty to revise curricula to increase ESD content. Additionally, as suggested by the aforementioned examples of FZS, Live&learn and ACCD, NGOs may be fund raisers and supporters for sustainability activities/projects at TEIs.

Finally, NGOs can play an important role in promoting university outreach. In all five training courses, NGOs connected university students to local communities, including sustainability-minded farmers at organic farms (ACCD), school teachers and students in Danang and Hoi An (SA, Greenviet and ACCD), Kon Ka Kinh National Park officials (FZS), famous speakers (Live&learn and ACCD) and youths from across Vietnam. Thanks to NGO connections and funding, students could apply their knowledge to construct organic gardens, organize campaigns to raise public awareness of biodiversity and nature conservation and carry out environmental education at elementary and junior high schools, all of which are closely related to their future careers. Given the wealth of knowledge at NGOs, it would obviously be of benefit if universities promoted NGOs as hosts for student internships (Roche 2013).

Based on the analysis of results and literature review of NGO complementary spheres of education (Haigh 2006; P. A. Reddy and Reddy 2006; Mendenhall and Anderson 2013; Blum 2009), the author would also suggest that NGOs become involved in formal university education as well as their current informal and non-formal activities. A framework for NGO involvement in training teachers is presented in Figure 6.6.

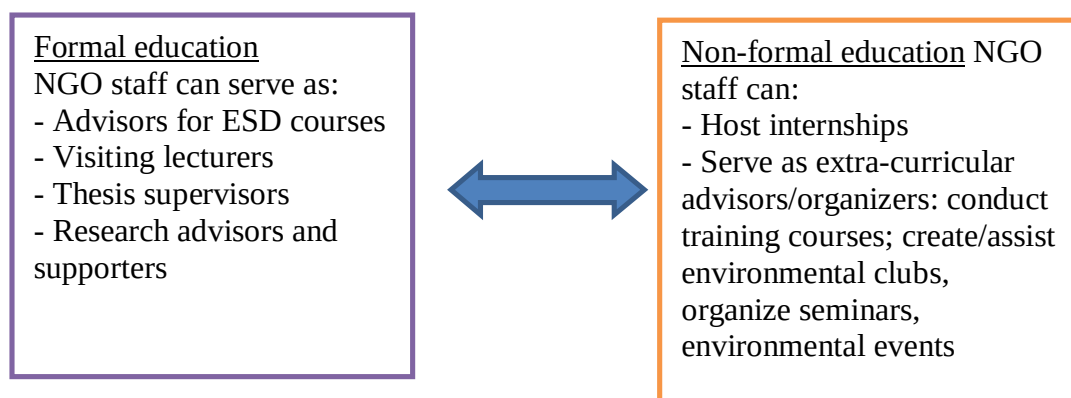


Figure 6.6. Involvement of NGOs for training teachers in ESD

6.4.2. Gaps in UNGOPs

The suggested prospective roles of NGOs accompany continuing collaboration with universities. Yet despite the fact that DUEd has maintained relationships with NGOs since early 2000s, the overall level

of their collaboration has remained poor. Interviews suggested that both DUEd faculty and NGO staff perceived the existing challenges of UNGOPs quite well but there has been little effort to address these challenges. This may be due to a lack of interest, mutual influence or trust between the two sectors (Baum 2000). NGOs frequently contact DUEd to secure students to join courses or events or faculty to help implement them. However, the partnership typically ceases as the project comes to an end. This short-term collaboration may result in a lack of interest from the university. On the other hand, NGOs are often wary of universities' slow and complicated bureaucracy, and they fear that the university will interfere with their activities (M. C. R. Reddy and Ramakrishna 2006). The independent existence of both NGOs and university is also a factor leading to a lack of perceived mutual interests.

General benefits and clear purposes are among the fundamental factors for constructing a successful partnership (Prins 2005; Baum 2000). The interviewees suggested that both DUEd and the NGOs do not fully acknowledge the benefits of the UNGOP. DUEd lecturers failed to consider NGOs as potential employers capable of reviewing university curricula and recommending improved sustainability content, or as potential advisors on community outreach. NGOs, on the other hand, failed to recognize the importance of the university in enhancing their prestige or assistance by the university in facilitating their projects.

There is also a recognition gap between NGOs and the university as regards the objectives of their collaboration. For example, student comments and feedback after training courses, including lessons learned for application to future teaching, are rarely shared with the university. There also seemed to be little understanding that, as suggested by Reddy, the university applies a theoretical research orientation while NGOs partake in action research (P. A. Reddy and Reddy 2006). If a DUEd lecturer doing research on experiential learning could join the summer school course offered by ACCD, for example, that lecturer could apply research methods like course observation, interviews or questionnaires to conduct research under ACCD support and subsequently share the results with ACCD to realize greater effectiveness. This kind of collaboration would bring benefits to NGOs, lecturers and students.

6.4.3. Way forward

Improving the UNGOP requires sustained efforts. Ten conditions suggested by Reghu (2006) for facilitating UNGOPs include mutual understanding, respect and acceptance; a positive attitude by university administrators and NGO staff; faith in the program; willingness to learn and act; fruitful time management; proper support and encouragement from all actors; mutual learning; team work to achieve the goal; a sense of social commitment; and a tolerant atmosphere. Among the five instances of collaboration between NGOs and DUEd described here, the partnership between FZS and DUEd would

appear to be the most successful. FZS established a coordination office at DUEd after an initial five years of collaboration from 2006. The partnership cost both sides a great deal of time and manpower but yielded great benefit. Active participation of lecturers is the key factor in creating reliability and increasing NGO interest in collaboration. Based on the suggestions of many of the interviewees three initial steps have been suggested to enhance UNGOPs:

1. The university should contact and collaborate with the city or provincial department of foreign affairs (managing INGOs at local level) and VUSTA (managing domestic NGOs) to stimulate dialogues between NGOs and university (via workshops, meetings or group discussions). Regular communications will allow to establish generate clear, specific, and realistic purposes that are core elements of the successful partnership (Baum 2000).
2. The university must select suitable and reliable NGO partners. Some criteria for selection, according to Reddy (2006), include: Substantial experience in sustainability-linked fields, adequate financial capacity, sound management and qualified staff, and long-term commitment to collaboration.
3. The university needs to facilitate NGO activities by providing facilities and venues for NGO programs, minimizing red tape, and organizing a group of sustainability-related teaching lecturers to assist NGOs, co-write grant proposals and exchange knowledge and experience in seminars and workshops.

6.5. Summary

Partnerships have become an important element for universities in an age of increasing globalization. Collaboration between NGOs, which are spearheading ESD activities in many developing countries, and TEIs, which play an essential role in educating about sustainable development, is an area needing more attention.

NGOs are also pioneers in engaging Vietnamese youth in sustainability through diverse themes (i.e. environmental education, climate change education) under the umbrella of ESD. A case study of DUEd examines several NGO-led training courses addressing sustainability themes and employing various interactive pedagogies. The courses were found to have positively enhanced student teachers' understanding of sustainable development. Students enhanced key competencies in sustainability such systems thinking, future thinking and values thinking which potentially result in environmentally friendly behaviors. They also came to understand the significance of active pedagogies in teaching ESD. Based on student interviews and focus groups, NGOs were seen as crucial educators in non-formal ESD

and to contribute to promoting ESD at TEIs by helping to raise funds and to provide research funding, offering the promise of future employment and reviewing curriculum.

Despite potential benefits that were well perceived by the university and NGOs, there remained several gaps to be bridged for successful collaboration. According to interviews with university faculty and NGO staff, a lack of sustained interest, influence and mutual understanding were the most common barriers. It was suggested that in order to strengthen the partnership, there needed to be sustained, government-facilitated dialogue, selection of suitable NGO partners and more active participation by university members.

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CHAPTER 7: YOUTH ORGANIZATIONS' PROMOTION OF ESD COMPETENCIES AMONG STUDENT TEACHERS': A CASE STUDY

7.1. Background

7.1.1. Youth sustainability-linked activities (SLAs)

Nearly half of the world population is under 25 (CIA World Factbook 2014) and this age group is considered to be key stakeholders promoting environmental protection and sustainability. Many recent programs and policies have focused on young people because of their roles in long-term social change and their active performance in environmental conservation (Wray-Lake, Flanagan, and Osgood. 2010). Empowering and mobilizing youth is one of the five priority action areas of Global Action Program (GAP), a follow-up to the DESD of UNESCO (Buckler and Creech 2014).

Under the umbrella of sustainability, young adults have been involved in diverse fields such as climate change and disaster prevention, environmental conservation, socio-economic development and cultural preservation. Yet few publications have discussed youth sustainability-linked actions in detail and the challenges youths face in taking action. Popular forms of youth sustainability-linked actions are described as following (Schusler et al. 2009; Hall 2010):

- Improve physical environment (e.g., restoring natural habitats)
- Engage in community development towards sustainability (e.g., promoting composting, organic farms, assisting communities during disasters)
- Enhance public awareness on sustainability themes and promote sustainably responsible behaviors (e.g., organizing community festivals and campaigns with such themes as environmental problems, food consumption, saving energy)
- Train change agents or leaders to transform society (e.g., training workshops, camping, forums)

The development of youth forums and platforms and the assistance from funders and sponsor organizations have resulted in expanding youth networks at the national, regional and global scale and the foundation of youth-led non-governmental organizations since the last decade. The 1st World Youth Sustainability Summit in Berlin is a typical example. Under the theme “Youth and Sustainability in Everyday Life – Challenge, Rethink and Revive Global Ways of Living”, this event attracted more than 160 youths from over 30 countries worldwide to discuss with each other and to issue a declaration of

commitment by young people to sustainable development and an appeal to decision makers (Youthinkgreen 2013).

Changing youth behavior and sustaining their commitment towards sustainability are complex efforts. Applying a narrative analysis of three typical Swedish young adults who are active in sustainability, Almers (2013, 116) identified six common themes that promote action competence for sustainability: “emotions creating a desire to change conditions; a core of values and contrasting perspectives; action permeation; feeling confident and competent with what one can contribute; trust and faith from and in adults; and outsidership and belongingness”. Working with youth is a challenging task that requires patience, intellectual capital (ideas and skills), financial capital, social capital and goods transfer (ICYE European Association 2009). In the EE or ESD field, youth should be engaged throughout the whole process of projects or programs to perceive sustainability problems, transform behavior and commit themselves to sustainability.

The recent accelerating expansion of youth-led organizations (YLOs) is allowing youth to be engaged in sustainability-linked programs. YLOs transform youth participation from spontaneous groups (e.g., eco clubs) to well-structured organizations. YLOs are fully led, managed and coordinated by young people (Advocatesforyouth 2016), though in many cases they work under the patronage of different actors such as university educators, researchers, NGO leaders and funders. Running an YLO empowers youths to be creative in conceiving sustainability efforts, which can be regarded as a type of experiential learning. Indeed, “through participation, youth can learn civic concepts (such as decision-making structures) and skills (such as communicating and negotiating) that increase their ability to influence public affairs” (Schusler and Krasny 2008, 272). In addition, leaders of YLOs typically transfer ownership to new leaders after a certain time (often before turning 30), so that youth participation can continue. Recent publications have sought to suggest apposite characteristics of SL by analyzing training course operation or interviewing outstanding sustainability leaders. According to Whilst, Shriberg and Macdonald (2013) key sustainability leadership skills include:

- Communications skills: the ability to communicate effectively on thorny issues to diverse stakeholders
- Systems intelligence: the capacity to work across multiple domains and analyze complex problems
- Self-assessment and self-awareness: people who can both reflect on themselves and tell their own story

- Balance of strong sense of confidence with a strong sense of humility
- Ability to be a problem-solver

Another model developed by (Visser and Courtice 2011), “The Cambridge Sustainability Leadership Model Individual,” presents insights on sustainability leadership in three areas: context, individual characteristics, and actions (Figure 7.1). This model was tested with a sample of senior business leaders and adjusted based on their feedback. Seven key characteristics of sustainability leadership emerge from this model: systemic understanding, emotional intelligence, values orientation, compelling vision, inclusive style, innovative approach, and long term perspective.

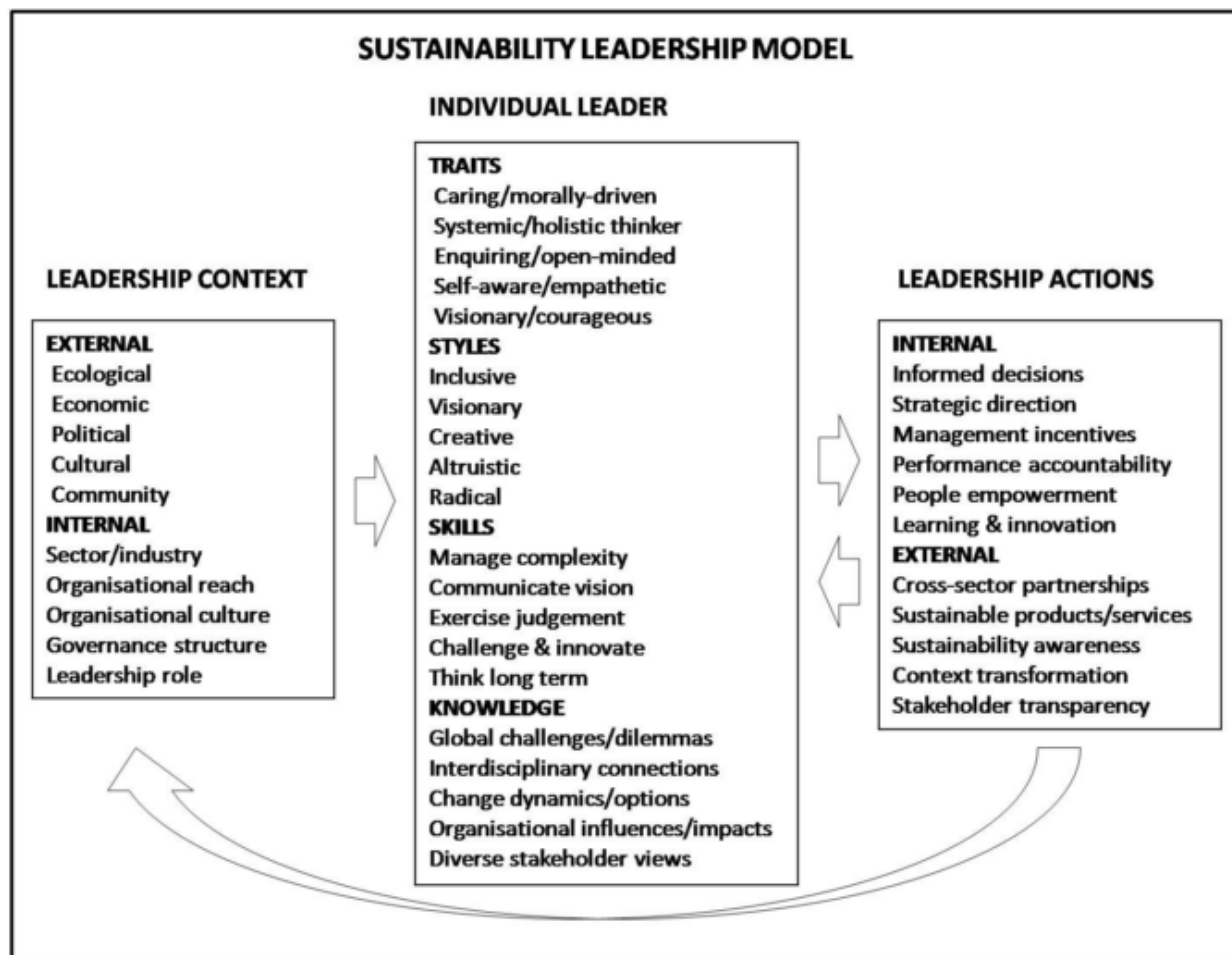


Figure 7.1. The Cambridge Sustainability Leadership Model Individual (Visser and Courtice 2011)

The determination of key SL competencies gives worldwide educators and educational policy makers overarching directions to adjust their training to create change agents in sustainability. Although there have been some frameworks/models to provide better understanding of the characteristics of

sustainability leaders in general, there is little published research on the specific topic of youth leadership in sustainability, particularly in relation to either age range or occupation.

7.1.2. Environmental youth groups in Vietnam

In order to learn more about youth participation in sustainability and their leadership competencies, the author conducted a case study at DUEd focusing on environmental youth groups. An overview follows of the most popular environmental youth groups, the Youth Union and environmental clubs.

a. Youth Union

The Ho Chi Minh Communist Youth Union, which was founded in March 1931 with the original name of Vietnam Labour Youth Union, is an official mass organization of Vietnamese youth (Youth Union 2007). Led by the Communist Party, the Youth Union (informal name of Ho Chi Minh Communist Youth Union) is the largest social political organization of Vietnamese young people. According to the latest report of the Youth Union (YU), its members comprise around 28% of all Vietnamese youth from 15 to 30 (Youth Union 2015).

Like other social-political organizations in Vietnam, like the Women's Union and the Farmers' Union, the Youth Union is a multi-tiered organization with four administrative levels: national/central, provincial, district, ward/commune. YU exists as a parallel structure in the educational system and at work-places (Youth Union 2012; Valentin 2007) (shown in Figure 7.2). YU leaders at all levels are nominated and elected by its members.

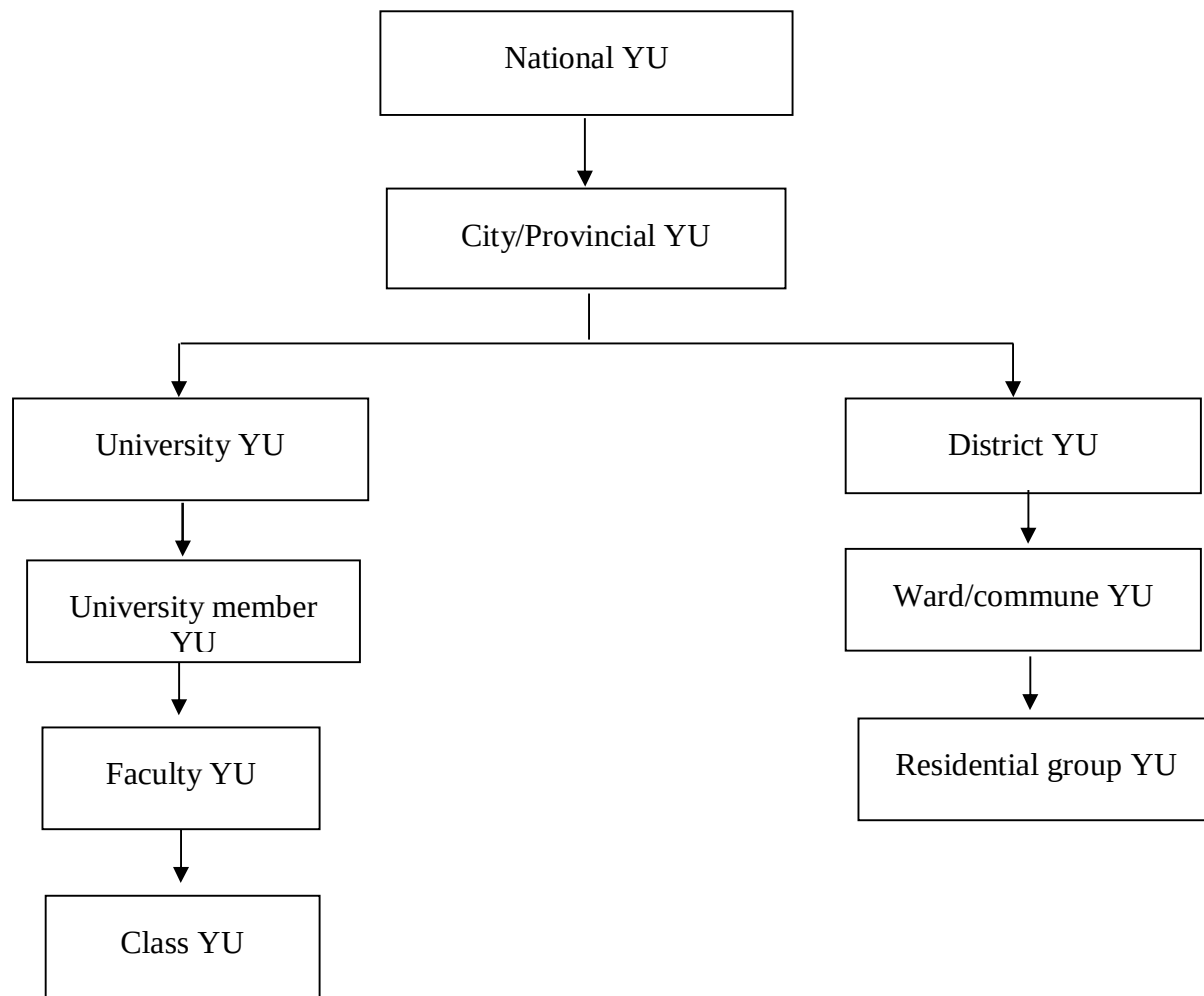


Figure 7.2. Administrative levels of YU

The Youth Union recruits those aged from 15 to 30 who are “progressive, striving for the Party’s ideal and goal of national independence and socialism, for the cause of rich people, strong country, just, democratic and civilized society” (Youth Union 2012). Most university students in Vietnam are members of YU (Valentin 2007) because undergraduates are usually considered as well-educated and highly disciplined citizens. As a preponderance of the nation’s active young citizens are members, YU bears a major role in promoting youth roles in national development. Thus, the YU activities focus on three tasks:

- Educate to enhance the young generation’s politics, ideology and lifestyles under the leadership of the Communist party;

- Disseminate information about governmental laws, regulations, policies and strategies to youth and;
- Empower youths to contribute in national development in all dimensions (society, economy, culture, environment)

YU promotes its members' participation by either rewarding certificates and scholarships or nominating them to become members of Communist Party. This activity, in turn, may increase job opportunities for young graduates, particularly state offices or national enterprises. Under the context of globalization, some researchers have suggested that the YU should reform its current operations by transforming training content, cultivating new YU leaders, allowing more latitude for criticizing government policies and increasing YU's autonomy under the orientation of the Communist Party (Ngo 2016). In fact, it is gradually replacing its traditional strong focus on political issues by turning more attention to responses to global challenges. Of those new areas, environmental protection and climate change responses are important focuses of YU activities nationwide (YU 2013). The final report of YU's activities in 2015 recounted a variety of youth environmental actions, including planting trees, enhancing youth and public awareness of environment and climate change, promoting youth innovation in saving energy, mainstreaming environmental friendly offices and organizing clean-up days (Green Sunday). The broad scale of these activities implies continuity of youth participation in sustainability.

b. Environmental/sustainability related groups

Since the enactment of the first environmental law in 1993 and the approval of Vietnam Agenda 21 by the Prime Minister in 2004, there has been a growing effort nationwide to improve public environmental awareness, particularly among young generations. That has engendered the development of many environmental groups such as international and local NGOs, clubs and other civic groups. Thus besides environmental activities led by Youth Union, young people in Vietnam are able to join many different environmental groups, of which youth-led volunteering eco/environmental clubs are the most popular.

As with other YLOs around the world, Vietnamese youth environmental clubs faces fund-raising, leadership and long-term continuity problems. Although there is scant literature on youth participation in environment or sustainability in Vietnam a search of documents, reports and webpages of l reveals two models of successful environmental groups (V.N. Nguyen 2013; The Asia Foundation 2011; The he xanh 2016; Go Green Club 2014; Withnall 2014). The first model is the clubs managed under the sponsorship of international NGOs or large enterprises (e.g., Toyota) or being mentored by local NGOs (Figure 7.3). The second type consists of environmental clubs founded by university students and supported by university staff – either YU or faculty members.

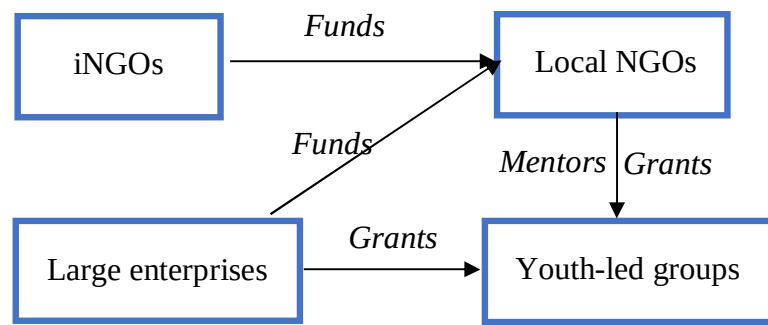


Figure 7.3. Model of successful youth-led environmental groups

The Asia Foundation, a nonprofit international development organization, has collaborated with two Vietnamese NGOs, Live and Learn and the Centre for Education and Development, to train approximately 500 young environmental activists across Vietnam, and they have awarded 18 grants for teams of these youths to implement sustainability-linked projects (V. N. Nguyen 2013). In terms of large enterprises, Toyota Motor Vietnam (TMV) is one of the most active sponsors of young environmentalists. During the first three years after the establishment in 2008 of the TMV-sponsored Go Green Club (GGC) in Hanoi, TMV involved 3000 voluntary members in the three biggest cities in the country (Hanoi, Danang and Ho Chi Minh). According to TMV, each member of GGC serves as a nucleus to promote the activities of environmental protection and raise public awareness (Toyota Motor Vietnam 2016). GGC has organized several creative environmental projects that reach Vietnamese young people, such as Green Habitation, an activity that took place over a 45-day period at schools for the disabled. Consisting of various games, training workshops and art performances, this event enabled GGC members to educate the students to change their daily habits to conserve nature and mitigate climate change impacts. In order to recruit more members and share experiences with other young activists, a website was created (<http://gogreen.com.vn/>) by its members. Similar environmental and sustainable development youth groups that are well-known across the country include the Be Change Agents, 350 Vietnam and the Delta Youth Alliance.

Environmental clubs (ECs) are also extremely active at higher education institutions. Universities feature innumerable student clubs and circles among students being educated in such disciplines as technology, international relations, agriculture, economy, education and foreign languages. Enhancing community's awareness of sustainability-related problems, building members' skills and fund raising are the most common activities of such groups.

The proliferation of ECs has led to the foundation of a national youth environmental network called *Thế Hệ Xanh Việt Nam* (the Vietnam Green Generation Network) in 2008. Currently, The He Xanh is the sole network of ECs nationwide under the support of the domestic NGO Live and Learn. The network aims to empower leadership of young leaders of ECs by sharing knowledge of sustainability, youth initiatives and fund raising opportunities, and operating a year-long training program. Moreover, The He Xanh can connect Vietnamese YLOs with others worldwide and promote participation by Vietnamese youth leaders in international youth forums for sustainability.

Vietnamese are becoming increasingly concerned about the impacts of climate change and environmental problems arising from rapid industrialization during recent last decades. Active participation of youth in awareness-raising campaigns, clean-up efforts and consumption reduction promotion is a prerequisite to sustainability. Despite the existing challenges, young ECs in a developing country like Vietnam play a vital role to mainstreaming sustainability among youths

7.2. Results

In order to understand youth organizations' promotion of ESD competencies among student teachers at DUEd, the author conducted questionnaire surveys of 143 student teachers (utilizing both multiple choice and open-ended questions), four key informant interviews and one focus group (FG) of 12 student teachers (see Section 3.3.2). The results are presented as the following sections.

7.2.1. YU-led sustainability activities

a. Student teachers' participation in YU-led sustainability activities

With 98% of DUEd students as members, YU is the largest and most influential organization for extracurricular activities of student teachers. According to two DUEd YU staff interviewees, environment/sustainability-related topics have become a compulsory part of YU activities since 2013 and such activities account for 10-15% of YU activities annually. The YU interviewees identified four successful environmental programs that have been held on a continuing basis among undergraduate students:

- Green Summer (*Mùa hè xanh*) is an annual campaign that encourages students to stay in rural communities in remote areas of Vietnam during their summer vacation. The campaign, lasting from two to four weeks, is expected to provide students with unique volunteer experiences assisting communities with their knowledge and enthusiasm. Depending on students' disciplines, they may help local people to construct or reinforce infrastructure (bridges, schools, houses), offer free health check-ups, or consult on agriculture. In the case of DUEd student teachers, they

often organize on-site classes to teach children basic knowledge and enhance their awareness of environment. The campaign has been highlighted the endeavor of youths and the strong connection between HEIs and local communities.

- Tree Planting (Trong cay) was first carried out by Vietnam's founding president Ho Chi Minh. The campaign aims to involve students in not only planting trees but also tending and conserving the trees on campus and surrounding areas.
- Green Sunday (Chu nhat xanh) is the most frequent and popular clean-up campaign conducted by YU. The campaign calls for youth participation to remove and dispose of drawings, banners, and fliers on roads, pavements and public places, to collect trash and to enhance public awareness of environmental protection (as shown in Figure 7.4).
- Protect Hometown Rivers (Bao ve dong song que huong) was implemented due to the dramatic rise in water pollution across Vietnam. The program aims to raise awareness of youths, especially among college students, in order to keep the water bodies near their living places clean. The DUEd YU leader explained that under this program, students frequently collect trash from rivers and riverbanks or urban lakes. Notably, some students applied a wetland restoration approach to purify water at an urban lake in Danang City.

YU is able to mobilize large numbers of students to participate in special events. For Environmental Day, for instance, approximately 500 students join a bicycle tour to call upon people to conserve the environment. It is worth noting that taking part in YU environmental activities benefits students by allowing them to increase their non-academic score, part of the overall university assessment which is required for graduation.



Figure 7.4. Students' participation in a cleanup activity

The investigation of 143 student teachers indicates that among the activities mentioned above, litter campaigns for Green Sunday is the most common and frequent activity organized by DUEd YU. Indeed, 93% of the respondents have participated in such litter campaigns (Figure 7.5), although 88% of the students claimed that their participation was involuntary. Students in a focus group implied that most of the clean-up activities organized by YU were quite repetitive and superficial. However, when asked about Green Summer campaign, 54% of interviewed students revealed that they had not been able to take part in Green Summer campaigns and they really wish that they could join.

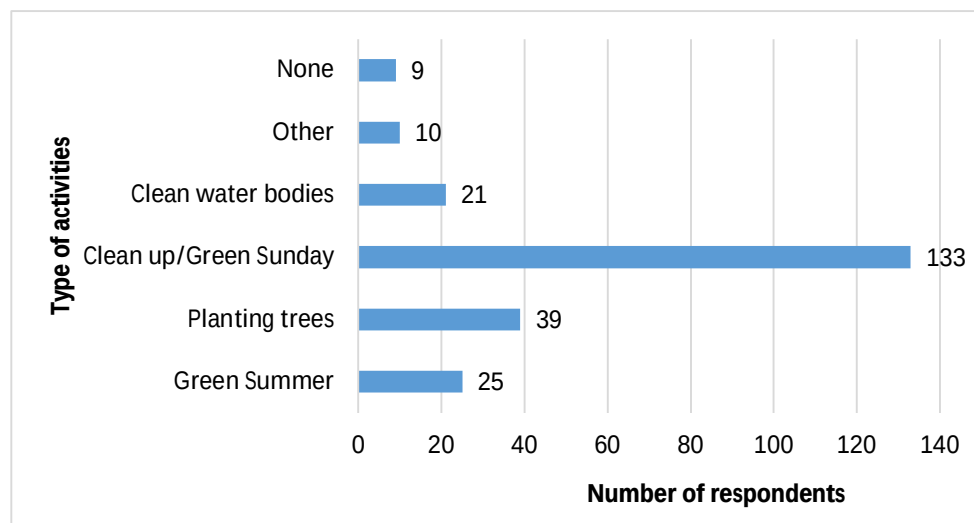


Figure 7.5. Student teachers' participation in DUEd YU's sustainability activities (n = 143)

The abovementioned activities are conducted by DUEd's university-wide YU organization. In addition YU units are able to generate and implement their own activities at each faculty and class level.

Interviewed YU leaders disclosed that approximately 60-70% of faculty activities are planned and conducted by faculty YU. Thus in environment-related faculties (Faculty of Biology and Environmental Science, Faculty of Geography and Faculty of Chemistry) where many students pay attention to environmental problems, environment/sustainability-linked themes may constitute 80% of YU activities. At those faculties, YU collaborates with student clubs to organize small-scale environmental activities such as recycling fashion shows, flea markets and Earth Hour ceremonies. Nevertheless, the clean-up campaigns remain the most predominant and frequent (Figure 7.6).

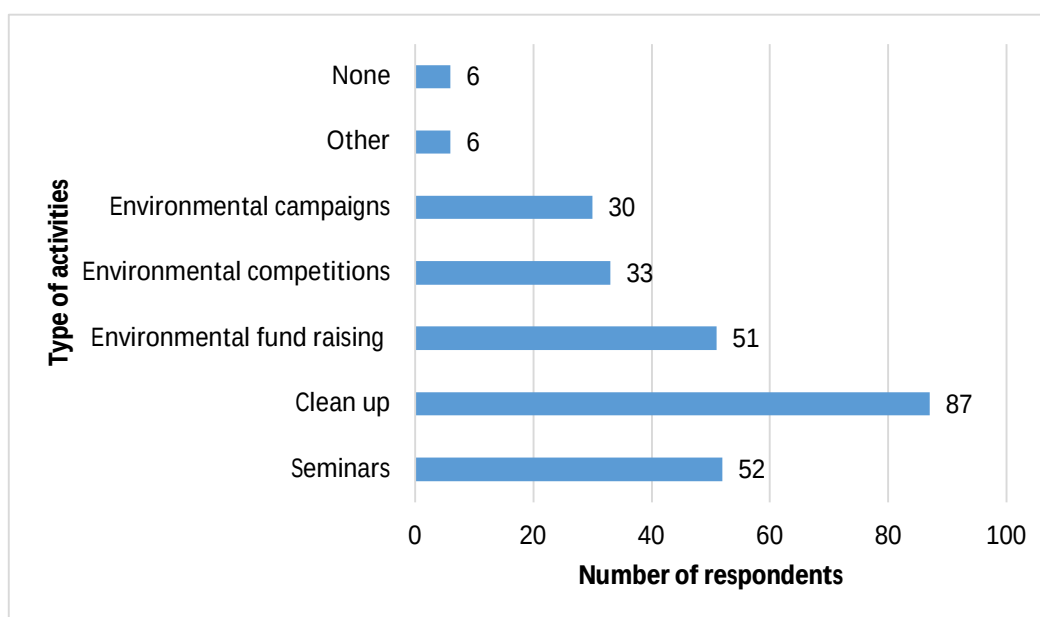


Figure 7.6. Student teachers' participation in YU's sustainability activities at their faculty (n=143)

b. Reflection of student teachers on YU-led sustainability activities

The questionnaire survey indicated that by participating in YU activities, students gained a range of knowledge and skills (Table 7.1). It is worth noting that most of the knowledge and skills that students gained were from Green Summer campaigns although it is organized only once a year. According to one female student:

I have participated in both the cleanup campaigns and Green Summer. I personally think that Green Summer is great opportunity for us to go and stay with local people in remote areas. Many of us were born in urban areas and we do not know how difficult the lives of rural residents are. At the beginning of the campaign, I had thought that we were going to help such local residents. However, I recognized that we gained innumerable practical and indigenous knowledge from the

local community beyond academic knowledge that we had learned at university. I want to enrich my knowledge and link with such indigenous knowledge to protect the local natural conditions and help people to get income in accordance with environmental conservation. (female student, 21).

Table 7.1. Outcomes of participation in YU-led sustainability activities

Outcomes	Number of codes from responses
Knowledge	212
Practical knowledge	102
Environmental knowledge	54
General knowledge	45
None	11
Skills	203
Communication	44
Group work	74
Personal skills	85
Motivation	134
Enhance consciousness of sustainability/environment	83
Want to protect environment	42
None	9

Results from the survey and FG showed that although YU has organized some sustainability-linked activities (SLAs) these activities have not completely met the demand of students yet (see Fig 7.7). In the focus group, students claimed that the advantage of YU-led sustainability is building students' skills, particularly personal skills that allow them to feel confident in communication and organizing extra-curricular activities which may be useful for their future teaching. Conversely, students stated that such activities did not effectively improve their understanding or change their behavior towards sustainability because of the superficiality and lack of creativity of the activities as well as the lack of updated information/knowledge. Students did not feel inspired and motivated to act actively in sustainability, hence only 6% of respondents indicated that YU activities completely satisfied them.

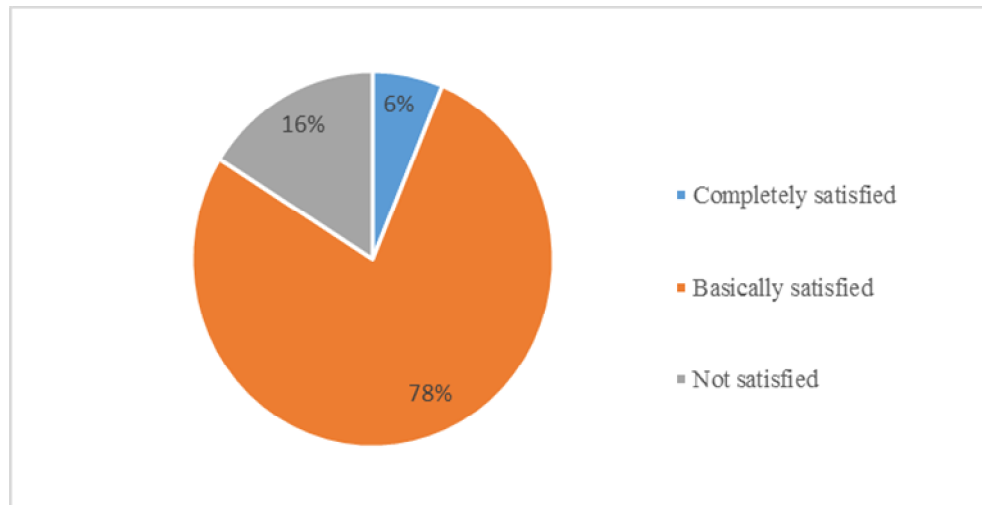


Figure 7.7. Students' satisfaction towards YU-led sustainability activities

7.2.2. Student-led environmental groups

a. Student participation in environmental groups

During the period of thesis research, from October 2013 until December 2016, the author was informed of the activities of six student-led environmental groups by interviewees: Go Green Danang, Love Nature in Danang, Danang River Watch (DRW), ENV Volunteer, Green Arrow and b (GEC). The groups were established by different agents, including the private sector (Go Green Danang is a branch of Go Green Vietnam, founded by Toyota Motor Vietnam), young wildlife conservationists (Love Nature in Danang was founded by young wildlife conservationists working at Son Tra peninsula), an NGO (ENV Volunteer), a group of college students with sponsorship by a Vietnamese NGO and with the patronage of university lecturers (DRW), and students with the assistance of faculty members (GEC and Green Arrow).

Of the groups, GEC accounted for the largest number of members among the interviewees. Go Green and Green Arrow have disbanded, while DRW and Love Nature in Danang were transformed to be local NGOs. GEC is a typical student-led club since it was founded and run by students. The club was originally a group of students at the Faculty of Geography who wanted to support each other in learning about the environment and geography. In 2012, with the advice of lecturers from the faculty of Geography, GEC was founded to diversify student activities involving the environment and geography. According to the current club leader, popular activities sponsored by GEC include litter campaigns, sharing information about job opportunities and scholarships, charity drives, and enhancing environmental awareness of students and communities. These activities aim to improve clubs members'

soft skills and environmental knowledge. Recently GEC has collaborated with the university YU on large events such as Environmental Day Campaign and the Earth Hour Ceremony, which require much preparation and expenditure. GEC organizes meetings once to twice a month as well as picnics to improve skills and strengthen members' relationships.

Of 143 surveyed students, 40 students had participated in SLAs organized by eco clubs. Their participation in eco clubs is presented in Figure 7.8.

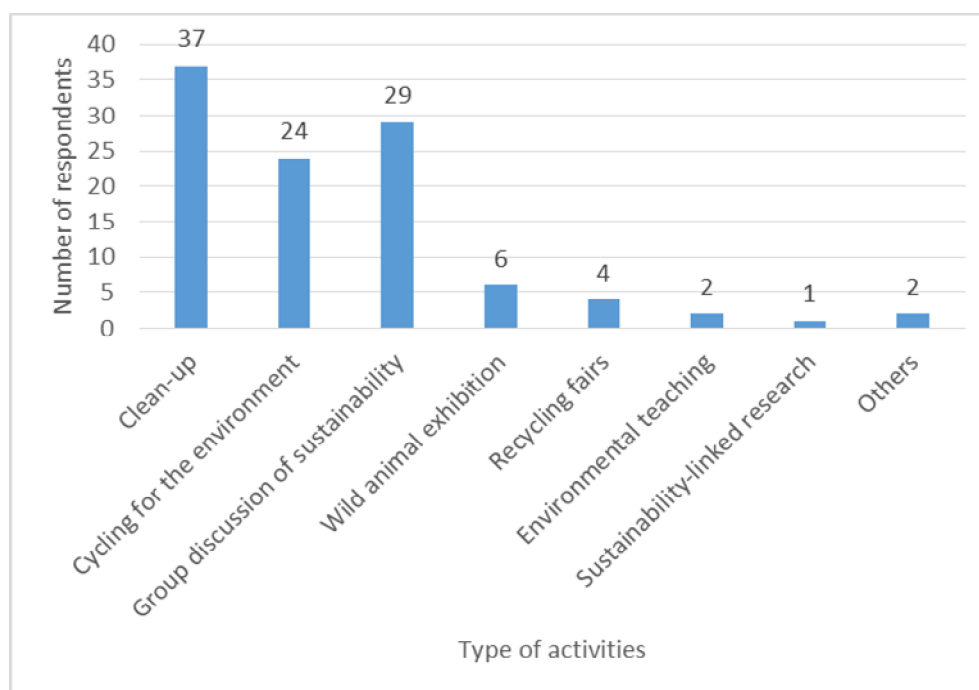


Figure 7.8. Student teachers' participation in eco clubs' activities (n=143)

Although the percentage of students participating was highest for litter campaigns with 92.5%, the activities run by eco clubs are more diverse than YU. In the focus group, students explained the differences between litter campaigns run by YU and the clubs as presented in Table 7.2.

Table 7.2. Differences between YU and clubs in clean-up activities

Difference	YU	Clubs
Number of participation	Large (more than 100)	Small (less than 30)
Places	Determined by YU leaders (DUEd, pavements)	Determined by club members (beaches, park, public areas)
Reason of participation	Compulsory extra-curricular activities (YU staff will check)	Want to protect environment

	attendance)	
Preparation and arrangement	YU leaders	Club members
Evaluation	None	After activity

There are two common reasons why litter campaigns is the most frequency activity, as explained by students in the FG, first is because this is a low-cost activity, secondly, it is quite easy to prepare and arrange. In the case of YU activities, no attempt is made afterwards to assess the efficiency of activities but in case of eco clubs, the members usually get together and evaluate the efficiency of activities, then discuss how to improve future activities.

b. Reflection of student participation in environmental groups

The survey results related to outcomes of student participation in environmental activities are shown in Table 7.3.

Table 7.3. Outcomes of student participation in environmental groups' activities (n=40)

Outcomes	Number of answers
Knowledge	
Update knowledge of environment and sustainability	45
Learn about local environmental problems	16
Skills	
Improve skills of teaching about environment and sustainability	4
Improve communication skills	48
Improve skills of group work	38
Improve skills to organize extra-curricular activities	21
Improve skills of financial management	9
Build leadership skills	3
Motivation	
Change behavior towards sustainability	26
Orient future career	16
Feel more responsible for sustainable development	14
Want to inspire others to protect environment	14

The outcomes of participation in eco group appear to be more concrete than in YU. Students mentioned well-regarded competencies such as communication skills, group work and updating sustainability knowledge as well as sustainability-linked skills such as leadership, environmental teaching skills and inspiration for environmental protection. Yet the number of such answers remains limited, mainly from the active students who are leaders of a club. Notably, of 40 such students, there were only 16 students who joined club activities regularly. One student noted:

Currently, we have 40 members but usually in the first semester, GEC members may reach more than 100. Many student members are getting busy with university schedules in the second semester, particularly members who will graduate in the second semester. In order to transfer club ownership, we will select several enthusiastic members who really care about environmental problems and are willing to prioritize club activities. Enthusiasm or willingness is the core factor because that allows them to persevere when trouble occurs while operating the clubs (e.g. conflicts among members or financial stress). We train new leaders by sharing our experiences and YU leaders collaborate with us to inculcate leadership skills. (GEC leader, 21).

7.3. Discussion

7.3.1. Constraints of efficient youth-led sustainability activities at DUEd

Youth participation in sustainability as presented in the case study of DUEd shares many common elements with examples worldwide in both the types of activities implemented (Schusler et al. 2009; Hall 2010) and the challenges faced (Advocatesforyouth 2016; Almers 2013). Overall, there are two categories of constraints hampering the expansion of sustainability-related activities at DUEd that emerged from interviews with two YU leaders, two environmental club leaders and the student FG. First is the “internal” constraint of student apathy. In the FG, students argued that only about 10% to 20% of DUEd student teachers actually cared about environment or sustainability issues. Most of those students are studying at faculties closely related to sustainability themes. On the contrary, many students merely care about benefits of their participation. This fact has bearing on the inability of most students to take strong actions to stop their friends from littering or perform environmental friendly acts because they feel they are “strangers” or even “self-important”. Explained one student:

Enthusiasm is the crucial factor that enables each individual to regularly participate in environmental activities. I have learned that “If you really want to do something, you’ll find a way. If you don’t, you’ll find an excuse”. Many students complain that they are busy with their

homework or part time job so they cannot join our environmental activities. Yet, they still have time to surf the Internet and check Facebook (male, 20).

The second category is the “external” constraints which includes: (i) the lack of interesting and creative activities of YU, (ii) the lack of opportunities for student teachers to be fully engaged in SLAs, (iii) the lack of information related to sustainability funds, programs and training courses, (iv) the lack of conditions/facilities and inspiration that promote their environmental performance (e.g. poor solid waste management system at university), (v) the lack of appropriate recognition and value from university YU, (vi) the lack of sustainability leadership in implementation of sustainability, and (vii) the lack of financial capital to support eco ideas/programs. Some of these requirements have been described by researchers as typical factors that promote proactive behavior for sustainability (Almers 2013).

Moreover, there remains a huge gap in student teachers’ demands for sustainability activities and youth-led SLAs at DUEd. There were three areas needing improvement most, according to surveyed students and students in the FG: 1. Sustainability teaching competencies (81), 2. Latest knowledge of global issues (71), and 3. Skills to work with communities (71). In fact, the most popular activities are not related to their future teaching job. As explained by Advocatesforyouth organization (2016), future job prospects are an important factor that increases their interest and sustainable engagement in sustainability.

7.3.2. Solutions to advance student teachers’ participation in youth-led sustainability activities

Students claimed that they preferred the model of eco clubs which engaged them in the whole process of an environmental activity to the YU. They noted that eco clubs leaders pay attention to improve their members’ knowledge and skills to not only able to conduct the club activities but also to strengthen membership. Interviews with two club leaders suggest that their individual characteristics conform to the core internal factors mentioned in research related to pro-environmental behaviors or sustainability leadership (Visser and Courtice 2011; Almers 2013; Brown 2011). Such characteristics include environment/sustainability knowledge, self-awareness, visionary, creativity, responsibility and communicativeness. They noted that since YU is a mass official organization that compulsorily involves student teachers in environmental activities its impact can be limited. Student participation is expected for students to secure certificates and maintain high extra-curricular scores. Obviously, “remuneration” is also essential to maintain youth commitment in sustainability (Advocatesforyouth 2016). However it should also be noted that the YU leaders are elected by students because they are enthusiastic, have experience in working with young students, are able to communicate across disciplines and some YU leaders are young lecturers who have a good reputation in both university and society.

The above analysis suggests that the collaboration between YU and student clubs will boost the effectiveness of sustainability activities. YU should encourage more autonomy at lower YU units (faculty and class) and provide sponsorships to student clubs. Thereby more students could be expected to become involved in environmental activities with their own initiative. In order to institutionalize and advance sustainability in student extra-curricular activities, YU can consider the following steps:

1. Establish a hub of sustainability promotion: as a leading organization, DUEd YU is able to map student sustainability activities, then identify and recruit potential change agents in sustainability. Only a few university YU leaders would be required to manage such a hub.
2. Build sustainability leadership: the first trainees could be students who fit the profile mentioned above. YU leaders could train these students in soft skills (i.e. communication, listening, presentation, etc.) and ESD experts (i.e. faculty lecturers, NGO leaders, etc.) can train and inspire them in sustainability.
3. Construct a systematic action plan: currently, there is no any clear action plan for student sustainability activities, excepting DUEd YU Green Summer and Green Sunday. Most activities are spontaneous and overlap, which may reduce the number of participants. At the beginning of the academic year, the hub can call for students' initiatives in sustainability from individuals, clubs, classes or faculties. Subsequently, core members of the hub can select the most appropriate initiatives, then construct a yearly action plan based on student proposals, human resources and financial situation⁷. Notably, the action plan will be also updated to faculties and university management committee and can be adjusted if required.
4. Create a communication network: a communication network (i.e. a part of university website and Facebook page) will be created to disseminate the action plan to student population so that students can register to participate in activities that they feel interested in. Information on student sustainability implementation will be published through this network. Obviously, such a network will not only facilitate, recognize and reward students' engagement in sustainability but it will also enable them to share knowledge and experience of sustainability.

This systematic approach will promote students' active performance by applying their own autonomy and creativity and mitigate feelings of isolation. Students will be able to experience the whole process of creating a sustainability program, including generating ideas, modifying ideas, preparing, implementing

⁷ YU members pay membership fees annually. YU at faculty and university will utilize such money to run student extra-curricular activities

and evaluating. Through this process, students will become problem solvers so that they can learn about challenges and how to overcome them. In this process, YU leaders will play roles as mentors/advisers to help students modify their ideas under the umbrella of university sustainability themes, as facilitators to connect students to outside stakeholders (i.e. communities, schools, NGOs), and as evaluators to recognize and award students. Therefore, they do not need to devote much time and human resources to generate and implement activities and force students to participate like before.

7.4. Summary

The Youth Union, a political organization of Vietnamese youth, often conducts activities with sustainability themes as a part of its regular activities. In Vietnamese TEIs as in other HEIs, the Youth Union and student-led eco groups provide student teachers with several opportunities to be involved in sustainability activities. Such youth-led organizations are the most frequent non-formal educators at DUEd to enhance student teachers' consciousness of environment and sustainability.

YU with experienced and well-respected leaders can reach a large number of students to mainstream sustainability, but their approaches require more autonomy and creativity. Meanwhile, by engaging students in planning and carrying out sustainability programs, eco clubs significantly enhance students' engagement with sustainability. Based on the analysis of each organization's strength and weakness, and students' demands the author suggested four steps to improve sustainability planning, including establishment of a hub of sustainability promotion, fostering sustainability leadership, conceiving a systematic action plan, and creating a communication network to promote students' active efforts towards sustainability.

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CHAPTER 8: CONCLUSION

8.1. Chapter review

This section briefly summarizes the key findings of chapters 1 – 7 by reviewing the existing ESD teacher education literature and the ESD implementation in teacher education institutions in Vietnam.

Chapter 1. There has been increasing recognition of the essential contributions of education for advancement of sustainable development since the first endorsement of the concept of sustainable development at the UN General Assembly in 1987. By the end of UNDESD (2005 – 2014), ESD had become embedded in a variety of areas and levels of education in accordance with the establishment of frameworks, tools, teaching materials, partnerships and networks (Buckler & Creech, 2014). There are numerous innovations that have been introduced around the world to enhance knowledge of sustainability, of which key sustainability competencies and Regional Centres of Expertise (RCEs) can be seen as most critical in ESD implementation within the last decade.

Chapter 2. Teachers have been recognized as key agents for mainstreaming sustainable development, so it is incumbent that they obtain relevant knowledge, skills and action competence to not only transform themselves but also society. Yet teacher education for sustainability can be regarded as lagging in Vietnam, and there are very few published papers on this topic. As in many developing nations, Vietnam faces a variety of challenges for ESD implementation, including poor funding, limited human resources and weak collaboration among ministries and other stakeholders. Currently, there is only one dedicated center, Centre for Research and Promotion of ESD (CEREPROD), formed to promote the teaching of ESD as a subject at HNUE (Doan 2013). NGOs have implemented several projects under the umbrella of ESD but so far there are no official projects targeting pre-service teacher education.

Chapter 3. This study was designed to identify challenges and opportunities for mainstreaming ESD at Vietnamese TEIs and propose appropriate solutions emerging from the lessons learned. The study first examines the existing pre-service teacher education for SD at the five TEIs in Vietnam. Then it looks in more detail at a DUEd case study to search for a comprehensive approach to build ESD teaching competencies for student teachers in Central Vietnam.

Qualitative methods, including focus group discussions, semi-structured interviews and key informant interviews, were mainly applied in this study. These qualitative methods yielded a wealth of detailed information via individual responses and comments regarding non-formal education in training teachers about ESD. Manual coding according to the streamlined code to theory method (Saldana 2012) was

conducted for the interview data to identify themes and quantify the qualitative data for comparison. Additionally, a framework describing key sustainability competencies (Wiek et al. 2016) was applied in order to understand student teachers' learning outcomes. The framework suggested five key sustainability competencies: (i) systems thinking; (ii) futures thinking; (iii) values thinking; (iv) strategic thinking, and (v) collaboration. Objectives were described for each competency at three levels: novice, intermediate and advance.

Chapter 4. Results from interviewing university members and students at five TEIs across Vietnam and focus groups indicated that ESD-related topics were included in both formal and non-formal education. Several sustainability-linked courses have been launched in teacher education programs that provide student teachers with basic understanding of sustainability themes. However, there remains a wide gap between ESD cognition and ESD teaching capacity among student teachers due to a lack of practical and local knowledge related to sustainability, the prevalence of top-down pedagogy, large classes and poor facilities. According to students non-formal education greatly contributes to improving student teachers' sustainability competencies through diverse activities but it was not connected with formal education. Thus, promotion of collaboration among stakeholders is a desirable approach to ESD advancement at TEIs.

Chapter 5. Outdoor experiential pedagogy and other NFE approaches can result in positive environmental attitudes, and they inspire students to apply the scientific knowledge they've acquired (Littledyke, Manolas, and Littledyke 2013; Lugg 2007; Hopkinson, Hughes, and Layer 2008). Indeed, discussion results imply that NFE conducted by NGOs, Youth Union, foreign educational institutions and environmental clubs provides students with important opportunities to widen their scope of knowledge, skills and competencies in sustainability. Nevertheless, each organization was seen to exhibit varying strengths and weaknesses in conducting non-formal education for sustainable development.

One major drawback for existing collaboration in training teachers at DUEd is the fact that the contribution of NGOs has not been sufficiently recognized by the university. There is also a lack of linkages between formal and non-formal education for sustainable development. Strengthening collaboration between TEIs and outside sectors will increase students' learning opportunities and augment the weak structure of NFE. Lecturers and YU leaders are crucial enablers to link stakeholders and facilitate joint discussions towards such collaboration.

Chapter 6. This chapter explicates the crucial roles of NGOs in training student teachers on ESD. Examination of five NGO-led sustainability-linked training courses proved that they have applied

abundant interactive teaching approaches which led to a positive enhancement of student teachers' understanding of sustainable development. Of those approaches, follow-up activities such as environmental campaigns and mini-projects enable students to integrate their learning from the training to their daily work and life. This chapter also analyzes the partnerships between DUEd and NGOs. Based on the interviews it is clear that despite potential benefits, there remains a gap in partnership between DUEd and NGOs due to a lack of interest, mutual influence or trust between the two sectors. In order to strengthen the partnership, there need to be sustained, government-facilitated dialogue, selection of suitable NGO partners and more active participation by university members.

Chapter 7. This chapter details how the two most frequent non-formal actors, Youth Union and environmental clubs, engage student teachers in sustainability. Though their activities have enhanced students' consciousness of environment and sustainability, there remain two categories of constraints, internal and external, preventing students from proactive performances in sustainability. Based on the analysis of each organization's strength and weakness, and students' demands the author suggests four steps to improve sustainability planning, including establishment of a hub of sustainability promotion, fostering sustainability leadership, conceiving a systematic action plan, and creating a communication network to promote students' active efforts towards sustainability.

Five questions posed in Chapter 3 can be answered briefly as follow:

- o RQ1: How is ESD being implemented at TEIs in Vietnam in both formal and non-formal education? (Chapter 4) *Several sustainability-linked courses and researches in formal education and a variety of extra curricula activities (training courses, environmental campaigns, etc.)*
- o RQ2: What lessons can be learned from initial efforts in ESD implementation at TEIs nationwide? (Chapter 5) *University lecturers play a crucial role in enhancing students' sustainability literacy and there is also a role for non-formal educators to play in building students' action competence. Challenges that emerged from the five TEIs include the lack of prioritization of ESD in teacher education and lack of collaboration among ESD educators*
- o RQ3: How does NFE contribute for training teachers in ESD? (Chapter 5) *NFE significantly enhances student teachers' sustainability understanding and skills by experiential learning*
- o RQ4: What are NGOs' approaches in building key sustainability competencies for student teachers in the DUEd case study? (Chapter 6) *NGOs have widely applied interactive pedagogies to train student teachers for sustainable development, including problem-based learning,*

enquiry-based learning, and motivating students' actions with follow-up activities as projects, educational programs and public awareness-raising

- o RQ5: How can the youth-led organizations enhance student teachers' proactive performances in sustainability? (Chapter 7) *Establish a hub of sustainability promotion, build sustainability leadership, construct a systematic action plan, and create a communication network are the initial steps that can promote sustainability at DUEd.*

8.2. Recommendations to advance ESD in teacher education

Based on the findings and analysis of the study, this section makes several recommendations to sustainably embed ESD at TEIs:

1. ESD needs to be institutionalized at TEIs by integrating ESD-related topics into teacher education programs and Youth Union's regular activities. To produce a change in the current paradigm of ESD requires more evolution of education and learning rather than "just a simple 'add-on' of sustainability concepts to some parts of the curriculum" (Sterling 2004, 65). In concert with faculty members, YU leaders need to enhance their cognition of ESD to reform student extra-curricular activities promoting effective youth contributions in sustainability.
2. Promoting collaboration among formal and non-formal ESD educators. It is necessary to strengthen not only internal collaborations among faculty lecturers, YU leaders, administrators and student environmental clubs but also external collaboration between DUEd and NGOs, foreign educational institutions, schools, CCCO and local communities. Such collaboration is expected to increase community outreach and student experiential learning, two key driving forces for ESD advancement.

The prospective roles played by each stakeholder in training student teachers for sustainability are presented in Table 8.1.

Table 8.1. Prospective roles played by stakeholders in training student teachers for SD

Stakeholder	Suggested task	Feasible collaboration
Lecturers	- Transform syllabi including: shifting from content-based to competency-based teacher education for sustainability and from conventional to interactive teaching methods, and updating practical and local knowledge. - Find more opportunities to involve	- Work with administrators to facilitate collaboration with outside stakeholders such as NGOs, schools, communities and local authorities (CCCO) - Generate a long-term vision for further collaborations with those outside stakeholders and administrators

	students in ESD-related practices. - Promote exchanges of knowledge among faculty members via seminars, faculty meetings, etc. to enhance lecturers' knowledge of ESD.	- Work with outside sectors to diversify ESD-related lectures (i.e. inviting NGO leaders to join lectures or become visiting educators) - Consult and collaborate with local communities to supervise students' research and transfer the research results to improve living conditions and productions - Train other staff (Youth Union & Administrators) to enhance their awareness of sustainability and their potential roles to promote a green campus
Administrators	- Update knowledge of sustainability to reduce energy consumption, waste disposal - Accredite appropriate non-formal training courses (suggested/approved by lecturers)	- Facilitate procedures that allow outside sectors to organize their ESD-linked activities at DUEd - Work with faculty members to establish and institutionalize partnerships with other organizations - Reform the educational programs and work with schools to increase student training period at schools
Youth Union	- Update knowledge of ESD to diversify environmental/sustainability activities - Transform assessment of its members (98% of university students) to provide students with more autonomy to join sustainability-linked activities not only organized by Youth Union but also other organizations	- Consult and collaborate with lecturers, trustworthy NGOs to enhance awareness and skills Youth Union leaders to organize effective EE/ESD programs - Consult and support student eco clubs to promote initiatives among students towards sustainability
Environmental clubs	- Enhance awareness and capacity for the members to be able to conduct their activities - Leaders should participate in ESD-related training courses to build leadership for further initiatives in their activities	- Collaborate with Youth Union to build and implement university sustainability action plan, transfer ownership for sustaining the clubs - Collaborate with other organizations and eco clubs to share experiences in running clubs and diversify activities
Schools	- Allow students to conduct their training period for longer than before - Share experience and knowledge in teaching and assist students to conduct EE and ESD during their training period and afterwards	- Collaborate with lecturers to share information during student training period - Send school students to DUEd to learn more about sustainability sciences - Involve DUEd students in environmental/sustainability events at schools (games, campaigns, camping, etc.)
NGOs	- Organize ESD-related training courses for students, particularly building sustainability leaderships not only	- Collaborate with lecturers to teach students about ESD - Make efforts to build a long term

	targeted at students but also Youth Union and young lecturers - Exchange knowledge and experience with lecturers - Assist university to increase community outreach - Popularize their activities to university (increase mutual understanding and trustworthiness) - Allow students to conduct internships	partnership with DUEd - Cooperate with DUEd to improve quality of student internship
Foreign educational institutions	- Promote training courses and seminars to enhance awareness of lecturers and students of sustainability - Introduce scholarships, funds and sponsors to university for research and teaching related to sustainability	- Share experiences and collaborate with DUEd in advancing ESD activities (i.e. greening curriculum, campus sustainability) - Collaborate to conduct sustainability-linked research
Local communities	- Share with university their indigenous knowledge related to development - Allow students to work as volunteers in their field sites (farming, forests, for examples) and help them to learn about locality	Cooperate with other sectors to advance sustainability-related practices (i.e. organic agriculture)
CCCO	- Update local knowledge and experience in climate change response and sustainable development to university - Allow students to conduct internships - Introduce university to local communities where CCCO has conducted projects to learn practical knowledge	- Cooperate with DUEd to improve quality of student internships - Staff can co-teach in formal courses related to climate change and sustainable development - Collaborate with lecturers to promote sustainability projects

8.3. Implications

As mentioned in previous chapters, though ESD has been launched for more than a decade, it remains new to many Vietnamese educators. This study is one of the first systematic endeavors to provide new and significant information of ESD implementation in Vietnam to scholars and educators, in particular teacher educators. The proposed solutions generating from the study may be applied in higher education institutions, particularly in training teachers across developing countries.

Much of the study focus is about DUEd, a case study. Lessons learned from DUEd in ESD implementation and collaboration with outside stakeholders can be useful to other HEIs. As qualitative methods were mainly applied in this study, the research findings can be utilized for further studies that apply quantitative methods with a larger scale of samples. Further study focusing on analysis of

partnerships between TEIs or HEIs with communities, local authority and schools are essential to test the recommendations proposed above.

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APPENDIX I. INTERVIEWED QUESTIONS OF INVESTIGATION AT THE FIVE TEACHER EDUCATION INSTITUTIONS

I. Questions for interviewing student teachers

A. General information

Name of student:

Name of university:

Academic year:

Major/specialty:

Contact information:

B. Questions

1. Participation in formal education

1a. In training program

Subject	Credit requirement	Knowledge/ contents	Skills	Actions/ behaviours	Feedback/ comments			Recommendations
					Teaching methods	Contents	Other	

1b. In research activity

Research topic	Main contents	Research methods	Achievements			Feedback/ recommendations
			Knowledge	Skills	Ongoing actions/development	

2. Participation in non-formal education

Activity	Main contents	Duration and Freq.	Time of participation	Organizers and student position	Achievements			Feedback/ recommendations
					Knowledge	Skills	Actions	
Short-term training course								
Seminar								
Online course (TV, FB, internet...)								
Volunteer 1 (in detailed)								
Volunteer 2 (in detailed)								
Volunteer 3 (in detailed)								

Part time job (in detailed)								
Competition/ contest								
Other 1 (in detailed)								
Other 2 (in detailed)								

II. Questions for interviewing university staff

A. General information

Name of university:

Name of representatives:

Contact information:

Job position:

B. Questions

B1. Formal education

1. Teacher training curriculum

Subject	Credit requirement	Objectives	Main contents	Teaching methods	Expected outcomes	Evaluation	Students' feedback	Reorientation/ Modification

2. Students' researches

Research topic	Main contents	Research methods	Outcomes	Evaluation	Students' feedback

Extra questions (EQ):

EQ1. Is there any change in researches of students within the last 5 years? (contents, methods, quality of outcomes....)

EQ2. The ratio of students conducted researches/students did not.

B2. Non-formal/ Informal education

1. ESD related activities inside university

Type of activity (public awareness raising, clean up...)	Topic/out line/the me of activity	Frequen cy (regular/i rregular)	Objectiv es	Duration	Organizer	Outcomes	Students' feedback	Financia l support

2. ESD related activities outside university

Type of activity (public awareness raising, clean up...)	Topic/outlin e/theme of activity	Frequency (regular/irreg ular)	Venue of activity	Objectiv es	Durati on	Organiz er	Outco mes	Studen ts' feedba ck	Financia l support

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Extra questions (EQ):

EQ1. Is there any change in non-formal education (extra curriculum activities) for students within the last 5 years? (Contents, theme, objectives, orientation, requirements, student participation, management activities which are not organized by university...)

EQ2. Give the reasons to explain these changes

3. ESD outreach

- Partnerships with: NGOs, local communities, oversea institutions/organizations and other agencies
- ESD related activities which these partners have conducted in the university (short term training courses, project funding...)

C. Difficulties/barriers in implementing ESD at the university

1. Recognition of difficulties/barriers in implementing ESD at the university
2. Suggestions to overcome/promote ESD at TTIs in Vietnam

APPENDIX II. QUESTIONS FOR INTERVIEWING AT THE CASE STUDY

I. Questions preparing for interviewing senior teacher

A. Interviewee information

1. Name of school:
2. Address/phone:
3. Name of teacher:
4. Position:
5. Contact:

B. Questions

1. *Integration of environment and sustainable development topics at school*

Q1. Could you share the integration of environment and sustainable development topics at your school? (types of activity, in formal or non-formal education, to what extent, frequency, When did it start and who initiated it? In what grades? Was it difficult to introduce? etc.)

Q2. What are the advantages and disadvantages of this integration?

EQ. *Are there any differences between young teachers and senior teachers in teaching about environment? What are they?*

Q3. How have you (or your colleagues) changed the teaching since the announcement of Ministry of Education about positive teaching and integrated teaching?

2. *Experiences in collaboration with universities to train student teachers* (during their probation at school)

Q1. How long have you trained student teachers when they are on probation at your school?

Q2. How students change? (Same/better/worse and reasons for this change)

Q3. According to your experiences, does student teachers' capacity meet the requirements of positive teaching and integrated teaching?

EQ. *Can you give me the reasons why you think "yes" or "no"*

If "no" how should the students improve their teaching capacity?

Q4. What is/are your recommendations/feedbacks in training teacher program of TTIs related to EE/ESD in general and DUE in particular?

II. Questions preparing for interviewing new/young teacher

A. Interviewee information

1. Name of school:
2. Address/phone:
3. Name of teacher:
4. Position:
5. Contact:

B. Questions

1. ESD teaching capacity

Q1. How long have you been a teacher?

Q2. Did you conduct any activities to teach environment and sustainable development topics at your school? (types of activity, in formal or non-formal education, to what extent, frequency, etc.)

EQ. What are the difficulties? How were the reactions of your students?

Q3. Did you receive any feedbacks from other (senior teachers, students, students' parents)?

EQ. Which skills/knowledge should you improve?

Q4. Do you think you will continue these activities? And reasons why?

EQ. Which forms of activities do you plan to conduct?

2. Feedbacks on teacher education program (TEP)

Q1. After graduation and being a teacher, what are your feedbacks on TEP on EE/ESD: knowledge, skills, distribution of semesters, subjects related environment/sustainable development, pedagogies, etc.

Q2. How should TEP be changed to meet the requirements of the real context?

EQ. Do you think it is difficult to change? Reasons?

Q3. How did you learn by yourself to meet the requirements to integrate environmental topics to curricular or organize extra-curricular activities?

3. Integration formal and non-formal education in teaching ESD

Q1. Which extra-curricular activities did you participate when you were a student? (describe in detailed)

EQ. Benefits you got? Do you still keep contact or update regularly with NGOs/those who organized these activities?

Q2. What is the role of formal/non-formal education in building ESD teaching capacity?

Q3. Do you find any linkages between formal and non-formal education in building your teaching capacity related ESD, EE?

EQ. If "yes" please tell me in detailed

Q4. Do you a member of ex-student association?

EQ. If "yes" please tell me if you think the ex-student association can help to improve TEP to meet the requirements in teaching in general and ESD in special.

III. Questions preparing for interviewing university lecturers

A. Interviewee information

1. Name:
2. Position:
3. Contact:

B. Questions

1. Partnerships in education

Q1. Which outside sectors has your university/faculty collaborated?

EQ. Purposes, scope of collaboration, activities, frequency, benefits, involved in formal or non-formal education for each partner

Q2. What is the trend of this collaboration? (Continue same or enlarge and reasons for the trend)?

Q3. Do the outside stakeholders have influence/involve in designing teacher training program?

EQ. To what extent, how they can involve, Also, what are the challenges in trying to involve these stakeholders

2. Feasibility of integration of formal and non-formal education in ESD

Q1. What is the provision of formal education in building ESD teaching capacity for student teachers?

Q2. Is there any linkage between formal and non-formal education in teaching ESD for student teachers at DUEd?

EQ. Reasons for the answer "yes" or "no". If "yes" could you describe in detailed?

Q3. Do you think it is important to integrate formal and non-formal education in ESD? How this process can be done or mechanism of the integration? Opportunities and challenges.

IV. Questions preparing for interviewing Youth Union

A. Interviewee information

1. Name:
2. Position:
3. Contact:

B. Questions

1. Partnerships in organizing extra-curricular activities

Q1. Which outside sectors has the Youth Union (YU) collaborated?

EQ. Purposes, scope of collaboration, activities, frequency, benefits, involved in formal or non-formal education for each partner

Q2. What is the trend of this collaboration? (Continue same or enlarge and reasons for the trend)?

Q3. Do the outside stakeholders have influence/involve in extracurricular organized by YU?

EQ. To what extent, how they can involve, challenges

2. Feasibility of integration of formal and non-formal education in ESD

Q1. Can you share some activities organized by YU related environment/sustainable development/climate change recently? (time, duration, frequency, contents, etc.) the overall objectives of the YU and how these activities fit with these objectives

EQ. Do these activities be fixed yearly or can be changed flexibly?

Q2. What are reasons for the change of YU recently to increase ESD/EE related activities?

Q3. What is the provision/benefits of these activities, What do you want students to gain from participation?

Q4. How about the reaction of students?

Q5. Does YU Collaborate with the teacher training program when organizes these activities?

EQ. Reasons for the answer “yes” or “no”. If “yes” could you describe in detailed?

V. Questions preparing for interviewing NGO staff

A. Background information of NGO

1. Name of NGO:
2. Name of interviewee: Contact:
3. Background information: Time of foundation, missions, number of staff

B. Interview questions

1. Experiences in collaboration with universities conduct educational projects/activities

- Q1. Name, contents/activities and frequency of the projects
- Q2. Why did you work with universities?
- Q3. The experiences after working with universities: Procedures; Budget; Human Resources and other preparations; Advantages and disadvantages.
- Q4. Do you think your organization will collaborate with the universities in the future?
- EQ: If “no” please tell me the reasons?
If “yes” can you reveal more detailed this collaboration? (Contents, expected time, scope of collaboration, etc.)
- Q5. Did you work with university students?
- EQ: If “yes” what do you think about their competencies? (Knowledge, skills, activeness, etc.)

2. Feasibility in collaboration between NGOs and universities to promote ESD activities in Vietnam

- Q1. Do you have any other activities/projects which can be applied to teach students about ESD?
- EQ: If “yes” can you reveal more detailed
- Q2. How NGOs can collaborate with universities to promote ESD activities in Vietnam
- EQ. Opportunities and Challenges
The barriers of the collaboration and how to overcome these barriers

VI. Questions for interviewing Climate Change Coordination Office (CCCO)

A. Interviewee information

1. Name of interviewee: 2. Position:
3. Contact

B. Interview questions

1. Experiences in collaboration with universities conduct educational projects/activities

- Q1. Have you/your office collaborated with university in any activities? If “yes”, please tell the name, contents/activities and frequency of the projects/events/programs
- Q2. Why did you work with universities?
- Q3. The experiences after working with universities: Procedures; Budget; Human Resources and other preparations; Advantages and disadvantages.
- Q4. Do you think CCCO will collaborate with the universities in the future?
- EQ: If “no” please tell me the reasons?
If “yes” can you reveal more detailed this collaboration? (Contents, expected time, scope of collaboration, etc.)
- Q5. Did you work with university students?
- EQ: If “yes” what do you think about their competencies? (Knowledge, skills, activeness, etc.)

2. Feasibility in collaboration between CCCO and university to promote ESD activities in Vietnam

- Q1. Do you have any activities/projects which can be applied to teach students about ESD?
- EQ: If “yes” can you reveal more detailed
- Q2. How can CCCO collaborate with university to promote ESD activities in Vietnam
- EQ. Opportunities and Challenges
The barriers of the collaboration and how to overcome these barriers

APPENDIX III. QUESTIONS FOR ANALYSIS NGO'S INVOLVEMENT IN TRAINING TEACHER ON ESD

I. Questions for interviewing university lecturers

A. Interviewee information

1. Name: 2. Position:
3. Contact:

B. Questions

1. Working experience

- Q1. How long have you worked as a university lecturers?
Q2. What is your major? (Can you explain the courses/subjects that you are teaching currently?)
Q3. How does your teaching link to ESD/sustainability themes?

2. Working with NGOs

- Q1. Which NGOs (working on sustainability) has you cooperated?
EQ: Please explain more detailed: name of NGOs, purposes, scope of cooperation, activities, frequency, benefits, involved in formal or non-formal education
Q2. What is your role in those training programs (TP)?
Q3. What did you learn and benefits from those TP?
EQ: Knowledge, pedagogies, organizing extra-curricular, enlarging network, being consultant for NGOs, applying funds for projects and so forth.
Q4. Do you bring what you learned to your teaching?
EQ: Please describe in detailed (Improve teaching methods, updating practical knowledge, etc.)
Q5. What are the good points of the TP? How can the TP be improved?
Q6. Do the students have many opportunities to participate the TP like those/this at university?
EQ: Do you think how to utilize NGOs TP to promote teaching student teachers about environment/sustainability? If Yes, how can you? If No, can you explain the reasons?

3. Future direction

- Q1. What are the benefits when a university collaborates with NGOs in ESD?
Q2. How is current situation of this collaboration?
Q3. What constraint the collaboration between university and NGOs?
Q4. What are enablers/mechanism to sustain this partnership?

4. Compare NGOs' training courses with university formal courses

No.	Strength of NGOs' courses	Feasibility of apply at DUEd	
		If Yes, to what extent (frequency, any difficulties/issues)	If No, reasons
1	Training contents are updated with local and practical knowledge		
2	Aims to improve trainees' competencies (communication, group work, self-update, teaching, etc.)		
3	Training pedagogies - Attractive and inspired lectures - Applying visual movies and pictures - Inviting famous speakers who have thoughtful understanding of sustainability - Field works (at deep forests, organic farms)		

	- Visiting local schools and teaching - Promoting dialogues during training - Funding trainees' proposals after courses - Promoting self-updating via social network and websites		
4	Evaluation based on - Participation during the courses - Initiatives and proposals at the end of the courses		
5	Diverse follow-up/motivation activities		
6	Other strengths (.....)		
No.	Weakness of NGOs' course	Feasibility of DUEd to fix the weakness	
1	Training courses are short		
2	Lack of collaboration with lecturers		
3	Other 1		
4	Other 2		
5	Other 3		

II. Questions for interviewing NGO staff related to sustainability training courses

A. Interviewee information

1. Name of NGO:
2. Name of interviewee:
3. Position:
4. Contact:

B. Questions

1. Experiences in organizing sustainability-linked training courses for students

Q1. Can you describe your training course organized for DUEd students as detailed as below?

- ESD-related activities/themes
- Targeted group/number of trainees
- Pedagogies applied
- Evaluation
- Follow-up activities

Q2. Which are the most successful points/ highlights of your training courses?

EQ: *Why do you think such points/highlights are important?*

Q3. How had students changed/transformed during and after the courses?

EQ: *Did you conduct pre and post course evaluation? If Yes, please share with me your report.*

Q4. Can your organization continue organizing this course?

Q5. Did you meet any difficulties during your training course?

EQ1. *How about students' participation? How about the local authorities? Are there any uncertainties?*

EQ2. *How did you solve those difficulties?*

2. Experiences in collaborating with DUEd

Q1. How could you collaborate with DUEd staff for the training course?

- a. Based on personal relationship
- b. Contacting with administrative office
- c. Introduced to DUEd by VUSTA
- d. Other (.....)

Q2. Did you collaborate with DUEd staff to organize the course (preparation, implementation and evaluation)

- a. Yes (please describe in detailed :.....)

- b. No (reasons:.....)
- Q3. Did you meet any difficulties in collaboration with DUEd?
 - a. Yes (please describe in detailed :.....)
 - b. No

3. Visions for further collaboration

- Q1. Does your organization desire to collaborate with DUEd or other universities in the future?
- Q2. According to you, what are the benefits of universities to collaborate with NGOs in general and in the field of sustainability in special?
- Q3. How about NGOs' benefits to collaborate with universities?
- Q4. According to you, what constrains university-NGO partnership?
- Q5. How to solve such constraints?

APPENDIX IV. STUDENT QUESTIONNAIRE SURVEY RELATED TO YOUTH SUSTAINABILITY ACTIVITIES

A. Information of respondents

1. Name:

2. Email:

Phone number:

3. Faculty:

Class:

B. Student teachers' participation in Youth Union-led sustainability activities

1. Participating sustainability organized by university Youth Union (YU)

Activities	Reason of participation (a: voluntary; b: compulsory)	Frequency (a: regular; b: occasional; c: rare)	Conditions of participation (a: class leaders; b: skillful; c: none; d: other.....)	Learned knowledge (describe details)	Learned skills (describe details)	Motivation (describe details)
Green Summer						
Tree Planting						
Cleanup						
Purify water bodies						
Green Sunday						
Others (.....)						

2. Are there any activities that you wish to participate?

a. Yes

(.....)

b. No

3. Participating sustainability organized by faculty YU

Activities	Reason of participation (a: voluntary; b: compulsory)	Frequency (a: regular; b: occasional; c: rare)	Conditions of participation (a: class leaders; b: skillful; c: none; d: other.....)	Learned knowledge (describe details)	Learned skills (describe details)	Motivation (describe details)
Seminars (environment, climate change...)						

Cleanup						
Environmental fund raising						
Competitions						
Recycling fairs						
Others (.....)						

4. Did the YU's sustainability activities satisfy you?

- a. Completely satisfied
- b. Basically satisfied
- c. Not satisfied

C. Student teachers' participation in environmental groups

Activities	Reason of participation (a: voluntary; b: compulsory)	Frequency (a: regular; b: occasional; c: rare)	Conditions of participation (a: class leaders; b: skillful; c: none; d: other.....)	Learned knowledge (describe details)	Learned skills (describe details)	Motivation (describe details)
Cleanup						
Environmental teaching						
Sustainability-linked research						
Recycling fairs						
Wild animal exhibition						
Cycling for environment						
Group discussion of sustainability						
Others (.....)						

D. Student teachers' demands on sustainability activities

- a. The latest information/knowledge of global issues
- b. Current local issues
- c. Sustainability teaching competencies
- d. Competencies to deal with global challenges (e.g. climate change, disasters, environmental pollution)
- e. Self-study and self-update
- f. Skills to work with communities

E. Your expectations of youth-led sustainability activities are:

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APPENDIX V. PICTURES OF DATA COLLECTION



Figure A1. Student focus group discussion



Figure A2. University – Stakeholder focus group



Figure A3. University – NGO focus group



Figure A4. Student interview