Exploring Education for Sustainable Development in Myanmar: Concepts and Models to Influence the Integration in, and the Transformation of, Higher Education Institutions

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A thesis submitted for the degree of Doctor of Philosophy

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Abstract

Education for Sustainable Development (ESD) is a priority area for the United Nations and features in the Sustainable Development Goals. While Higher Education Institutions (HEIs) have an important role in ESD, what ESD means and how it is integrated into HEIs requires further investigation in some contexts. Indeed, ESD in South-East Asian HEIs, including Myanmar, has rarely been studied. This research considers the conceptualisation of ESD in Myanmar HEIs' context, desirable graduate attributes for the sustainable development of Myanmar, and factors that should influence the integration of ESD in, and the transformation of, Myanmar’s HEIs. An in-country scoping study helped formulate the research questions and design. All other data collection occurred remotely as first Covid-19, and then the Military coup, prevented in-country work.

A mixed methods approach was employed with qualitative data collected through key informant interviews (n=7) and two focus group discussions (FGD) with university teachers and students (n=19). A large survey (n=417) collected quantitative (and some qualitative) data on graduate attributes, triangulated by a follow-on survey with FGD participants (N=15).

Thematic analyses indicated that ESD can be viewed in two dimensions. First, desirable sustainable development for Myanmar can be reviewed through five thematic lenses: political, economic, sociocultural, environmental, and philosophical perspectives. Second, HEIs are expected to contribute to ESD by nurturing graduates with essential attributes, conducting locally relevant research and innovation, advocating for policy changes, and fostering learning hubs.

Statistical analyses highlighted the relative importance of graduate attributes for ESD, revealing some differences compared to UNESCO’s ESD competencies. The quantitative findings support the efficacy of the three pillars: Head, Heart, and Hand, in fostering graduate attribute development. The thematic analysis findings suggest an adapted ESD integration model as well as an adapted educational reconstruction model that can offer useful guidance for the transformation of Myanmar’s HEIs.
Declaration

The work presented in this thesis is the author's original work. No part of this thesis has been submitted to this or any other university for any further qualification or degree.

Bo Bo Lwin

April 2024
To
My sisters and brothers:

Maw Maw

Nyi Nyi

Ni Ni

Maung Maung
Acknowledgement

First of all, I would like to express my heartfelt thanks to my supervisors Professor Andy Lane and Dr Rachel Slater (The Open University, UK) for their enthusiastic supervision and warm support throughout my PhD journey.

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<td>Quality Assurance Agency</td>
</tr>
<tr>
<td>RES</td>
<td>Research, Enterprise, and Scholarship</td>
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<tr>
<td>RFA</td>
<td>Radio Free Asia</td>
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<tr>
<td>RMIT</td>
<td>Royal Melbourne Institute of Technology</td>
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<tr>
<td>RQ</td>
<td>Research Question</td>
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<tr>
<td>SAC</td>
<td>State Administration Council</td>
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<td>SCP</td>
<td>Sustainable Campus Programme</td>
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<td>SD</td>
<td>Sustainable Development</td>
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<td>SDG</td>
<td>Sustainable Development Goal</td>
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<tr>
<td>SEA</td>
<td>South-East Asia</td>
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<tr>
<td>SOS</td>
<td>Students Organising for Sustainability</td>
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<tr>
<td>SPHEIR</td>
<td>Strategic Partnerships for Higher Education Innovation and Reform</td>
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<tr>
<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
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<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>SSE</td>
<td>Sustainability: Society and Environment</td>
</tr>
<tr>
<td>STEM</td>
<td>Science, Technology, Engineering, and Mathematics</td>
</tr>
<tr>
<td>TIDE</td>
<td>Transformation by Innovation in Distance Education</td>
</tr>
<tr>
<td>TLA</td>
<td>Teaching, Learning, and Assessment</td>
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<tr>
<td>TSL</td>
<td>Transformative Sustainability Learning</td>
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<tr>
<td>UDE</td>
<td>University of Distance Education</td>
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<tr>
<td>UK</td>
<td>United Kingdom</td>
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<tr>
<td>ULSF</td>
<td>University Leaders for a Sustainable Future</td>
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<tr>
<td>UN</td>
<td>United Nations</td>
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<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
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<td>UNDP</td>
<td>United Nations Development Programme</td>
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<td>UNEP</td>
<td>United Nations Environment Programme</td>
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<tr>
<td>UNESCO</td>
<td>United Nations Education, Scientific, and Cultural Organisation</td>
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<td>US</td>
<td>United States</td>
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<tr>
<td>USA</td>
<td>United States of America</td>
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<td>USDP</td>
<td>Union Solidarity and Development Party</td>
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<tr>
<td>UWE</td>
<td>University of West England</td>
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<tr>
<td>VPN</td>
<td>Virtual Private Network</td>
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<td>WCED</td>
<td>World Commission on Environment and Development</td>
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<td>YUDE</td>
<td>Yangon University of Distance Education</td>
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Chapter 1 Introduction

This doctoral thesis investigates the conceptualisation and integration of education for sustainable development (ESD) in the context of Myanmar’s higher education institutions (HEIs) and the prospective educational reconstruction for the transformation of HEIs in the country. The investigation was influenced by the researcher’s motives and interest in education reform for his home country, Myanmar, and the expectations of the initial funding agency and The Open University (UK) to contribute to Myanmar’s sustainable development (SD) by supporting the doctoral studentship. The research addresses the definition of sustainable development in Myanmar and the interpretation of ESD by Myanmar (Burmese) higher education stakeholders.

While SD and ESD have long been globally acknowledged and used by many HEIs worldwide, it was seen as important to conceptualise them in the researched context before they could be adopted and integrated into the existing higher education system. It was also the right time to start this research project because while education reform in Myanmar was well underway, ESD had not yet been considered amongst Myanmar HEIs. Subsequent events halted these reforms, but exploring the potential models and approaches of ESD integration in preparation for future changes to the higher education system is still critical. To address these gaps, the overarching research aim was to determine how ESD can be appropriately integrated into Myanmar HEIs.

This chapter provides a brief historical outline of the international communities’ efforts to conceptualise and enact sustainable development, the emergence of ESD as part of that effort and HEIs’ implementation of it, the political and higher education context of Myanmar, the rationale and personal context for this doctoral study, and finally the organisation of this thesis.

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1 Myanmar was used to be known as Burma (country) and Burman/Burmese (people), but it was officially changed to Myanmar by the military regime in 1989. Myanmar will be used in this thesis for both the country’s name and its citizens albeit some controversies and disputes. However, Bamar/Burmese will be interchangeably used in this thesis to refer the majority ethnic group.
1.1 Sustainable Development in the global context

The increasing scale and scope of human activities, such as consuming natural resources and producing goods or services to meet human needs, have led to positive and negative outcomes regarding both human and natural systems’ social, economic, and environmental sustainability. Environmental issues have become a core agenda amongst the international communities seeking alternative pathways for the sustainable development of these activity systems. Originally, sustainable development was rooted in the United Nations (UN) Conference on Human Environment in Stockholm in 1972, although the term was not explicitly used (United Nations, 1973). It was widely acknowledged that the World Commission on Environment and Development (WCED), chaired by Brundtland (Norwegian Prime Minister), was one of the historical milestones calling for the global cooperation of a new development model considering environmental sustainability concerns.

Since the time of Brundtland’s Report (1987), known as ‘Our Common Future’, intergovernmental meetings and global partnership events have made some agreements and commitments to undertake sustainable development and environmental protection, such as Agenda 21 by the UN Conference on Sustainable Development in Rio de Janeiro (1992), the Millennium Development Goals (MDGs) (2000 – 2015) and the Sustainable Development (SDGs) (2016 – 2030) (United Nations, 1973, 1992, 2015a). Although there are many aspects to work on, climate change has been one of the most prominent issues to be tackled. This prominence can be seen in both the MDGs and the SDGs, and it became a global agreement to keep global warming at 1.5 to 2 degrees Celsius in the Paris Climate Conference (COP21) in 2015.

1.2 Education for Sustainable Development (ESD)

The SDGs, which replaced the MDGs, were officially launched by the United Nations on 1st January 2016. They include 17 Goals, 16 of which are set out for different thematic sectors covering three dimensions: economic growth, social inclusion, and environmental protection (the 17th deals with partnerships working within and across the thematic sector goals). Amongst the 17 Goals, Education, titled SDG 4, aims to:

3 21st Conference of the Parties
‘ensure inclusive and equitable quality education and promote lifelong learning opportunities for all’ (United Nations, 2015a, p. 14).

SGD 4 has ten targets, amongst which target 4.7 is specifically highlighted as the role of education to prepare the students with the required competencies to contribute to sustainable development. It is commonly known as ESD, which aims to:

‘ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, amongst others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and nonviolence, global citizenship and appreciation of cultural diversity and culture’s contribution to sustainable development by 2030’ (United Nations, 2015a, p. 17).

Although an important aspect of the SDGs, the development of ESD began much earlier than this. To provide a long-term strategic direction, the sustainable development movement embraced education as a key component of human needs and expected HEIs to be sources of ‘change agents’ as noted by Svanstrom, Lozano and Rowe (2008). They claimed that there is a possibility that unsustainable actions in communities can be reversed and that ESD is essential for everyone to make appropriate contributions to society. Intending to foster the implementation of SDG 4 and strengthen collaborative work across the nations, UNESCO developed the Global Action Programme (GAP) of ESD to further develop and distribute the findings from the UN’s Decade of ESD (2005-2014) (Brandt et al., 2019). UNESCO’s GAP includes a key action area with an explicit aim of strengthening the capacity of educators, trainers, and other change agents to become learning facilitators for ESD. Aligned with the UN’s mandate, ESD has been extensively integrated into teachers’ education policies and practices by more and more countries working alone or collaboratively [for example, see Higgins and Kirk, 2006; Steele et al., 2010; Brandt et al. (2019)]. For example, the Asia-Pacific Regional Network of Teachers’ Education Institutes for ESD (ESD-Net) is a related network supported by UNESCO (Nomura and Abe, 2011).

\[\text{\textsuperscript{4}}\text{ United Nation Educational, Scientific and Cultural Organisation (UNESCO) is a special agency of the UN to promote world peace and security through international cooperation in education, arts, science, and culture.}\]

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\[\text{\textsuperscript{4}}\text{ United Nation Educational, Scientific and Cultural Organisation (UNESCO) is a special agency of the UN to promote world peace and security through international cooperation in education, arts, science, and culture.}\]
Over three decades, ESD has been discussed, studied, and tested amongst many HEIs worldwide. An early and important catalyst that preceded the SDGs and the GAP was the University Leaders for a Sustainable Future (ULSF) conference in France in 1990. This conference committed to environmental sustainability in higher education (HE) by delivering the Talloires Declaration⁵, signed by 526 HEIs in 60 countries according to the ULSF website⁶ as of July 2023. The Declaration aims to create an ‘institutional culture of sustainability’ and to ‘educate for environmentally responsible citizenship’ (Shephard et al., 2015, p. 3). Alongside the Talloires Declaration, SDG 4 and GAP, there have been many studies and publications on the role of higher education in implementing ESD. ESD-related research and publications have generally been widely observed in more developed countries. However, most developing countries, particularly the Least Developed Countries (LDCs), are still struggling to upgrade the general quality of their education services. Therefore, ESD, set out in the SDGs, is a relatively new agenda for these nations. ESD integration into HEIs has been carried out using different approaches, such as redesigning the existing curricula, developing courses/modules on sustainable development, innovating the campus operations or management (for green campuses), and promoting community engagement. However, the extent to which ESD is embedded in HEIs’ practices is variable, although adoption is increasing.

### 1.3 ESD in the Myanmar context

Myanmar, one of the LDCs, had been ruled by the military following a coup in 1962 before transitioning into a quasi-civilian government in 2010. Following two terms of elected governments (2010-2015 and 2015-2020), the military staged another coup in February 2021 following national elections, bringing about the abrupt destruction of the democratic transition process (Brown and Hung, 2022). The country has since been facing political turbulence and civil wars, with whole systems collapsing, leading many to declare it a failed state (Kurlantzick, 2021). This includes the education reform process initiated by the former civilian government and set out in National Education Strategic Plan (NESP). Reform has become uncertain under the military junta and through

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⁵ Talloires declaration is the first official statement made by the university presidents, chancellors, and rectors of a commitment to environmental sustainability in higher education, which was composed in International Conference in Talloires, France in 1990.

⁶ Talloires Declaration Signatories List – ULSF (accessed: 26 July 2023)
people’s resistance to the coup, with many university teachers and students not participating in the continuing work of their universities.

The Myanmar education system has two main levels of formal education: basic education (BE) and higher education (HE). The terms tertiary education and HEIs are not commonly used in Myanmar, and higher education is widely understood as the degree awarding institutes. In this thesis, ‘HEIs’ will cover all the public universities, institutions, and colleges offering degree programmes, excluding the diploma-awarding institutions commonly known as vocational or training institutes in Myanmar. There was no officially registered private HEI in Myanmar during this doctoral research and there was not yet any related law for them.

The pre-coup education reform process incorporated elements of ESD, leading to significant enhancements in the BE sector, encompassing both practices and systems. More specifically, some new subjects, for instance, Morality, Civic Education and Life Skills, were introduced, and 21st-century skills and Five Strengths\(^8\) (physical, intellectual, moral, social, and economic which are also discussed in section 3.5) were embedded as the expected skills to be developed through the new curricula (Tanaka and Khine, 2021) to meet the demands of the changing society and developing world (Volman et al., 2020). According to the former website of the National Education Policy Commission\(^9\), these subjects aimed to build basic knowledge of peace and conflict, social harmony, teamwork and cooperation, good citizenship, environmental awareness, gender awareness and how to respect others’ rights. Some teachers have also undertaken training about integrating ESD into BE (UNESCO, 2017b). Still, ESD integration was not explicitly mentioned in the newly developed curriculum framework of the four-year degree programme for the student-teachers\(^10\) at Education Colleges (UNESCO, 2016). Similarly, there is no evidence of formal integration of ESD into the two education universities in Yangon and Sagaing.

\(7\) Basic Education in Myanmar includes three levels: ‘Primary, Middle and High School’ and a new system of 12 year-schooling (KG+5+4+3) has been updated to meet the ASEAN standard during 2015-2020.

\(8\) Myanmar traditional belief and discourse of teaching the young to prepare the skills and strengths for the betterment of livelihood and wellbeing.

\(9\) https://www.nepc.edu.mm/national-curriculum-committee-ncc/ (accessed on May 11, 2020, but no longer running)

\(10\) Undergraduate or pre-service students who are preparing to become teachers for Basic Education.
Less attention was drawn to the role of higher education in the initial reform process, while more emphasis was put on basic education. In addition, ESD was still new to Myanmar HEIs and needed to be more widely discussed and known amongst them. This omission meant that research was needed to understand how ESD could be conceptualised and integrated into Myanmar HEIs, including what ESD means to Myanmar citizens and the definitions of the UN and other international communities. This incorporates investigating what kinds of knowledge and skills (or competencies) are needed for the graduates who will contribute to the country’s sustainable development in the future and exploring any necessary changes for the transformation of HEIs which can help students build these desirable competencies.

1.4 Research Questions

Therefore, as justified above, this doctoral research has three main research questions to address the knowledge gaps and understand ESD integration in the context of Myanmar’s higher education.

Research Questions

1) How might ESD be conceptualised in the Myanmar HEIs’ context?
2) What are the graduate attributes to be expected from integrating this conception of ESD in Myanmar HEIs?
3) What transformations in Myanmar HEIs’ educational policy and practices are needed to develop these graduate attributes?

1.5 Rationale and personal context

Three factors mainly influenced the personal context underpinning this research project:

- The researcher's personal interests and professional background,
- The expectation to gain insights into the potential transformation of universities through the international education development project called 'Transformation
by Innovation in Distance Education (TIDE)\textsuperscript{11} spearheaded by the Open University (UK), and

- The opportunity to pursue a doctoral studentship funded by the Global Challenge Research Fund (GCRF) to explore the students’ experiences in higher education concerning ESD.

From 12 years’ experience of leading and managing multiple projects and programmes of youth empowerment in Myanmar, the researcher has built a certain level of knowledge and expertise in the capacity development of youth and university students, particularly in the context of non-formal education, and witnessed their contribution to peacebuilding and environmental conservation. Moreover, collaborations with twenty University Green Clubs (for the green campus movement) and the two Universities of Education for promoting education for peace have built his commitment to understanding the context of higher education in Myanmar. This doctoral research opportunity aimed to explore the possibilities of ESD integration, upgrade personal knowledge and academic skills, and contribute to the reconstruction of higher education in Myanmar. This learning journey started well, but the challenging political turbulence after 18 months tested him, both as a developing researcher and as a Myanmar national. Finally, this thesis has been made possible with the researcher’s eagerness, interest, motivation, and commitment.

Three external factors influenced the learning journey. First, due to the paucity of research and academic publications on Myanmar’s HE sectors (Esson and Wang, 2018), this research has had to rely on grey literature references such as reports, websites, and non-academic review articles. Furthermore, most reviewed documents relating to Myanmar HE reform were written by Western scholars, and only a few publications were produced by Myanmar researchers. The latter were mostly found as theses for master’s degrees, and there is a doctoral thesis for ‘Higher Education and Social Justice in Myanmar’ (Heslop, 2019) by someone who worked for the British Council in Myanmar for some years. To offset this lack of academic publications, an in-

\textsuperscript{11} The TIDE project aimed for the enhancement of staff capacities for academic, teaching, and complementary staff, enhancement of Programmes and Approaches to the strengthening of Higher Education and Distance Education system (Gregson, Lane, and Foster, 2019). It was a partnership led by The Open University (UK), working with Yangon University (Myanmar), Yangon University of Distance Education (Myanmar), Yadanarbon University (Myanmar), Irrawaddy Policy Exchange (UK), The University of Oxford (UK) and The University of Manchester (UK) funded by DFID/FCDO (UK).
country scoping study (in December 2019) contributed to what was needed to help formulate the research questions.

Second, the restrictions placed on international travel after March 2020 caused by the Covid-19 pandemic prevented further in-country data collection through accessing unpublished documents, conducting interviews, and running focus group discussions. Instead, all planned data collection activities had to be revised to be carried out remotely.

Third, the research design and data collection process needed further revision due to the political crisis in Myanmar following the 2021 coup. The coup meant that involving Myanmar citizens in the country was technically very difficult (due to disrupted internet provision) and not without personal risk. Hence, Myanmar national residents outside of Myanmar became the focus. The coup also led to the early termination of the TIDE project with which this doctoral studentship was associated.

These external factors tested the researcher’s resilience. They understandably impacted his emotional state, meaning the thesis had taken longer than planned, and the researcher could not return home to visit friends and family.

1.6 Composition of Thesis structure

This doctoral thesis is organised into nine Chapters.

This introduction, Chapter 1, provides an overview of sustainable development (SD) in a general context, ESD in higher education and the political landscape of Myanmar, focusing on its education reform efforts under the two semi-civilian governments (2010-2020). It also outlines the primary goal of this doctoral research to bridge the knowledge gap concerning ESD conceptualisation in Myanmar’s HEIs and its potential contributions to HE reforms. In addition, it also discusses the personal context of the researcher in undertaking this study.

Chapter 2 summarises the political landscape of Myanmar, the higher education context, and the role of HEIs in ESD integration for the future sustainable development of Myanmar. The chapter tries to provide a holistic picture when considering the reconstruction needs of Myanmar HEIs and the place of sustainability in preparing future graduates. It portrays the challenges and constraints the HE communities face in the ongoing political turmoil and civil war.

The following Chapter 3 presents the literature review, including the historical background of sustainable development in the global context and its links to HE. It
discusses why it is important to consider ESD in HE, how graduate attributes are viewed, and what different approaches can be regarded in the complex systems of universities’ activities. It discusses an ESD integration model and an educational reconstruction model for the HEIs’ transformation, which significantly inform this research study and analytical process. The chapter also outlines existing ESD implementation in the Asia Pacific and Southeast Asia regions and how sustainability can be viewed through Myanmar traditions.

Chapter 4 comes next, providing an account of the in-country scoping study conducted before the Covid-19 pandemic closure and the military coup, which took place in February 2021. This chapter describes the process and essential findings of the in-country scoping study, highlighting how these understandings justified and shaped the formulation of the research questions.

Chapter 5 outlines the research questions with justifications and explains the relevant research enquiries and methodologies. This chapter describes the research design, preparation, data collection and analytical processes, and the related adaptations and challenges caused by the global pandemic and the military coup. It covers ethical considerations and some activities needed to make data collection flexible, measures taken to ensure the validity and reliability of the research data and the analytical processes.

The subsequent chapters, namely Chapters 6, 7, and 8, are dedicated to presenting the research findings in connection with each research question. Chapter 6 explores the conceptualisation of ESD in the context of Myanmar. Chapter 7 examines the desirable graduate attributes for sustainable development in Myanmar. Chapter 8 investigates potential approaches for integrating ESD and the reconstruction processes of HEIs. These chapters thoroughly discuss the themes and sub-themes derived from the qualitative data analysis and the statistical analysis of quantitative data concerning graduate attributes.

Chapter 9 summarises the composition of this thesis, discusses key findings related to the research questions in comparison with literature review and the country’s context, and synthesises vital learnings and knowledge contribution to the ESD integration in higher education sector, and recommends further studies. In addition, it discloses the limitations in conducting this research, the researcher’s personal reflection and key learnings based on this doctoral research experience in the context of uncertainty and distressful crisis. Then it concludes with a brief remark.
Chapter 2 The Higher Education System in Myanmar’s Socio-political and Environmental Context

2.1 Introduction

This chapter provides the background context of the higher education (HE) system in Myanmar, including the recent education reform processes amongst the higher education institutions (HEIs) and the national picture concerning views about the environment and sustainability. In setting out the HE system in Myanmar, this chapter first considers the socio-political and environmental context (section 2.2) in the three major political transitional periods:

- Military regime during 1988-2010
- Quasi-democratic governments (2011-2020) and
- ongoing Military Coup (2021-2023).

It outlines some challenges and concerns of the recent educational reform process (section 2.3) and the nature of HEIs from this history (section 2.4). The chapter then covers lack of ESD integration and holistic reconstruction in the HE reform process by the government and introduced a few initiatives of international projects (section 2.5). It concludes with a description of the policy frameworks for Myanmar Sustainable Development Plan (MSDP) and National Education Strategic Plan (NESP) which were developed during the recent governments (2010-2020) but were lacking strategic link of higher education and sustainable development (section 2.6). Then, the chapter identifies the gaps to be considered for the HEIs’ contribution to address the sustainability issues in Myanmar.

2.2 Socio-political context of Myanmar

Myanmar, previously known as ‘Burma’, gained its independence from the British Empire in 1948 and encountered a chaotic political situation and civil unrest for 14 years in the post-colonial period. Then it was ruled by the military junta for 48 years: 26 years (1962 – 1988) under the Burma Socialist Programme Party and 22 years (1988 – 2010) under the State Peace and Development Council. It became a member state of the Association of Southeast Asian Nations (ASEAN) in 1997. A new political system, known
as a quasi-democratic system, began in 2010 through the 2008 constitution. The Union Solidarity and Development Party (USDP), backed by the military, won the first election in 2010 as the first term for a semi-civilian government in Myanmar and initiated some educational reforms. Then, the National League for Democracy (NLD), chaired by Aung San Suu Kyi, won the second term’s election in 2015 and escalated the education reform process.

The subsequent election was won in a landslide by the NLD party in November 2020. However, on February 1, 2021, the military seized power from the civilian government by arresting top politicians, including Aung San Suu Kyi. Most of the people of Myanmar, including many university teachers and students, have been rejecting the coup through informal protests and the more organised Civil Disobedience Movement (CDM) since then. As the military coup used both army and police forces to crack down on the protests by shooting, arresting, and jailing them, the anti-coup movement turned into a resistance movement. Thus, sustainable development and education reform processes have been disrupted since early 2021.

2.2.1 Political and inter-ethnic issues

Socially, Myanmar is rich in cultures with a diversity of ethnicity, languages, traditions, faiths, and spirituality. This diversity brings both strengths and challenges. Amongst its population of approximately 50 million, according to the 2014 Census (Department of Population, 2018), Bamar-Buddhists are the majority group in this population. However, the ethnic and religious data of the 2019 census has not been released yet due to the concern for high conflict. The inter-ethnic tension and disputes amongst the ethnic groups, particularly the minority groups’ grievance over the unfair treatment by the majority Burman group (International Crisis Group, 2020), remain the most prolonged issue in the country since the post-colonial period.

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12 25% of the parliamentary seats were appointed by the Chief Commander of Tatmadaw (Myanmar Military) by the 2008 Constitution.

13 The term ‘ethnicity’ is still controversial and common understanding is needed because the term “Taing-Yinn-Thar” in the Myanmar language is difficult to translate into the English word ‘race’ or ‘ethnicity’ (Cheesman, 2017; International Crisis Group, 2020).

14 Note that an estimated population of 1,206,353 people were not covered in some conflict prone areas such as Rakhine, Kachin and Kayin (Department of Population, 2018).
These issues were sparked during the post-colonial political crisis because a group of authoritarians (majority Burman) controlled the power after assassinating General Aung San, who committed at the Panglong Conference to establish a federal union of Burma after gaining independence from the British. The dominance and politicisation of ethnoreligious drivers in building the nation-state during the revolutionary government’s time created social disintegration and hatred amongst the ethnic minority groups upon the majority Bamar-Buddhists. The anti-colonial movement in the British colonial period also left a negative side effect reinforcing this social disintegration and hatred between ethnic minority groups and the majority Bamar-Buddhists. Decades of ethnic conflict fuelled by U Ne Win’s Burmanisation and forced assimilation programmes have led to the formation of ethnic armed groups (Lall, 2016) and fragmentation of social connections amongst the ethnic groups. The civil wars between the military and Ethnic Armed Organizations (EAO) have deprived hundreds of thousands of people of homes and villages, resulting in suffering as refugees in the border areas, lacking all access to public services, and having lost their human rights and dignity. That situation fuelled hatred amongst the suffering ethnic minority groups upon the majority Bamar group. Consequently, any trust-building or reconciliation process is challenging at both national and community levels. The decades-long ethnic-armed resistance to the Tat-ma-daw (Burman-dominated Military) has been added to and escalated by the proliferation of militia groups, mostly called People’s Defence Forces (PDF), emerging from the Spring Revolution after the coup in 2021.

2.2.2 Environmental issues

Myanmar has diverse geographic features and rich aquatic resources in both inland and coastal zones. However, there have been reports of overfishing activities leading to lower biomass (Krakstad, Krafft and Alvheim, 2015). Deforestation is an issue; there was a continual increase in forest loss from 2001 to 2017, resulting in a total forest loss

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15 ‘Burman’ was used by English speaking communities, and it is locally pronounced as ‘Bamar’.
16 A conference in Panglong attended by the governors of Burma and representative leaders from Shan, Kachin, and Chin hills in February 1947.
17 The Union Revolutionary Council, chaired by General Ne Win, became the first coup d’état after removing the Anti-Fascist People’s Freedom League (AFPFL) government, headed by U Nu in 1962.
18 An underlying policy used by the military coup in Myanmar (called Burma in the past) that involves open discrimination against minority ethnic nationality groups in the aspect of their cultures, education, languages, and religions as well as silencing of alternative historical narratives (Burma Link, no date).
of approximately 43 thousand square kilometres (Biswas et al., 2021). According to the National Commission for Environmental Affairs (NCEA) and United Nations Environment Programme (UNEP) (2008), cited in Raitzer, Samson, & Nam (2015), Myanmar has been encountering serious environmental problems such as rapid deforestation, biodiversity loss, and increased pollution. On the other hand, natural resources still need to be managed in some areas, even though environmental management and related regulations are relatively weak (Raitzer, Samson and Nam, 2015). Holding the rank of 164 out of 178 countries in the Environmental Performance Index (EPI) in 2014 (Raitzer, Samson and Nam, 2015), Myanmar needs better environmental policy and regulations, as well as human resources devoted to environmental management and sustainable development, to balance the country’s urgent requirement for economic development and ecosystem vitality. This is reflected in a quote from U Ohn Win, a former union minister of Natural Resources and Environmental Conservation of Myanmar:

‘Although extractive industries contributed substantially to the rapid growth of the economy in recent years, we have been facing many challenges concerning social and environmental issues. In this regard, strong institutions, clear environmental regulations and governance, law enforcement and social safeguards are undoubtedly required, along with social, economic, and environmental factors to achieve sustainable development.’ (Oxford Business Group, no date).

The corrupted governance under the military did not make sound natural resources management and environmental protection. Moreover, the military used their power and legal status as a government to maximize their benefit from exploitation of natural resources. The country has been listed in the LDCs and the overall country’s development, including education sector, was underdeveloped, although there were a lot of foreign investments over variety of natural resources. Indeed, Myanmar has been suffering from a ‘development trap’ and a ‘resource curse’ as remarked by Pick and Htwe Thein (2010, p. 270). Whilst the country needed to develop related policies and human resources in environmental management, there has been only a few universities offering environmental related degree programmes recently. It is, therefore, necessary to understand the whole country’s context before identifying what sustainable development means to Myanmar and how education should contribute to desirable sustainable future due to these complications.
This section describes some progress in planning for sustainable development in Myanmar during the political transition from a military dictatorship into a quasi-democratic system between March 2011 and January 2021. The first semi-civilian government (2011-2015) led by President U Thein Sein launched a series of liberal reforms which:

‘created the impression that the country, in undeniably difficult social and economic circumstances, was undergoing a successful process of fundamental political reform’ (David and Holliday, 2018, p. 1).

However, being a country of traumatic tension and civil unrest, peacebuilding and reconciliation between all ethnic-armed organisations and the Myanmar military was the priority needed to undertake further development and renovation in different sectors. Kyi and Walton (2016) highlighted in their editorial notes that:

‘decades of military repression, ethnic conflicts, political exclusion, abuse of natural resources and the environment, neglect of health, education, and infrastructure, and mismanagement of the economy, have left serious challenges for the new government’ (p. 2).

In 2012, the Framework of Economic and Social Reform (FESR) was developed to identify the key parameters of the reform process and outline the policy priorities for the country to become a ‘modern, developed democratic Myanmar in 2030’ (Government of Myanmar, 2013, p. 1). At the same time, Myanmar started to welcome international investments to become a more market-oriented economy.

In 2018, the NLD-led Government set up the ‘Myanmar Sustainable Development Plan: 2018-2030 (MSDP)’, which was strategically framed following the economic policy of the Union of Myanmar initiated in July 2016. MSDP, which was heavily informed by the UN’s SDGs, was considered as a road map for the country’s sustainable development. It was envisioned:

‘to establish an economic framework that supports national reconciliation, based on the just balancing of sustainable natural resource mobilisation and allocation across the States and Regions’ (Ministry of Planning and Finance, 2018, p. 7).

Moreover, its strategic components were framed in three main pillars:
• Peace and Stability
• Prosperity and Partnership
• People and Planet.

The MSDP provides a reference point for ESD conceptualisation in HE despite their needing to be more guidance on the roles of HEIs and expected outcomes from higher education as a contribution towards sustainability.

In brief, transitioning from a military regime to a quasi-democratic civilian government system (March 2011-January 2021) was a very short period to prepare the foundational steps of the reform processes in the MSDP. On the other hand, the country had achieved some progress in reforming its path towards long-term sustainable development, such as increased access to mobile phones and internet; learning opportunities for young people; international aid; cooperation with various development projects (Sampson, Farrelly and Holliday, 2018), e.g., the TIDE project (introduced in Chapter 1) and the CHINLONE\(^{19}\) project; increased foreign investment and economic growth (Selth, 2020); and the development of the MSDP and educational reforms.

2.2.4 Potential role of education for social transformation and development

As part of Myanmar’s transition from the predominance of military rule, education was and is expected to play an important role in developing a more democratic and collaborative culture and encouraging economic development. The Organisation for Economic Co-operation and Development (OECD) recommended that:

‘Training people in higher-level skills can help countries move up the value chain into producing more sophisticated goods and services and avoid becoming stuck in a low-skills equilibrium’ (2014, p. 116).

Furthermore, the country specifically needs more human resources with knowledge and skills in environmental management and environmental impact assessment (EIA) to help address the future demands of natural resource sectors and industrialisation, given how

\(^{19}\) CHINLONE (Connecting Higher Education Institutions for a New Leadership on National Education) project, financed by the European Union, Erasmus+ programme Key Action 2 Capacity Building in Higher Education. The consortium, under the supervision of the University of Bologna, facilitated to work amongst five HEIs and Department of HE from Myanmar and three HEIs and one University Association from the EU (CHINLONE, 2018).
these have been and will be important for economic development. But as noted earlier, environmental education was only recently added to the curricula of Basic Education in Myanmar and only a few degree programmes related to the environment were being offered by universities. Improving this picture was one of the expectations of the TIDE project supporting the capacity development of Myanmar HEIs to prepare the graduates with knowledge and skills for environmental and sustainable development (Lane, 2017a).

2.3 Recent education reforms in Myanmar

The lack of in-country vision, prolonged isolation and sanctions from international communities resulted in a slow and steady decay in Myanmar’s state education system (Howson and Lall, 2020). Despite the high rate of adult literacy, 89.5% in the 2014 census (Department of Population, 2018), many suggestions were made to improve the education sector in Myanmar (Comprehensive Education Sector Review, 2013). The National Education Strategic Plan: 2016-21 (NESP) provided comprehensive strategic guidelines for almost all sectors of education reform promoting quality education, which includes teaching, assessment and curriculum development, accessibility to education, development of alternative education (accommodating the needs of different groups of learners with restricted access to formal education), technical and vocational skills development and higher education sector development. The goal was set as follows:

‘Improved teaching and learning, vocational education and training, research and innovation leading to measurable improvements in student achievement in all schools and educational institutions’ (Ministry of Education, 2016).

Critics of NESP highlight the poor connection between education issues and the politics of the peace process (Lall, 2016) and the lack of conflict-sensitive curriculum reform and strategies for parallel education systems (Zaw, 2017). Both Lall (2016) and Zaw (2017) recommended considering peace education as part of the peace-building process by integrating it into the curriculum. As noted earlier, education is seen to be important in cultivating a non-violence culture and democratic practices for transforming Myanmar due to the prolonged oppressive leadership for several decades. For instance, the

\[\text{\textsuperscript{20}}\text{ TIDE's achievements can be studied in the sphir_final_report.pdf, (see Page 27-29) (FCDO, 2022)}\]
dominance of the teacher-centred approach is visible in the leadership culture of schools and universities. Although education alone cannot address all these issues, it can play an important role in developing social skills (January, Caesy and Paulson, 2011), contributing to peacebuilding and reconciliation processes (Davies, 2017; Taka, 2020), and it is impossible to reach a sustainable future without ESD (UNESCO, no date).

2.4 Higher Education Institutions (HEIs) in Myanmar

In general, HEIs in Myanmar are commonly known as universities or colleges. Normally, the matriculation examination and university admission process are centrally managed and tightly controlled by the Department of Higher Education (DHE) based on students’ marks (scores) in the matriculation examination. Plans to revise the admission procedures have been curtailed due to the military coup. Only 11% of students who completed BE progressed to HE in Myanmar as reported by OECD (2014) with considerable social inequalities in access to higher education (Heslop, 2019), although NESP aimed to expand access to higher education.

Regarding the learning mode, HEIs can be distinguished as 1) full-time/face-to-face universities and 2) distance universities. Yangon University of Distance Education (YUDE) and Mandalay University of Distance Education (MUDE) were the two major universities, accommodating the largest proportion of HE students (British Council, 2013b), counting for about 50% of overall HE students according to 2010 statistics (JICA, 2013). There were 411,164 students enrolled in 2015 for distance education (Ministry of Education, 2016) and these numbers remained similar in 2019, according to Gregson, Lane, and Foster (2019). Moreover, they claimed that distance education in Myanmar had been criticised for poor quality and lack of relevance to the job market demand despite the largest number of students. Therefore, one of the aims of the TIDE project, as a part of higher education reform process, was to improve distance education by upgrading the capacity of staff members, promoting online learning technologies and open education resources, integrating environmental and sustainable development concepts into the existing curricula, and facilitating the transformation of leadership and the policy reform process (Gregson, Lane, and Foster, 2019).

Another significant feature of HEIs in Myanmar is the historic multi-ministry administration structure, with some specialist universities under the administration of other ministries (see Table 2.1). Having declared the University Education Law of 1964, Arts and Science Universities and Professional Institutes were separately established and administered by the Office of Universities Administration, which became the
‘Department of Higher Education’ (DHE) in 1983, under the Ministry of Education (MoE) (Khine, 2000). Thus, there was a lack of autonomy for these Universities and Colleges (Khine, 2000; Hayden and Martin, 2013). This situation still held years later as both briefing reports of IIE (2013) and Ulla (2017) shared a common critique on this highly centralised education system with no autonomy for the universities in Myanmar.

Table 2.1. Corrected Number of HEIs under the ministries’ administration in Myanmar

<table>
<thead>
<tr>
<th>No.</th>
<th>Ministry</th>
<th>HEIs</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ministry of Education</td>
<td>Art and Science Universities</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Universities of Economics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Universities of Distance Education*</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Universities of Foreign Languages</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Universities and Colleges of Education</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Technological Universities</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Universities of Computer Studies</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td><strong>Total universities under the Ministry of Education</strong></td>
<td></td>
<td><strong>134</strong></td>
</tr>
<tr>
<td>2</td>
<td>Ministry of Agriculture, Livestock, and Irrigation</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Ministry of Environmental Conservational and Forestry</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Ministry of Defense</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>Ministry of Religious Affairs and Culture</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>Ministry of Border Affairs</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Ministry of Transports</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Ministry of Health and Sports</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td></td>
<td><strong>Total HEIs in Myanmar</strong></td>
<td></td>
<td><strong>171</strong></td>
</tr>
</tbody>
</table>

Source: From CHILONE report-2018 (data provided by DHE, Myanmar), but the correction was made in total due to the changes in the Ministry of Agriculture, Livestock, and Irrigation, as four instead of seven according to the MoALI website (accessed in 2020), and the total number mentioned in NESP (2016-2021).

*University of Distance Education is counted for Yangon and Mandalay as they were still in operation, although ‘one campus two systems’ was introduced to other Arts and Science Universities.
However, there needs to be more cooperation amongst these ministries in managing their universities (Comprehensive Education Sector Review, 2013). Dr Thein Lwin, a reformist education expert, recommended putting all these institutions (universities, vocational education, basic education, early childhood education, etc.) only under the MoE’s administration (British Council, 2013b). However, this was and is still a controversial issue to debate amongst the HEIs as they have been under the multi-ministry administration system for a long time.

2.5 Lack of ESD integration and holistic reconstructions in the HE reform during 2010-2020

The term ‘transformation’ is more appropriate for the HEIs in the planned educational reform process context. It implies a wider scale, longer term, and even ongoing and evolving sense of the development of policies and practices across the whole higher education sector. However, the word ‘reform’ is commonly used in Myanmar.

Although the 2013 CESR report gave an overall picture of challenges and suggestions for higher education in Myanmar, the higher education sector was not widely mentioned in both NESP (2016-2021) and MSDP (2018-2030). Nevertheless, the role of higher education is acknowledged as an important sector for the country’s socio-economic development in NESP and the commitment of the MoE on the transformational shift of HE to be achieved by 2021 was stated as follows:

*‘Students have equitable access to a world-class higher education system leading to better opportunities for employment and significant contributions to a knowledge-based economy’* (Ministry of Education, 2016, p. 189).

As an initial step of higher education reform, a project to renovate and upgrade the University of Yangon, was began in 2012. However, the project put more emphasis on the physical infrastructure and not enough on ideological, pedagogical, and psychological reconstruction despite its claimed necessity and importance (Esson and Wang, 2018). Some critiques of the pilot initiatives were based on the inequality of

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21 He led the National Network for Education Reform (NNER) and engaged in the NLD’s Education Committee.
provision, especially in remote areas where ethnic minorities cannot access education effectively. For instance, Sandan strongly argued that:

‘reinvigorating Yangon University without addressing some of the social issues affecting wider relations between communities or recognising that higher education systems can engage proactively to bring change in those relations will result in limited impact on these discourses of marginalisation and discrimination’ (2014, p. 70).

In fact, a good balance between central control and autonomy is significantly required for HE reform process in Myanmar. Although the University Education Law (1973) implemented by the Revolutionary Council was amended thrice – in 1983, 1989 and 1998 - there still was a centralised administration structure to control universities’ activities, including forcing to teach about Myanmar’s socialist philosophy. A feature of centralisation is that all staff recruitment processes, research collaboration, schedules, collaboration with different stakeholders, and even the campus activities were strictly monitored and controlled by the higher department. Equally, all the curriculum programmes needed approvals from the National Curriculum Committee (NCC) and official permissions from the Ministry or the DHE. Therefore, Dr Mya Oo (a former Secretary of Myanmar’s Education Development Committee) acknowledged the challenges of founding autonomous universities and overturning the centralised system (Oo, 2013).

NESP (2016-2021) expected HEIs to develop their own University Charters and University Councils and practice autonomy in the future. Before that, there would be some processes like capacity building for leadership and management bodies of HEIs and the establishment of a National Institute for Higher Education Development (NIHED) and a Higher Education Quality Assurance Agency (HEQAA) as independent institutions (Ministry of Education, 2016). The National Education Law (NEL) was issued in 2014 and amended in 2015 as a reform process; however, it did not explicitly cover the role and authority of HEIs and contradicts NESP’s strategic outcomes, which had not yet been completed when the military seized power again in 2021.

According to OECD (2014), the education system of Myanmar needs to prepare graduates with the skills required by the labour market. Dr Thein Lwin also recommended focusing on the individual’s academic performance and research-based learning rather than the rote learning or memorisation approaches that have historically characterised education in Myanmar (British Council, 2013b). Whilst NESP mentions the quality of education, accessibility, and relevancy in general terms, it does not talk
about graduate attributes or generic core competencies that are important for specific disciplines or ESD that can contribute to employment or citizenship.

The needs to improve in teaching content and methods are also key issues Myanmar HEIs face (Lall, 2016) because rote learning, locally named ‘parrot learning’, is commonly critiqued (Comprehensive Education Sector Review, 2013; IIE, 2013). A reformed system of teaching, learning and assessment was suggested by the findings of Comprehensive Education Sector Review (2013), which also recommended upscaling the quality of graduates’ learning and skills and the development of university teachers’ professional skills and capacity. Teacher-centred approaches dominate the learning system, and exam-oriented teaching is mainly practised due to the lack of formal training provisions in universities reported by Comprehensive Education Sector Review (2013). Thus, the argument for required changes in teaching methods and learning approaches at Myanmar HEIs is supported by Hayden and Martin (2013). Although recent initiatives for teachers’ capacity-building programmes had some positive results, e.g., enthusiasm from teachers to explore and apply new styles of teaching and assessment, Hayden and Martin (2013) found that teachers’ challenges of applying new methods learnt in their professional development programmes and tendency to shift back again to their old ones once they were back to their jobs.

Limited competencies and opportunities for research are other key challenges for Myanmar HEIs. In addition, lack of research freedom and dominance of autocratic administration discourage partnership projects with international institutions, hindering their research capacity development. Regarding research competency and collaborative engagement, Myanmar HEIs are lagging far behind those in the ASEAN countries and ‘the budget for research activities and institutions remains unchanged’ despite the gradual increase in the educational budget since 2010 (Lee et al., 2020).

Additionally, the lack of quality assurance systems for higher education is still challenging for Myanmar HEIs and there have only been a few developments in this area (Hayden and Martin, 2013) for instance five partner universities in the CHINLONE project had developed a list of graduate attributes and a competency framework for their specific accreditation system as part of internal quality assurance processes.

These issues show that both physical infrastructure and human resources are the significant needs in Myanmar HEIs to provide a quality education as well as to integrate ESD. Moreover, what is to be taught (curricula) in the higher education should be reconsidered if ESD is to be integrated in Myanmar HEIs based on the socio-political context discussed above. The context of higher education in Myanmar also reveals the
needs of reconstruction amongst HEIs to accommodate ESD integration in different aspects. As previously discussed, there is no explicit national drive to integrate ESD in higher education in Myanmar. The role of HEIs in the MSDP described in its study number 4.1.7 is mentioned to ‘improve the quality of and access to higher education through improved teacher training and academic administration’ (Ministry of Planning and Finance, 2018, p. 43). Nevertheless, it does not clearly link to the role of HEIs in preparing the graduates for the sustainable development of Myanmar. Thus, both MSDP and NESP do not strategically display the role of HEIs to address the sustainability related issues discussed in the socio-political context of Myanmar (see 2.2). In addition, there is a lack of evidence on how ESD is viewed in Myanmar. This meant that a review of how ESD is regarded globally is needed and is covered in Chapter 3, as well as a better initial picture of ESD in Myanmar is required and was done through an in-country scoping study reported in Chapter 4.

2.6 Chapter Summary

This chapter begins with an overview of Myanmar’s socio-political, environmental circumstances, sustainable development planning, and the potential role of education for social transformation and development. Despite the country’s abundant natural resources and cultural diversity, Myanmar has grappled with many issues, including military coups, inter-ethnic conflicts, environmental degradation, poor management of natural resources, civil wars, civil unrest, and a lack of human resources and quality education. Prolonged isolation and international sanctions have further hampered the development of Myanmar’s education system, placing it far behind even other ASEAN countries.

The chapter then provides a brief history of recent education reform alongside the political reform and some progress and gaps through national strategic plans for sustainable development and education, such as MSDP and NESP, during the semi-democratic system from 2010 to 2020. It also extensively discusses the context of higher education in Myanmar and particularly their challenges in the centralised administrative structures and systems. Then, the reform process for higher education was explained acknowledging some positive developments related to the formulation and practical implementation of NESP (2016-2021) and MSDP (2018-2030), which cover the HE sector. These plans do not adequately address the conceptualisation and strategic implementation of ESD in Myanmar’s HEIs although there were some progresses in international cooperation projects, such as TIDE and CHINLONE, contributed to
capacity building in HEIs and fostered collaboration amongst universities, CSOs, and NGOs in ESD-related activities.

In brief, the chapter laid out the context of Myanmar’s socio-political and environmental issues as well as the landscape of higher education reform recently commenced with progress and gaps. Moreover, the issues in this chapter highlighted that there is a need in ESD conceptualisation for Myanmar HEIs and necessary changes to be made to integrate ESD and ensure the development of graduate attributes for the country’s sustainable development.

With the country context explained, the next chapter will review the broader literature on ESD, exploring its history, concepts, and potential models relevant to integrating ESD into the reconstruction of Myanmar’s higher education sector.
Chapter 3 Education for Sustainable Development and the Reconstruction of Higher Education Institutions: Global and Local Perspectives

3.1 Introduction

Chapter 2 laid out the socio-political context of Myanmar and the nature of its education system, particularly the landscape of public higher education institutions (HEIs) in terms of their administrative systems, their challenges (including the military coup in February 2021), and their potential roles in contributing to the country's sustainable future. In addition, it noted that Education for Sustainable Development (ESD) is still new to Myanmar HEIs and has not yet been part of the recent education reform process, except through the development of the National Education Strategic Plan (NESP) and Myanmar Sustainable Development Plan (MSDP). Both NESP and MSDP aimed to contribute to the country's sustainable development and upgrade the education provision although they were not strategically linked to ESD integration particularly in the HEIs. Due to a paucity of published literature on ESD in Myanmar HEIs, it is necessary to review the existing literature regarding the international context of ESD concepts and related activities, as this helps to shape, inform, and reflect the conceptual framework and scope of this doctoral research.

To frame the scope and justify the purpose of this study, three research questions (RQ) were formulated based on this literature review and an in-country scoping study (see Chapter 4):

- **RQ (1): How might ESD be conceptualised in the Myanmar HEIs' context?**
- **RQ (2): What are the graduate attributes to be expected from integrating this conception of ESD in Myanmar HEIs?**
- **RQ (3): What transformations in Myanmar HEIs' educational policy and practices are needed to develop these graduate attributes?**

This chapter reviews the literature to add to this local context of ESD through the following key aspects:

- Section 3.2 investigates the global evolution of environmental and sustainable development by exploring the historical progression of sustainable development (SD) and the inception of ESD within international agreements.
• Section 3.3 encompasses international and Southeast Asian regional contexts. This section examines the concepts associated with ESD, the engagement of HEIs, and UNESCO’s leadership in promoting ESD.
• Section 3.4 presents a reasoned argument for the contextualisation of ESD, highlighting its significance within the localised educational context.
• Section 3.5 underscores the importance of conceptualising ESD within the specific context of Myanmar.
• Section 3.6 explores the broader concepts of graduate attributes and further narrows the focus to graduate attributes associated with ESD.
• Sections 3.7 and 3.8 discuss the various models employed for ESD integration and educational reconstruction which can lead to HEIs’ transformation for developing desirable ESD graduate attributes.
• Section 3.9 explains how the research questions were formulated and justified.
• Section 3.10 summarises the key points covered within the chapter.

Through these components, the chapter highlights the local perspective by assimilating international insights and theories within the unique framework of Myanmar’s higher education landscape.

3.2 Emergence and Progression of ESD on the Global Stage

3.2.1 Sustainable Development or Sustainability

This section aims to provide an overview of different understandings of the terms ‘sustainability’ and ‘sustainable development’ – history, meanings, and concepts behind them and how they have evolved. This is necessary to understand how ESD (and Education for Sustainability) can be framed and implemented in HEIs and why a particular term is used in this thesis. Indeed, scholars and development practitioners have had a diverse range of discussions about sustainability and sustainable development. According to a commonly used definition appeared in the report by Brundtland et al. (1987), sustainable development is the development that ‘meets the needs of the present without compromising the ability of future generations to meet their own needs’ (p. 24). Despite the popularity of the Brundtland definition, Justice and Sandra (2019) have argued that the definition and meaning of sustainable development is still an unresolved question for many people.

Sustainability, according to Gray (2010), can be seen as ‘a state, a way of being’ in which business or development interventions are justified by social and ecological
resilience for justice (p. 57). Similarly, Moore (2005) claims it as ‘a concept, a goal, and a strategy’ (2005, p. 32). Gray (2010) argues that there is no single state to be named as sustainability and there can be different ways and solutions to achieve it. Thus, a sustainability approach might be one way of addressing many of the current global challenges of economic gaps, inequitable resource distribution, climate emergency, serious pandemic health risks, environmental pollution, and social injustice issues. Both views have become commonplace beyond academic discourse, being attractive to various groups and sectors of socio-economic and political life as they adjust to growing environmental concerns.

Moreover, sustainable development and sustainability are often used interchangeably to mean the same thing, yet they have different origins. Authors such as Du Pisani (2006), Schmithusen (2013), and Barfod and Daugbjerg (2020) claim that ‘sustainability’ was used for the first time by Hans Carl von Carlowitz, a German forestry author, in 1713. It was rooted in sustainable forestry management in which Carlowitz used the German term ‘Nachhaltigkeit’ (Barfod and Daugbjerg, 2020, p. 149) (which translates as sustainability). Sustainable development emerged from the rising concern about environmental degradation due to human activities in the name of development (Du Pisani, 2006) and to prevent the risk of limiting future generations’ access to ecosystem services22 or natural resources (Glavič and Lukman, 2007).

While sustainable development was rooted in the concept of development interventions in environmental management as noted previously (Du Pisani, 2006; Glavič and Lukman, 2007), the word ‘development’ itself is contested and can be interpreted from diverse professional or disciplinary fields and from different socio-economic perspectives (Ufford, Giri and Mosse, 2003; Chandler, 2013; Esteva, 2018). Chandler (2013) critiqued Western countries’ dominance over others in relation to community and human resource development. Following the lens of morality, ethics, and responsibility used by Ufford, Giri and Mosse (2003) in examining various development interventions, Esteva (2018) saw international aid programmes, particularly from the powerful Western countries in the post-war period, as a form of saviourism and a ‘colonising emblem’ (p. 22).

22 The benefits provided by the ecosystems contributing to human beings for their lives, e.g., food, water, climate regulation, and non-material benefits such as recreation or spiritual believes as adopted by the UK National Ecosystem Assessment <http://uknea.unep-wcmc.org/EcosystemAssessmentConcepts/EcosystemServices/tabid/103/Default.aspx>
This highlights a tension between the different perspectives of Western and Asian nations, amongst others, in looking at or defining the meaning of development if the indicators or parameters are to be based on income, living standards, possession of resources, or acquired knowledge and skills.

Whilst there are international statements on these sustainable development concepts through the United Nations (UN) and other international bodies, it is also to be expected that they will be influenced and shaped by differing cultural, political, institutional, and religious (spiritual) ideologies and people’s experiences in a particular location. Landorf, Doscher and Rocco (2008) stated that there were over three hundred definitions on SD and ESD found by Debson in 1996 ‘ranging from equating it with environmentalism to basing implementation upon the overthrow of existing social, political, and economic structures’ (p. 222).

While this research primarily uses the terms ESD and Sustainable Development (SD), sustainable development and the desirable sustainable future for Myanmar were used interchangeably during data collection. The purpose was to be more understandable rather than using only SD or Sustainability which is more likely to elicit the participants’ thinking, i.e., to create space to freely express attributes of a desirable society, and not to let the definitions in the literature limit their ideas. This approach to data collection was more comprehensive in the local context particularly since the research did not intend to limit the definition of SD by using a single definition or discourse because SD itself has many meanings. More importantly, the study aims to explore and understand how research participants (Myanmar nationals) understand and express the optimum conditions for sustainable future.

Although any particular definition of sustainable development was not introduced to the research participants during research data collection in order to allow them to express their views, this research embrace the definition of sustainable development in the ‘Our Common Future’ report (Brundtland et al., 1987), acknowledge concerns about environmental issues from human’s activities and limitation of access to ecosystem service for both current and future generations as highlighted by Du Pisani (2006) and Glavič and Lukman (2007), and agrees with van Ufford, Giri and Mosse (2003) and Esteva (2018) to be mindful about the influence of Western’s development model over the developing countries. In brief, sustainable development for Myanmar, from this research’s view, needs to be locally relevant, socio-economically and politically compatible, able to fulfil the country’s needs, friendly with local environment and climate, and harmonious with cultural values and belief systems of Myanmar. The literature
reviewed in this section and the knowledge of country’s context discussed in Chapter 2 informed the qualitative analysis and these components can be seen in the sub-themes of desirable sustainable future for Myanmar in Chapter 6.

3.2.2 Origins of ESD in International Agreements

While the academic discourse notes the variety of terms and meanings around SD, international political discourse has tended to be more focussed. The Brundtland report (Brundtland et al., 1987) was the first political milestone for defining sustainable development, raising worldwide concerns about the impact of human activities, and inspiring a series of international conferences and meetings. Then, the first UN Conference on Sustainable Development in Rio de Janeiro (Brazil) in 1992 agreed to ‘Agenda 21’ as the first step of international commitments on sustainable development from a global partnership.

In 2000, world leaders made a Millennium Declaration as a global partnership to implement the ‘Millennium Development Goals (MDGs)’, which included eight targeted goals with a deadline of 2015. The MDGs generally targeted developing countries and are claimed to have saved millions of lives and improved livelihoods for many people through global, regional, national, and local efforts (United Nations, 2015b). MDG 2 focused on accessibility and completion of primary education in all countries but did not mention the role of higher education and other education levels. MDG 7, targeting environmental sustainability, mainly focused on addressing deforestation, greenhouse gas emissions, water sanitation, and pollution issues. There was also no explicit link between the environmental sustainability goal and educational institutions’ involvement in MDGs. Nevertheless, the ‘Experiences and evidence from the efforts to achieve the MDGs’ through this global partnership on sustainable development provided insights for the next 15-year strategic plan of Sustainable Development Goals (SDGs) for all as noted by Mr. Ban Ki-Moon, Secretary-General of UN, in his foreword to the final MDG report (United Nations, 2015b, p. 3).

The role of education in SD has been there from the beginning. Chapter 36 of Agenda 21, promoting education, public awareness, and training were the foundational agreements in the Decade of Education for Sustainable Development (DESD) (2005-2014) by the resolution 57/254 in 2002 (UNESCO, 2009). The Action plan 36.1 of Chapter 36, in Agenda 21, clearly states ‘Education, raising of public awareness and training are linked to virtually all areas in Agenda 21’ (United Nations, 1992, p. 320) while 36.2 also recommends that education programmes should be oriented towards
sustainable development. It also recognises all types of education covering both formal and non-formal ones, and Action plan 36.3 states:

‘education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues’ (United Nations, 1992, p. 320).

At the UN General Assembly in 2015, all member states adopted the 17 Sustainable Development Goals (SDGs) to extend the global partnership for the next set of 15-year targets and the 2030 Agenda for Sustainable Development was launched on 1st January 2016. Out of 17 SDGs, the role of education is set out in SDG 4 as follows:


There are different targets under each SDG with specific indicators. Amongst ten different targets under SDG 4 (4.1 to 4.7+ additional 4.a, 4.b, and 4.c), sustainability specifically features in target 4.7, commonly known as Education for Sustainable Development (ESD), which states:

‘by 2030, ensure all learners acquire knowledge and skills needed to promote sustainable development, including amongst others through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and of culture’s contribution to sustainable development’ (United Nations, 2015a)

This doctoral research uses this target as the context for investigating the role of HEIs in general towards ESD, their contributions to this target through preparing graduates with relevant attributes, and more specifically what this might mean in the context of Myanmar HEIs. Echoing what Calder and Clugston (2003) claimed, the term ESD should be broader than environmental education as it should include international development, cultural diversity, social and environmental equity. At the same time, the statement of target 4.7, still left questions as to what ESD covers – particularly what graduate attributes should be expected and how it could be integrated in HEIs. However, the term ESD has been consistently used throughout the study. Moreover, this research uses SDG target 4.7 – to ensure all graduates, throughout their studies at HEIs, acquire expected knowledge, skills, and attitudes (attributes) to promote SD of the country that reflects cultural context and expectations of Myanmar nationals.
3.3 Global Engagement of HEIs in Advancing ESD

3.3.1 Overview of HEIs’ Roles for ESD

To understand how HEIs can implement ESD, it is necessary to understand what HEIs do. There have been and still are different expectations on the roles of HEIs depending on political ideologies, economic systems, and social values. Fadeeva and Mochizuki see the roles and responsibilities of HEIs to involve wider activities called ‘third mission’ in addition to its core missions of education and research (2010, p. 251). They also added that HEIs should influence policy in addition to knowledge creation and technology transfer, and they claimed that the third mission no longer means merely ‘outreach’ to society, but it calls for deeper engagement with and relevance to society.

Regarding research in higher education, Tilbury (2011) claims that sustainability research has adopted inter and multidisciplinary focuses, putting more emphasis on transforming rather than just informing and aiming at social and structural changes. Moreover, she also claims that increasingly the researcher acts like a partner rather than an expert, conducting research with the people instead of researching on the people, through a ‘partnership and outreach for sustainability’ (2011, p. 22). In this way, HEIs can potentially contribute to the development of lifelong learning, mutual respect, collaboration, awareness of climate and environmental issues for all the people involved and at all levels of decisions and activities through promoting research as a learning process.

As well as debates on the scope of third mission and research activities, there have been debates about how and to what extent higher education can prepare future leaders, workers, and citizens. As part of this agenda, the expected attributes of graduates are increasingly defined by governments, employers, professional bodies and others (Hill, Walkington and France, 2016; Khan, Malik and Janjua, 2019; Wong et al., 2022) and which become a significant driver for HEIs to prepare their graduates with these expected sets of knowledge, skills, and attitudes. Likewise, the European Commission mentioned that HEIs are the ‘focal points for shaping critical thinkers, problem solvers and doers’ (Shephard et al., 2015, p. 3), while authors like Robley, Whittle and Murdoch-Eaton (2005), Barnett (2012) and Donleavy (2012) support the idea that universities should equip their graduates with more than an in-depth knowledge of specific disciplinary content – they should also develop important employability and life skills. Other authors (Sterling, 2004; Paten et al., 2005; Tilbury, 2011; Shephard et al., 2015; Tierney, 2016; Dlouha et al., 2017; Filho et al., 2018; Gul et al., 2019; Vargas et al., 2019) support the idea of HEIs as the place where students can develop their
competencies that can contribute to society’s prosperity by addressing important social and environmental issues. So, it is important to understand what competencies graduates are expected to have and how HEIs could develop these.

Additionally, most statements on ESD merely cover the competences believed to be able to contribute to sustainability, but do not include how HEIs should instil those competencies in graduates nor how to make significant changes in the administrative and academic functions needed to support research and learning processes driven by sustainability. As noted by Singer-Brodowski, Etzkorn and von Seggern (2019) ‘one transformation path does not fit all’ (p. 1) regarding ESD integration in educational institutions in Germany, and this is also likely to be so for Myanmar’s HEIs within their particular context.

Overall, this section has shown that there are more expectations of HEI’s activities, in addition to their teaching and research, to engage in ESD implementations. HEs should teach sustainability related competencies and create learning opportunities or campus activities in which students can engage and learn. Moreover, HEIs can apply research projects to promote students’ development in ESD competencies as well extending collaboration with various stakeholders. HEIs also should engage in policy advocacy and serve as learning spaces for students and their neighbouring communities. The reviewed literature in this section and the knowledge of country’s context in Chapter 2 informed the data analysis particularly in developing sub-themes of ESD for Myanmar HEIs (to be discussed in Chapter 6): teaching, research, engaging in influencing policy, HEIs as learning hubs, and required investment in higher education.

3.3.2 HEIs’ different approaches for ESD

This section covers ESD related activities implemented by HEIs in different countries and regions. These activities not only informed the research scope but also provided ideas for potential approaches contributing to ESD in general, as well as developing desirable graduate attributes from ESD integration in HEIs.

Regardless of being conceptualised in many ways, ESD has been adopted by some HEIs and embedded into their institutional vision and curriculums as well as providing pedagogical guidance to the teachers for sustainability concepts, knowledge, and
related skills. For instance, the University of West England (UWE) Bristol UK\textsuperscript{23} embraces sustainability in their research and teaching strategies. Plymouth University UK\textsuperscript{24} embeds the three pillars of sustainability (environmental, economic, and social sustainability) into curricular themes and encourages teachers to use appropriate pedagogical approaches to encourage critical thinking, reflective learning, systems thinking, analytical skills, participatory learning, creative thinking, and collaborative learning. The Higher Education Academy (HEA)\textsuperscript{25}, a UK based institution for capacity development and research for UK HEIs, collaborated with 18 HEIs to bring an ESD focus to curricula and staff development (McCoshan and Martin, 2014). More recently, Advance HE and UK’s Quality Assurance Agency for education (QAA) have provided guidance for ESD which recommends how communities (students and staff) in UK HEIs should be actively engaged, how ESD could be integrated into the teaching, learning and assessment processes, and potential strategic approaches to develop students’ ESD related competences (QAA and Advance HE, 2021).

Moreover, the UK HE student body has been engaged in sustainability education, for instance Students Organising for Sustainability (SOS) is helping to inform the teaching and development of sustainability knowledge and skills through their student surveys\textsuperscript{26} (SOS, 2021). Their sustainability skills survey (2021-2022) reported that HEIs should promote sustainable development (88% respondents) and that it should also be incorporated into their learning courses (79% respondents) to develop related skills such as ethical issues, planning, problem solving, understanding environmental impact, etc. (SOS, no date). In general, UK HEIs and their students have done much ESD implementation (Fiselier, Longhurst and Gough, 2018).

Sustainability literacy is increasingly seen as an important attribute (Winter and Cotton, 2012; Zizka and Varga, 2021), although HEIs need to clarify what the term ‘sustainability literacy’ means to them (Sterling, 2004; Stibbe and Luna, 2009; Zizka and Varga, 2021), which is not easy with such a contested term as ‘sustainability’. El Ansari and Stibbe (2009) claimed that sustainability literacy has evolved from environmental literacy and

\textsuperscript{23} Sustainability at UWE Bristol - Our values, vision, and strategy | UWE Bristol
\textsuperscript{24} https://www.plymouth.ac.uk/students-and-family/sustainability/sustainability-education/esd
\textsuperscript{25} More about our ESD work | Advance HE (advance-he.ac.uk)
\textsuperscript{26} https://uploads.ssl.webflow.com/6008334066c47be740656954/62de805cb0d9030a96c6e88a_20220125_SOS-UK%20Sustainability%20Skills%202021-22%20-%20HE%20only%20-%20FINAL.pdf
ecological literacy, but it is commonly interpreted in terms of competencies, knowledge, skills, values, and attitudes of graduates required for sustainable development (Stibbe and Luna, 2009; Sterling, 2012). One early listing of the attributes or qualities needed for sustainability literacy was in Sterling’s (2012) ‘the Future Fit Framework’:

‘. . . resilience, resourcefulness, creativity, systemic and critical thinking, enterprise, and co-creative and caring outlook’ (p. 23).

Mochizuki and Fadeeva (2010) argue that achieving sustainability literacy is a challenging task that requires working with more ambitious educational goals for preparing students to build a society which is resilient to economic, environmental, and social shocks and to anticipate and envision different futures. Moreover, HEIs’ interests and the staff’ commitments to implement and make necessary changes in their practices might play as key drivers, too. Regarding the university teachers’ perspectives on ESD, Cotton et al. (2007), based their survey of some UK HEIs, concluded that lecturers generally had a good understanding of sustainable development and supported the idea of ESD integration across the whole institution despite uncertainty and concerns of ‘pedagogies for teaching sustainable development’ (p. 593). This informs the inclusion of university teachers in this study as they are relevant as well as important stakeholders to facilitate students’ learning while acknowledging that their teaching methods might influence the development of students’ ESD related attributes (Cotton et al., 2007).

Although some countries have not given ESD priority in their national agendas, it has been gradually gaining wider attention amongst HEIs since the Rio Earth Summit (Calder and Clugston, 2003). The Talloires Declaration (1990)27 (introduced in Chapter 1) is a significant milestone in the HEI’s ESD movement. The Talloires Declaration has a commitment for a 10-point action plan:

1) Increase Awareness of Environmentally Sustainable Development
2) Create an Institutional Culture of Sustainability
3) Educate for Environmentally Responsible Citizenship
4) Foster Environmental Literacy for All
5) Practice Institutional Ecology

27 http://ulsf.org/talloires-declaration/
6) **Involve all stakeholders**

7) **Collaborate for Interdisciplinary Approaches**

8) **Enhance capacity of Primary and Secondary Schools**

9) **Broaden Service and Outreach Nationally and Internationally**

10) **Maintain the Movement** (University Leaders for a Sustainable Future, 1990)

Whilst this action plan talks about environmentally responsible citizenship and environmental literacy, it does not specify what graduate attributes are needed to fulfil these aims.

Another significant network is the International Sustainable Campus Network (ISCN)\(^{28}\), representing 101 signatory member universities from thirty-two countries on six continents. The first three ISCN commitments call for HEI leadership to:

1) *‘Embed sustainability in all aspects of the university (governance, operations, learning, research, community)’*

2) *Create an environment that cultivates resilient, empowered, caring, and engaged students, staff, and faculty who will contribute to the health of people and places*

3) *Engage with external partners, industry, government, and civil society to disseminate knowledge, research, and best practices to benefit the communities’* (ISCN, 2018a).

Amongst other activities that HEIs have been trying to be catalytic role models, the greening universities campus movement has become popular across the world (Dave \textit{et al.}, 2014). Some examples are the China Green University Network (Tan \textit{et al.}, 2014), Green Campus Initiative\(^{29}\) in Africa (Dave \textit{et al.}, 2014), the Alliance for Sustainability Leadership in education or Environmental Associations of Universities and Colleges

\(^{28}\) [https://international-sustainable-campus-network.org/membership-overview/](https://international-sustainable-campus-network.org/membership-overview/)

\(^{29}\) [http://blogs.uct.ac.za/UCTGCI/](http://blogs.uct.ac.za/UCTGCI/)
(EAUC)\(^3\) in the UK and Ireland, the Green Campus Network\(^1\) and student-led groups such as the Sustainable Universities Network in Australia\(^2\).

### 3.3.3 HEIs' engagement with ESD in Asia Pacific region

In the Asia Pacific region, ESD is very much rooted in environmental education and widely influenced by the greening campus movement in some countries such as

- Green Campus Association (Korea),
- government’s support and national approaches to sustainability and ESD (Japan),
- universities’ policies and practices guided by local context and traditions (South Pacific islands),
- localisation and contextualisation for curriculum and campus practices (China),
- whole institution approaches to sustainability called Dark Green School Project (The Philippines), and
- policy and funding support for Sustainable Campus Programme (Taiwan). (Ryan \textit{et al.}, 2010).

Japan, one of the most pro-active countries in Asia in promoting ESD and development of higher education ‘\textit{despite the rare publication about them in international academic journals}’ (Nomura and Abe, 2008, p. 120), is significant in terms of proactiveness, prompt response and government support. Although governmental support has been achieved in Japan, India, and Taiwan to implement ESD in the higher education sector, Ryan \textit{et al.} (2010) acknowledged three key challenges:

- the lack of inter-ministerial communication and cooperation,
- the need to build sustainability progress based on the specific local context of the region and on the strength of HEIs, and
- the need to create learning opportunities in the formal curriculum by embracing sustainability in disciplinary content or inter-disciplinary learning approaches.

\footnotesize{\textsuperscript{30} https://www.eauc.org.uk/about_us
\textsuperscript{31} https://www.earthday.org/green-campus-network/
\textsuperscript{32} https://www.sustainableuninetwork.org/}
Nomura and Abe (2010) recommended that more attention should be given to the development of ESD research and Japanese HEIs should consider the ‘whole institution’ approaches (p. 127). Moreover, they reminded these HEIs to consider the continuation of the ESD programmes beyond the termination of government’s support and suggested them to find the ways to

‘encourage university executive staff responsible for mobilising and allocating resources for university management, to show strong leadership and commit to further developments in ESD’ (2010, p. 127).

Taiwan’s effort is apparently standing more on the physical, curricula and material reconstructions based on their experience of tragic earthquake disaster according to Su and Chang (2010). Regarding HEIs’ effort to facilitate the community’s engagement, Su and Chang (2010) acknowledged the proper consultations with community, non-governmental organisations (NGOs), and academics in preparation step in Taiwan experience. It is likely to have employed a participatory approach in the process. Although both Taiwan and Japan’s experiences are apparently emphasising the campus environmental management and developing explicitly designed courses and curriculums related to sustainable development, there was no comprehensive explanation of conceptual relations amongst ‘education, research, operations and outreach’ (Nomura and Abe, 2010, p. 127).

3.3.4 HEIs engagement with ESD in Southeast Asia region

ASEAN (Association of South-East Asian Network), a network of ten member states, is the leading agency in promoting environmental education and ESD in Southeast Asia. However, it is relatively late in implementing ESD and their work is rarely published in international academic journals. The 35th ASEAN Summit in Bangkok (November 2019) declared to advance their partnership to achieve the agenda 2030 for SDGs. In that Bangkok declaration, the second one, out of three key targets, focuses on SDG 4 and the sub-targeted objective 2.10 mentions learning outcomes or competences of learners as

‘active promoters of peaceful, tolerant, inclusive, secure and sustainable societies by equipping them with knowledge, behaviours, attitudes and values on global citizenship’ (ASEAN, 2019, p. 3).

Recently, ASEAN launched its ‘Roadmap on the ASEAN Higher Education Space 2025 and its Implementation Plan’ which mentions SDG 4 and target 4.b in general but there
is no explicit mention of ESD (ASEAN, 2022). The ASEAN University Network has no concrete mandate or commitment to collaborate for ESD amongst its thematic networks either.

However, there are some HEIs in this region implementing ESD in their own ways and engaging in international networks. Teachers’ Education Institutions collaborated through the South-East Asia ESD Network (SEA-ESD Network) in which universities and institutes from eight ASEAN countries, except Myanmar and Brunei, participated. Like other university networks in different regions, there is an established network in Asia called the Asian Universities Alliance (AUA) in which the University of Yangon is a member amongst fifteen members of HEIs. Amongst the AUA members, the National University of Singapore (NUS) offers over 60 modules or course related to sustainability, the University of Yangon launched a degree programme on environmental studies, and the University of Malaya is incorporating ESD in the campus management as a living lab (Liu and Kitamura, 2019).

Forming HEIs’ network for ESD in the region also revealed their interests and commitments to some extent. Based on the existing literature, most attempts of ESD implementation by HEIs in the Southeast Asia region is through offering courses or degree programmes related to sustainable development and sustainable campuses as role models to lead their local communities. Otherwise, ESD is relatively new to most of them.

3.3.5 UNESCO’s lead in approaches

While individual HEIs and networks of HEIs have been at the forefront of thinking about and implementing some form of ESD, UNESCO has been most prominent globally in promoting the need for ESD in HE. As well as UNESCO’s reports and official documents on ESD, the role of HEIs was explicitly highlighted in ‘the Draft International Implementation Scheme for the Decade of ESD (2005-2014)’. This scheme acknowledged universities as leading agencies of research, learning spaces, and preparing students with competencies to address sustainability issues, as well as being a role model for practicing sustainability values through employing ESD sensitive

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33 https://www.aunsec.org/discover-aun/thematic-networks
34 https://bangkok.unesco.org/content/southeast-asia-esd-teacher-educators-network
learning content and innovative teaching/learning methods. The report laid out seven strategies to help incorporate the responsibilities for the Decade of ESD (2005-2014):

‘Advocacy and vision-building

Consultation and ownership

Partnership and networks

Capacity-building and training

Research and innovation

Use of Information and Communication Technologies (ICTs) and


These strategies were set out as overall recommendations which could be adapted to individual contexts. A critical view of these strategies is that they are too general and not specific enough to ESD at different levels (institutional, national, and regional) even though the ‘Decade of ESD’ specifically mentioned that ESD implementation should not be ‘a stand-alone programme’ but it should be integrated at all levels of learning spaces or corners (UNESCO, 2005, p. 31).

More recently, UNESCO launched ‘Education for Sustainable Development: A Road Map (ESD for 2030)’ which identifies five key stakeholders: Government; Learners; People/ community; Educators; Youth, and set out five priority action areas:

- Advancing policy
- Transforming learning environment
- Building capacity of educators
- Empowering and mobilizing youth
- Accelerating local level actions (UNESCO, 2020).

Amongst them, the second priority action area suggests a ‘whole-institution approach’ to transform learning environments by developing a concrete action plan in collaboration with HEIs’ members and stakeholders including ‘the local community’ (UNESCO, 2020, p. 28). Priority action area three is aimed at empowering educators or teachers by building their knowledge and capacity to facilitate the learners’ transformative learning to become ‘change agents’ (UNESCO, 2020, p. 30). The main objective of this roadmap is to ‘integrate ESD and the 17 SDGs into policies, learning environments, capacity-
building of educators, the empowerment and mobilization of young people, and local level action’ (UNESCO, 2020, p. 14). Although the key stakeholders are broadly mentioned, this roadmap does not include any specific suggestions for the role of HEIs on ESD integration through the priority actions except for developing the capacity of educators and training institutions in general. The roadmap is tending to suggest that member states’ governments adopt ESD related policies or integrate ESD into the existing ones and encourage the capacity-building for the educators to facilitate transformative learning.

Having lifelong learning taking place could be a contribution to societal level SDGs but lifelong learning itself cannot be named as ESD per se. ESD is interpreted in many ways in UNESCO’s roadmap, such as a framework, a tool, a learning process, a learning environment itself, and a key enabler. At the same time, ESD is a goal or an objective. Nevertheless, the roadmap is embracing a wider scale of communities to engage in ESD implementation and reminds the higher education sector to consider transformative learning by transforming the institution.

In brief, the roadmap itself does not provide the specific conceptual framework of how a whole-institution approach could facilitate the individual learner’s personal transformation. It remains a question to be studied and researched based on the actions, experiences, and evidence (UNESCO, 2020). It is aligned with the aim of this doctoral research because the expected graduates’ attributes or competences from ESD integration will be studied through different approaches including the whole campus or institutional approach.

This literature review revealed that different authors and institutions introduced or claimed by including the UNESCO that some approaches for integrating ESD did exist. This needs to be studied intensively regarding how it could be implemented in a particular context. There can also be variations in those approaches and implementations, including what are the desired graduate outcomes and how they could or should be achieved. For example, HEIs are expected to actively engage in contributing to the sustainable development in addition to their two main tasks: teaching and research. This idea is consistent with UNESCO’s ten-year roadmap that highlights community engagement as being important. Some papers highlighted the curriculum and the campus approaches to improve the students’ learning process, while others discussed the values and practices of HEIs to foster societal level transformation. This is also aligned with the whole-institution approach which considers all aspects of HEIs’ activities. All of this literature has informed the proposed modified model (or framework)
of ESD integration, which will be discussed in 3.7, and that model has also supported the data analysis because all these elements and factors informed the qualitative analysis, especially in the phase of developing categories and naming the themes.

### 3.4 Contextualising ESD in the Southeast Asian context

While many of the core issues around ESD are similar across the world, different regions will respond it in different ways based on their local contexts. Jackson (2017), in her comparative discussions on East and West based philosophical stand points, religious beliefs, educational theories, and environmental attitudes, claimed that ‘Asian philosophies of ESD are diverse, intersecting with each other and with Western views’ (2017, p. 478). This is similar to the claim by Merrill (2018) that there is much diversity across countries in the region in terms of ‘languages, religions, and political systems’, therefore regional contexts are important (p. 7). Since the HEIs in the Asia Pacific region have been dominated and shaped by Western culture and philosophies, ‘the challenge of sustainability in the era of globalisation has required them to reconsider their roles both in local and global contexts’ (Nomura and Abe, 2011, p. 85). Then, it is necessary to explore the perspectives of ‘Asian sustainability thinking’ to allocate and practice locally relevant ESD (Jackson, 2017, p. 474) because the UN’s ESD has been influenced by Western thinkers.

Education in certain Asian countries claims to focus on teaching heart and mindfulness in addition to knowledge and skills. Chano (2012) argued that such contemplative education ‘has been largely overlooked by traditional Western-oriented liberal education’ (p. 107). Sulak Sivaraksa, a Thai social activist writer and scholar, has made many criticisms in his book ‘The Wisdom of Sustainability’ and other writings35 - particularly about capitalistic consumerism, neo-liberal development pathways, invisible traps of globalisation and structural-violence, social disintegration, dominance of monoculturalism and the lack of spiritual values and moral values/virtues in the internationalised or mainstream education (Sivaraksa, 2011). However, it can be argued that the claims made by Sivaraksa (2011) and Chano (2012) about the lack of morality in Western education are irrelevant criticisms because there might be unique styles or perspectives for looking at moral values and conduct. These two scholars’ views might

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35 Economic Aspect of Social and Environmental Violence from a Buddhist Perspective (Sivaraksa, 2002) and Global Problem-Solving (Sivaraksa, 2021)
be induced by their standing in a different cultural context or there might have been some changes in the western education during the last ten years. From the experience of a post-graduate research student in the UK, there have been some good practices and guidelines recognised as morality. For instance, ethical guidelines and procedures that all research degree students and professional researchers need to follow with due respect of research participants and the natural environment including animals. Moreover, respecting the individual’s rights and freedom, which is likely more oriented towards individualism or self-ness from an Asian perspective, are being taught and practiced. So, there could be contradictory standpoints in using the same term ‘morality’ in looking at the two different cultural contexts and it is not pragmatic to judge who is right or what is good in this case. On the other hand, looking at both cultural atmospheres and exploring inter-civilisational learnings might be helpful in seeking useful solutions, a belief that underpins this research.

Nevertheless, in exploring the contextualising of ESD in Southeast Asia and in considering the attitude or mindset in the holistic development of a learner, the writings of Sivaraksa have influenced the research reported in this thesis. Sivaraksa pointed out the unsustainable impact from the implementation of mainstream development ideas (he often used the term ‘western-type development’) and claims that Buddhist way for social justice, peace and development should be ‘the middle way’ rather than the idea of ‘the quicker the better’ or ‘the richer the better’ mindset in the capitalistic development model (Sivaraksa, 1994, p. 72). To him,

‘True development must be in harmony with the needs of people and the rhythms of the natural world. Humans are a part of the universe, not its masters. This awareness of the interrelatedness of all beings, as expressed in Buddhism, is lived in the traditions of indigenous peoples throughout the world. They do not separate the political from the personal or spiritual, but dwell in awareness of the sacredness of all life. This understanding guides their every step and every choice.’ (Sivaraksa, 2011, p. 32)

Regarding the sustainability, he claims:

‘Societies would be healthier if they advanced sustainability rather than unlimited growth, if they were places where people would help one another in hard times, where power would be shared rather than fought over, where nature would be revered rather than exploited, where spirituality and wisdom would be honoured.’ (Sivaraksa, 2011, p. 49)
He also makes a strong criticism on the western influenced mainstream education, which is more objectivity oriented, narrowly focused, and predominantly favouring competition while acknowledging some benefits from the science and technology advancement (Sivaraksa, 2011). The threefold training - wisdom (panna), ethics/morality (sila), and mental culture/concentration (samadhi) are the key principles from his Buddhist education perspective (Sivaraksa, 2005, 2011). Gaining knowledge and developing skills alone cannot be regarded as a good education or a holistic one to ensure the sustainability. He affirms:

‘Education needs to be re-envisioned to include the cultivation of wisdom, as well as learning to live in society and overcoming oppression and exploitation.’ (Sivaraksa, 2011, p. 41)

Although not academic texts, his perspectives and reminders in these writings reflect the Southeast Asian culture and which can be noticed in the research findings for Myanmar in Chapter 6 and 7.

3.5 Conceptualising ESD in the Myanmar context

However, Southeast Asia is not monocultural. Traditionally, the term ‘wellbeing’ is more familiar to Myanmar society than ‘development’. The former is more holistic and meaningful to them as it bears the sense of long lasting peaceful and healthy life while the latter is sometimes confused with modernisation or living in higher social standards which means enjoying comfortable lifestyles by consuming modern facilities and utilising advanced technologies. In the Myanmar tradition, wellbeing or prosperity in one’s life, including socio-economic development, are mainly determined by the five pillars or aspects of strengths36: physical, intellectual, moral, social, and economic.

These five strengths are similar to the Sustainable Livelihood Framework developed by DFID (Department for International Development, UK) in which five capitals were used (DFID, 1999), although in the Myanmar model of five strengths, economic strength includes one’s belongings and properties such as natural capitals or physical materials whilst these were separated as financial, physical, and natural capitals in DFID’s model. Physical capital in the DFID model refers to physical materials whilst physical strength (the word physical ‘kar-ya’ or ‘ru-pa’ in Myanmar language) in the five strengths means

36 It is called ‘Ba-La Ngar Tan’ in Myanmar Language meaning five pillars of strengths.
human body (as a healthy and fit condition). Health was incorporated into human capital in the DFID model. Morality is not considered as a capital in DFID’s model which mainly focuses on knowledge, skills, and abilities for personal income (DFID, 1999). However, the Myanmar model thinks of it as an important aspect of strength to achieve something or sustain it for the long term.

Traditionally, these five pillars of strength, considered as critical determinants for a person’s achievement or success, are commonly referred to in Myanmar education. It can be considered a ‘Myanmar lens’ for examining how these elements of personal development might equate to national level development for Myanmar. Therefore, one way to conceptualise ESD for Myanmar is that it provides ways of facilitating the students’ learning by building up all the qualities inherent in the five strengths rather than disciplinary related knowledge and skills alone.

Buddhist education is another potential lens to look at Myanmar’s ESD because Myanmar’s politics, education, and the monasteries\textsuperscript{37}, is immensely influenced by Buddhist teaching and discourses. The threefold training, as mentioned above, confidence and conduct in morality (\textit{Sila}), mental culture or spirituality (\textit{Samadhi}), and wisdom or intellectual values (\textit{Pannya}) are well known priority virtues amongst Buddhists scholars (for instance Sivaraksa, 2005, 2011; Mahathera, 2007; Sri Dhammananda, 2023). These qualities are often referred to as the core values of education amongst Buddhist communities in Myanmar.

As discussed, and argued in this section, it is necessary to understand the locally relevant and socially accepted ESD concept through exploring people’s understanding and expected features of sustainability in the Myanmar context. Hence, the first research question is to investigate how ESD might be conceptualised in the Myanmar HEIs’ context. Equally, it is necessary to decide what contextual attributes graduates should gain from an educational experience focussed on SD.

\textsuperscript{37} the community of Buddhist monks or Buddhists lay people is also known as ‘\textit{Sangha}’.
3.6 Understanding Graduate attributes in the Context of ESD

3.6.1 Understandings of Graduate Attributes (GAs)

When setting out the attributes that graduates should achieve it is important to note that there have been many ways in which these have been expressed within and across countries. HEIs use the language of Learning Outcomes in describing the students’ development. In the UK higher education context, the use of outcome-based education and learning outcomes were predominantly informed by the recommendations of The Dearing Report - 1997\(^{38}\), an output of Higher Education in the learning society (Edwards, 1996). Learning outcomes are specifically:

‘a statement of what a student is expected to know, understand and be able to do at the end of a module or qualification’ (Edwards, 1996, p. 4).

The Council for Higher Education Accreditation (CHEA)\(^{39}\), a non-profit higher education organisation based in the United States, also uses Learning Outcomes.

From a wider societal perspective, graduates’ progress can be viewed as broader than the learning outcomes which are narrowly specified with a disciplinary point of view and some scholars also talk about graduate competences or attributes. Svanstrom, Lozano and Rowe (2008) talk about learning outcomes as a set of competencies which includes knowledge, skills, and attitudes beyond a specific qualification. Indeed, employability is the predominant perspective in the literature when discussing outcomes, attributes and/or competencies (see Edwards, 1996; Amin and Amin, 2003; Hager and Holland, 2006; McCabe, 2010; Spronken-Smith et al., 2015) as graduate level recruitment has been increasing since 1985 (Rigg et al., 1990). Consequently, graduates’ competences have gained more attention amongst governments, policy makers, employers, and professional bodies, and many of them have developed a set of general and specific competencies for which HEIs are expected to prepare the graduates through their qualifications (Lane, 2017b). An early study of graduate employment in the UK reported that 52% of graduates were recruited for their general abilities in 1988 (Rigg et al., 1990).


\(^{39}\)https://www.chea.org/search?search_api_fulltext=graduate+attributes&sort_by=search_api_relevance&sort_order=DESC
Increasingly, HEIs are expected to prepare their graduates with much wider skills and attitudes for their personal lives, employability, their communities or societies, their environment and sustainability rather than a narrowly scoped set of specified disciplinary related competencies demanded by work roles (McArthur, 2011; Hill, Walkington and France, 2016; Abunasser, AlAli and Al-Qahtani, 2022). On the other hand, skills are widely used to describe these graduate attributes such as soft-skills, transferable skills, generic skills, high skills, core-skills, and 21st century skills etc. (Bridges, 1993; Tight, 2021). Whether describing specific attributes or competencies, a variety of terms are used by different authors, HEIs, and research institutions to explain them, such as cognitive and practical skills, knowledge and understanding, attitudes, values, and behaviours (see Spronken-Smith et al., 2015; Hill, Walkington and France, 2016).

In the case of New Zealand, Spronken-Smith et al. (2015) use graduate attributes as the subsets of the two main graduate profiles: Graduate Profile Programme (GPP) and Graduate Profile Institution (GPI) (see Figure 3.1). They describe the overall graduate outcomes as the composite of two profiles GPP and GPI, the former is a set of discipline related attributes (or discipline-specific attributes) and the latter as institution-wide generic attributes. It is such generic attributes, rather than discipline specific ones, that this research seeks to explore. However, the graduate profile they quoted is mentioned as a set of expected learning outcomes in the New Zealand Qualification Framework (NZQF) – 2011. The updated NZQF notes that the outcome statement must ‘describe the knowledge, skills and attributes of a graduate’ as well as the graduate profile should identify ‘the expected outcomes of a qualification’ (NZQA, 2016, p. 7). The framework needs to be more consistent in describing the graduate outcomes for a bachelor’s degree to meet a holistic set of qualities according to the principles of clear outcomes in which it is mentioned that a graduate can ‘do, be and know’ (NZQA, 2016, p. 3).

Certain institutions and professional networks have developed graduate attributes related to their fields of disciplines. For example, the International Engineering Alliance (2021) (Washington accord, Sydney accord and Dublin accord), issued an agreement of graduate attribute statements and professional competencies for three types of engineering professions: engineer graduate, engineering technologist graduate and engineering technician graduate. Their graduate attributes are claimed to be generically developed for three professional types of engineering and there are specific profiles of competences for each profession too, all well informed by the UN’s SDGs. Although the International Engineering Alliance (IEA) named them ‘generic’, it is specifically considered for engineering disciplines only. This makes it like the disciplinary...
(programme) related attributes or specific attributes under the graduate profiles programme used by Spronken-Smith et al. (2015).

![Diagram of Graduate Outcomes, Profiles, and Attributes](image)

**Figure 3.1 Definitions of graduate outcomes, profiles, and attributes adopted by Spronken-Smith et al. (2015)**

The South African higher education network has made an extensive discussion of the graduate attributes with a significant emphasis on the relation of higher education and employability (see Council on Higher Education, 2003) although the roles of HEIs are mandated more than preparing for the jobs argued by Griesel and Parker (2009). They applied Harvey and Green’s (1994) model of categorising ‘to determine the importance and employers’ satisfaction’ with the observed graduate attributes in the workplace (Griesel, 2003, p. 42). The model is based on employability and employers’ satisfaction, thus it is difficult to claim as generic graduate attributes, as their research is limited to only one type of stakeholder’s perspective.

Indeed, graduate attributes are still a relatively new topic to be discussed, contested, and studied more, although it has been increasingly used by HEIs although they can be differently viewed by the students and the university teachers/academics. Moreover, it could be contextually different in term of expectations because the studies in different countries like Botswana (Moalosi, Oladiran and Uziak, 2012), Oman (Belwal, Priyadarshi
and Al Fazari, 2017) and in the Middle East (Osmani, Weerakkody and Hindi, 2017) have shown diverse views of it. To respond to the graduate job markets and attract students’ attention, HEIs reveal their commitments for a particular set of graduate attributes in their websites which are commonly found in developed countries. For example, Staffordshire University mentions digital literacy and lifelong learning as their graduate attributes in their library website as:

‘lifelong learner with the capability to be technologically, digitally and information literate, and on leaving the university, able to apply these skills to a range of life experience’ (Staffordshire University, no date)

As another example, the University of Melbourne claims that their graduates from the Bachelor of Arts (B.A) programme ‘are academically outstanding, practically grounded and socially responsible’ and the graduates are equipped with ‘research and reasoning skills to be influential citizens with high leadership potential’ as well as prepared for their engagement ‘with national and global issues and are attuned to social and cultural diversity’ (The University of Melbourne, no date).

In addition, Hager (2006) argued that generic attributes are not something like ‘discrete or atomic entities to be acquired and transferred singly’ (p. 19) and learning does not mean putting things (knowledge) into a container (mind), rather it is a process. These outcomes could be contributed or influenced by any other sources of informal learning exposures in addition to the formal learning because attributes could be developed from the process and exposure to cultural context as claimed by Hager (2006). Thus, more studies are needed to understand the philosophical and epistemological views of developing of these generic attributes. Although it is claimed to be the results or impact of the learning process, it should be acknowledged that neither every kind of experience could be considered as a good learning source (Ison, 2017) nor every participation itself can guarantee the meaningful learning (Hager, 2006).

Despite the high demand, it might be a challenge for HEIs to measure and prove their graduate’s attributes or competences. As Kensington-Miller et al. (2018) argue, there are some attributes students can acquire in higher education from wider learning processes (such as autonomous learning), social interactions (e.g., diversity awareness and collaborative skills) and professional readiness (e.g., time management and resilience). However, these attributes do not appear on the graduates’ certificates or transcripts (academic records) and may be invisible to students and employers.
3.6.2 Graduate Attributes from a Sustainability Perspective

With the UN’s mandate and its members’ commitment on ESD, and the target 4.7, HEIs have become more active in developing and delivering environmental and sustainable development related degree programmes. Moreover, other disciplinary fields have been influenced by the ESD concept, and as a result environmental awareness or sustainability related skills have been embedded as a part of core competences in their graduate attributes. In fact, some qualities are hard to be called as skills, but they are rather considered as attitudes, dispositions, and behaviours (Hager, 2006).

The determination of graduate attributes for ESD has come about through various routes and developments. There were national and international discussions happening about ESD and the inclusion of ESD as part of the SDGs has also led to UNESCO developing a set of ESD competencies for graduates that HEIs can use as a guide in which the following eight cross-cutting key competencies were recommended.


These competencies were developed by authors from Europe and reviewed by the scholars and experts from different countries (UNESCO, 2017). They were reportedly informed by the concepts and models from the three articles which mainly discussed 12 sub-competencies of design skills or shaping competencies (de Haan, 2010), key sustainability competencies based on the literature (Wiek, Withycombe and Redman, 2011), and the key ESD competencies from the perspectives of senior members in higher education, NGOs and public administration (Rieckmann, 2012). So, the concepts were grounded in the experiences of Germany and influenced by the western scholars and the experts’ views.

In the UNESCO’s guide, the eight competencies are categorised into three domains: cognitive (for knowledge); socio-emotional (for attitude and values); and behavioural (for skills) (UNESCO, 2017). These UNESCO competencies for ESD have been slightly modified and adopted by the QAA and the UK Advance HE (QAA and Advance HE, 2017).

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40 https://www.bene-muenchen.de/gestaltungskompetenz-was-ist-das/;~:text=Mit%20Gestaltungskompetenz%20wird%20die%20F%C3%A4higkeit%20nachhaltiger%20Entwicklung%20zu%20erkennen.
using different terminologies for the three domains - ways of thinking (cognitive), ways of being (socio-emotional) and ways of practicing (behavioural) (see Table 3.1).

The table, as a high-level competency framework, does not explicitly have environmental or ecological literacy as a specific competency but instead has all eight competencies as being applicable and relevant to the subject knowledge and the SDGs which include environmental literacy in detail learning outcomes, and that learning outcomes for a programme should also enable graduates to develop these key competencies.

**Table 3.1 UNESCO’s ESD competency framework adapted by the QAA and Advance HE (UK)**

<table>
<thead>
<tr>
<th>Competency</th>
<th>Students who display this competency can</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems thinking competency</td>
<td>recognize and understand relationships; analyse complex situations; consider how systems are embedded within different domains and scales; and deal with uncertainty.</td>
</tr>
<tr>
<td>Anticipatory competency</td>
<td>understand and evaluate multiple futures; create their own visions for the future; apply the precautionary principle; assess the consequences of actions; and deal with risks and changes.</td>
</tr>
<tr>
<td>Critical thinking competency</td>
<td>question norms, practices, and opinions; reflect on own one’s values, perceptions, and actions; and take a position in the sustainability discourse.</td>
</tr>
<tr>
<td>Strategic competency</td>
<td>develop and implement innovative actions that further sustainable development at the local level and further afield.</td>
</tr>
<tr>
<td>Collaboration competency</td>
<td>learn from others (including peers, and others from inside and outside of their institutions); understand and respect the needs, perspectives, and actions of others; deal with conflicts in a group; and facilitate collaborative and participatory problem solving.</td>
</tr>
<tr>
<td>Integrated problem-solving competency</td>
<td>apply different problem-solving frameworks to complex sustainability problems; develop viable, inclusive, and equitable solution options; and utilize appropriate competences to solve problems.</td>
</tr>
<tr>
<td>Self-awareness competency</td>
<td>reflect on their own values, perceptions, and actions; reflect on their own role in the local community and the global society; continually evaluate and further motivate their actions; and deal with their feelings and desires.</td>
</tr>
<tr>
<td>Normative competency</td>
<td>understand and reflect on the norms and values that underlie one’s actions; negotiate sustainability values, principles, goals, and targets, in a context of conflicts of interests and trade-offs, uncertain knowledge and contradictions.</td>
</tr>
</tbody>
</table>

**Source:** (QAA and Advance HE, 2021, p. 20)

The idea of three domains of learning have been well known through the work of Benjamin Bloom and a group of researchers during 1956-1972, although education has
been more influenced by the idea of cognitive domain (Sipos, Battisti and Grimm, 2008; Lynch et al., 2009; Hoque, 2016). Work on the affective domain was developed by Krathwohl et al. in 1964 (Lynch et al., 2009) and the psychomotor domain by Dave in 1975 and Harrow in 1972 (Hoque, 2016). Although these two domains have been less well used than the cognitive, today’s education is expected to prepare the learners with appropriate awareness, attitude, behaviours, and mindset for addressing the world’s issues in the name of ESD competencies (Rieckmann, 2012).

Indeed, learning is a process rather than an event and is more than mental skill or cognitive development (Lynch et al., 2009; Hoque, 2016; Marc Smith, 2018). Therefore, all three domains should be considered as important categories of generic attributes that graduates should have developed from their transformative learning process (Sipos, Battisti and Grimm, 2008) to become change agents for sustainability. Related to these models - UNESCO’s competencies framework and three domains of learning from the work of Bloom et al. (Krathwohl, 2002) - the three categories of attributes have also been referred to as three Hs: Head for cognitive domain (way of thinking); Heart for affective domain (way of being); and Hand for psychomotor domain (way of practicing). The 3 Hs are also found in the Transformative Sustainability Learning (TSL) framework introduced by Sipos, Battisti and Grimm, 2008; Singleton (2015). The TSL framework covers all aspects of generic attributes as developed through pedagogic models (such as action-based learning, environmental education, problem-based learning) and the expected learning outcomes (see Figure 3.2).

![Figure 3.2 Head, Heart, Hand Model of students' transformative learning](Figures/3.2.png)
The ‘3Hs’ model is friendly to Myanmar, as discussed earlier, particularly in Buddhist communities. Being dominated by Buddhist philosophies and Asian cultures, education in the Myanmar tradition aims for learning to understand the natural phenomena in the world, to upgrade good attitudes, and to nurture wisdom for addressing the societal issues. The Eight-fold noble path is seen as a foundational root of teaching and learning in building a peaceful and sustainable society. It is explained by many religious scholars (see Sivaraksa, 1994, 2005; Mahathera, 2007; Sri Dhammananda, 2023) in three trainings for morality (Sīla), mental culture (Samadhi), and wisdom/intellectual qualities (Panna) as discussed above.

- Morality (Sīla): Right Speech; Right Action; Right Livelihood
- Mental culture (Samadhi): Right Effort; Right Concentration; Right Mindfulness
- Wisdom (Panna): Right Understanding; Right Thoughts

Moreover, it is widely used by the development practitioners in the NGO/CSO communities for measuring their training achievements by checking participants’ development in knowledge, attitude, and behaviours. For this reason, this research intends to employ the ‘3Hs’ model (Head, Heart, and Hand) in exploring the desirable graduate attributes for the Myanmar HEIs’ context. The term graduate attribute is used to cover non-subject discipline attributes including, but not limited to, attitude, behaviour, values, skills, and competencies most relevant to SD. In brief, this research aims to develop a list of ESD graduate attributes that emerges from Myanmar research participants so that they are context specific, and not directly influenced by prior formulations and listings. Once developed through a grounded approach, these attributes will be compared with established listings such as UNESCO and QAA.

3.7 The 4Cs+RP Model: Integrating ESD in HEIs

The literature variously reports on the experiences of HEIs’ engagement in, and implementations of ESD at international and regional levels as well as use of the UNESCO statements, strategies, and recommendations (discussed in the former sections). Some authors have also discussed various approaches or models for integrating ESD in HEIs and some of which have been tested. This section discusses a potential ESD integration model which was adapted and modified based on the initial

41 It can also include altruism according to Myanmar culture.
one proposed and tested by the Plymouth University (UK). This model tries to indicate that the relationships between HEIs’ activities and practices are holistic and systemic, but some additional elements were proposed in the adapted and modified model used in this research.

The University of Plymouth accepts ESD as ‘a holistic concept’ and acknowledges the whole university approach considering all different aspects of teaching, learning, assessment, research including the university’s cultural practices in ESD implementation (Dyer, Selby and Chalkley, 2006, p. 309). Subsequently, the Centre for Sustainable Futures (CSF) at the Plymouth University proposed a ‘4C’ model as a whole institutional approach in which ‘Curriculum, Campus, Community and (institutional) Culture are seen as mutually enfolded and complementary foci’ (Jones, Selby and Sterling, 2010a, p. 7) as a framework for a sustainability-sensitive university (see Figure 3.3). They claimed that:

‘learning programmes encompass the exploration of campus, community partnerships and initiatives, and university culture from a sustainability perspective, while student experiential learning and action research can be directed towards campus, community and institutional cultural change’ (Jones, Selby and Sterling, 2010a, p. 7).

Jones, Selby and Sterling (2010a) illustrate the ESD integration in HEIs by a graphic model in which the four elements, 4Cs, are represented by circles (Figure 3.3). They claimed that the students’ learning (curricula) can be facilitated or supported by the experiences in the campus, the community’s engagement, and the cultural practices of the university. Equally, they claimed that the students’ learning from these experiences and action research ‘can be directed towards campus, community and institutional cultural change’ (Jones, Selby and Sterling, 2010a, p. 7).

It can be critiqued that the authors have tried to visualise the ideas in their proposed model using a graphic diagram seemingly without consistent illustrative elements. They did not explicitly discuss how campus and community are inter-related and how the university’s culture can influence the other three elements. Moreover, it is not clear if the campus element in the model refers to just the campus operations or whether it also includes academic activities on campus (e.g., teaching, learning, and assessment). The diagram is useful in simplifying an institutional ESD approach, but it does retain some confusion and raise questions, for example if the three circles (curriculum, community, and campus) inside the bigger circle (culture) are equal in size, does that mean they are equally important? Additionally, ‘culture’ in the diagram is referred as ‘institutional’ or
‘university culture’ (Jones, Selby and Sterling, 2010a, p. 7) in their discussion so it is inconsistent to keep the community inside that circle of culture because the community can be both internal (HEI’s community) and the external one. Although innovative teaching methods or approaches are recommended, pedagogy is not represented in the 4Cs model, and how culture relates to the HEIs vision and mission is not set out (see Figure 3.3). Despite the weakness of the diagram, the model is a prototype holistic model for ESD integration in HEIs.

![Figure 3.3 ‘4Cs’ Model developed by Jones, Selby, and Sterling in ‘Sustainability Education: Perspectives and Practice Across Higher Education (2010a, p.7) [adapted in colour and shape]

Jones, Selby and Sterling (2010a) discussed research but they did not mention it in the graphic model therefore it remains to be questioned if it was considered as one of the activities in or by the campus. Anand et al. (2015) adapted the 4Cs model by adding research as an additional element and by elaborating ‘campus’ into ‘operations and campus operations’ which matches Chase’s (2009) four elements: ‘curriculum, research, university operations, and relationships with the community’ (cited in Anand et al., 2015, p. 919) (see Figure 3.4).

![Figure 3.4 Model of integrating sustainable development in higher education institutions adapted from Jones, Selby, and Sterling (2010a) and Chase (2009) (Adapted from the source: Anand et al., 2015)
Again, although the role of pedagogy under both curriculum and culture was discussed by Jones, Selby and Sterling (2010b) and Anand et al. (2015), they did not make pedagogy explicit in their graphic models. As discussed earlier, ESD attributes could be influenced by both curriculum and pedagogy in the HEIs through interactive as well as interpersonal learning processes (Walker, 2002). Using the model (4Cs+Research or 4Cs+R) adapted by Anand et al. (2015), and considering ‘pedagogy’ as an explicit element to the ‘4Cs+R’, a new model of ESD integration framework for HEIs, i.e., ‘4Cs+RP’ (Curriculum, Campus, Culture, Community, Research, and Pedagogy), is proposed as a framework for this research enquiry into a holistic approach for ESD integration in Myanmar HEIs (see Figure 3.5). The five oval elements inside the institutional context are meant to be mutually supportive and interdependent with each other and between them are expected to support the development of ESD related graduate attributes where they intersect. They are shown being the same size but the size of their contribution to the graduate attributes will vary depending on the context. In addition, the proposed model broadens out the context beyond the institutional culture to reflect the influence of proximate and distant communities to encompass their cultural values, policies, and expectations.

![Figure 3.5 Proposed modified model of ESD integration in HEIs (4Cs+RP)](image-url)
This graphic model attempts to illustrate the key elements - the inner circle (institutional culture) has elements that HEIs can directly influence, the middle and outer circles represent proximate and distant stakeholders’ influence, all of which can contribute towards developing ESD related graduate attributes. Each element in the model is viewed as a particular area of action which themselves have many parts as described in the literature and covered below. The proximate and distant communities’ influence were not explicitly mentioned in the original graphic models ‘4Cs’ (Jones, Selby and Sterling, 2010a) and ‘4Cs+R’ (Anand et al., 2015), therefore this modified model of ESD integration ‘4Cs+RP’ is a supportive framework in this research in the context of Myanmar HEIs and also informed the qualitative analysis in forming the themes of potential ESD integration approaches for Myanmar HEIs.

3.7.1 Curriculum

Including ESD in the curriculum raises questions about where it is to be integrated and how it will be implemented, with three main approaches:

- Integrating ESD related learning content into existing modules or by re-designing the existing content of a programme or course (Hadgraft, Xie and Angeles, 2004). Anand et al. (2015) claim that sustainable development can be more efficiently integrated at programme level, and it can build the stronger links to the professional practices of the future graduates. However, the applicability apparently depends on the acceptance and genuine dedication of the faculty who will deliver the courses (Briggs et al., 2019).

- Developing a new stand-alone course or an explicitly tailored degree or diploma programme on sustainable development, for example a Master of Sustainable Practice at the Royal Melbourne Institute of Technology (RMIT) University which uses adult learning principles or andragogy\(^{42}\) (Holgaard et al., 2016). Another approach is a university wide course, for instance ‘Sustainability: Society and Environment (SSE)’ is offered as a compulsory course for first-year undergraduate students in seven professional degree programmes as well as an

\(^{42}\) Malcolm Shephard Knowles (1913-1997) made six assumptions as principles of adult learning (Forrest III and Peterson, 2006) and Alexander Kapp first developed the term andragogy in early 19\(^{th}\) century and became widely used in 1960 according to Nottingham Andragogy Group (1983), cited in (Forrest III and Peterson, 2006).
elective course for all other undergraduate students from different disciplines at the RMIT university (Hegarty et al., 2011, p. 454), and

- Using a non-explicit or hidden-curriculum approach. Anand et al. (2015) claims that this option can be used in ‘a context that enables knowledge acquisition but without being explicitly targeted as such’ (p. 921). Cotton and Winter (2010) explain this approach as a way of transmitting certain messages, particularly ‘ethos and values’, to students through teachers’ behaviours or lectures or the institutional culture and practices, often unconsciously, in a tacit or unplanned manner (p. 45).

Regarding the first approach, Sterling (2004) thinks that it is not about making ESD ‘an add-on’ to existing structures and curricula’ but rather to change our world view and social view as well as to adopt diverse cultures of learning and practices (p. 50). It is also about ensuring the learning outcomes cover ESD related knowledge, attitude, and skills as well as contributing to the development of related generic attributes.

All three approaches to integrating ESD into the curriculum can be influenced by different perspectives, ideological standpoints, and political orientations amongst the scholars. For instance, Maina-Okori, Koushik and Wilson (2018) claim that

‘several scholars draw on intersectional frameworks to challenge dominant structures such as patriarchy, colonialism, capitalism, and anthropocentrism that reproduce inequality and contribute to continued environmental degradation’ (p. 293).

Regarding the constraints and challenges in implementing ESD through developing sustainability-related curriculum, Jones, Selby and Sterling (2010a) acknowledge three main inhibitors:

- Resistance from the academics based on ‘academic freedom’ and not matching with ‘the students’ expectations’ about specific discipline knowledge (p. 9)
- Hesitation by academic staff ‘who consider themselves as lacking the knowledge and skills, expertise, and experiences’ for teaching about ESD (p. 10)
- Perception of academics and administrators on the ethos of the institution as ‘not favourable for the successful integration of sustainability across the teaching and learning programmes’ (p. 10).

While it is acknowledged that the likelihood of ESD integration into curricula is largely influenced by the faculty members’ commitment (Briggs et al., 2019), students’
engagement in HEI’s curricula innovation and development should be encouraged (Brugmann et al., 2019). In light of the recent decolonising the curriculum movement amongst HEIs in the West, a sustainability curriculum itself must be properly assessed to ensure the learning process and the graduate outcomes are free from a neo-colonial approach of dominating other developing countries or the least developed countries (Charles, 2019).

3.7.2 Pedagogy

How ESD is taught and learned is as important as what and where it is taught. Pedagogy refers to the method and practice of teaching and learning, especially of academic subjects and theoretical concepts according to the Oxford Dictionary. Although the original meaning referred to teaching young children, it is now widely used to refer to all levels of education. The related term ‘andragogy’ refers to the method and practice of teaching adult learners, but it is rarely used in practice. Hence this thesis uses the term pedagogy, as it is the most widely used term in HEIs.

Howlett, Ferreira and Blomfield (2016) claim that students need to experience transformative learning to develop expected graduate attributes, so that they can cope with complex as well as challenging sustainability issues and global crises. ESD itself is ‘holistic and transformational education’ (Rieckmann, 2018, p. 40) and it is critical to reconsider the ways of teaching, learning, and assessing students, and the learning environment involved, in addition to rethinking the curricular content. Whilst promoting teachers’ competencies is emphasised in primary and secondary education (Bertschy, Künzli and Lehmann, 2013; Hayden and Martin, 2013; Brandt et al., 2019), transforming teaching methods and practices at higher education for ESD graduate attributes is still under-published (Lozano et al., 2019). Although university members could have a significant role in moving the ESD agenda forward, the level of staff motivation and engagement in ESD is still under-researched (Cebrian, 2017).

Learning in a particular type of situation may be difficult for the learner to be able to apply in another circumstance according to Kettunen, Kairisto-Mertanen and Penttila (2013).

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43 It might have a broader meaning than what it has been traditionally used and understood while it could be controversial in translating into English as it came from a Greek word (Friesen and Su, 2023).
44 pedagogy - definition of pedagogy in English from the Oxford dictionary (open.ac.uk) (accessed January 15, 2023)
It is apparent that they overlook transferable skills. Further, teaching and learning in higher education is heavily reliant on the knowledge of previous research. Research-based learning is more popular because it is interchangeably used as ‘problem’ learning or ‘enquiry’ or ‘active’ learning to improve the students’ practical skills (Lambert, 2009, p. 303). However, Lambert (2009) made a critique of the poor encouragement of students’ engagement in seminars or conferences in UK’s undergraduate programmes. To ensure achieving the student’s learning outcomes, more innovative learning should be designed, for instance running projects, seminars, or internships etc., creating opportunities for the students’ immediate use of their knowledge and skills in addition to lectures and traditional examination experiences. This is supported by Lozano et al.’s (2019) research that there is a relation between the contribution to sustainability and the strength of competences, and between the strength of competences and the strength of pedagogical approaches. They suggested a combined use of different pedagogical approaches to develop the sustainability competencies recommended by UNESCO and further research on alternative pedagogical approaches. In contrast, Humphreys (2019) employed the term ‘Ecopedagogy,’ which is different from conventional environmental education, to emphasise teaching on

‘how to think through the problematic of global environmental degradation in its broadest sense and how to engage with and respond to this problematic as concerned, reflexive and active citizens’ (p. 59).

Whatever the approach used for teaching, the effectiveness of learning is often determined by using appropriate assessment methods that relate to a programme’s learning outcomes which in turn contribute to graduate’s attributes. If ESD is primarily expected to start from an individual’s changes in attitude and behaviours, the taxonomy of affective domain (represented as Heart in Figure 3.2) should be recalled back because that domain explains from the ‘awareness’ level through ‘responding’, ‘valuing’, and ‘organisation’ to ‘characterisation’ in which a learner can reach his development to ‘a consistent philosophy of life’ based on the internalised attitude and values (Krathwohl, Bloom and Masia, 1964, p. 35). Following the argument of Krathwohl et al. (1964), Shephard et al. (2015) also supported that ‘we cannot teach students to be environmentally responsible without addressing their affective nature’, (p. 863), whilst acknowledging hardship in teaching for affective domain. They supported Bloom et al.’s (1956) critique that most teaching and learning in the university falls under the cognitive (knowledge, understanding, analytical skill etc.) and much of this cannot be categorised in the affective domain of learning (such as listening, responding, valuing, etc.) because the cognitive alone cannot influence or shape the students’ behaviour through emotions.
or desire. Education for sustainability should be acquired through the best practice in learning and teaching as the entry point to sustainability skills and knowledge, instead of the focusing on curriculum content only, as claimed by Hegarty et al. (2011).

### 3.7.3 Research

Research on sustainability issues, as a part of universities’ functions, can be considered as a potential approach of ESD integration as suggested by Chase (2009) (cited in Anand et al., 2015). Sterling (2013) argues that universities with a commitment for sustainability should prepare their students to become leaders who can transform society not only through teaching and learning but also research. Moreover, universities should be willing ‘to serve as a test bed for innovation’ to learn new knowledge and practices for ESD and share their experiences and learnings from the practices and research with their students and other HEIs (Sterling, 2013, p. 25). Some universities and networks have been trying to promote a focus of ESD in HEI’s educational practices using grants and awards for the research and students’ projects (Anand et al., 2015) and the Green Gown Awards45 is an example in the UK and Ireland. Although research activities are extensively carried out on sustainability, more studies are needed on the ESD integration approaches for HEIs. At the same time, HEIs themselves need to practice and transform as reflexive institutions rather than just distributing the knowledge from its own research (Sterling, 2004). Moreover, more research and learning from Indigenous Peoples’ knowledge and practices should be encouraged to understand how these Indigenous knowledge systems and practices could be revitalised and applied in the teaching and learning process as some of them can be relevant to ESD. For example, Mbah, Ajaps and Molthan-Hill, based on their systematic review of the Indigenous Knowledge Systems towards Climate Change Adaptation in developing countries particularly in Africa and Asia, encouraged to explore more of the Indigenous knowledge and practices and accommodate them in the ‘educational framework’ (2021, p-20).

### 3.7.4 Campus

The Green campus model has been widely followed by universities and colleges in the UK and some European countries. It is also practiced by the HEIs in some countries in

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45 Categories and Criteria 2022 | Green Gown Awards (accessed March 8, 2023)
South-East Asia. It includes campus (estate) management and resource utilisation in an environmentally friendly manner or sustainability practices. For instance, the Aalborg University in Denmark, a member of COPERNICUS (Co-operation Programme in Europe for Research on Nature and Industry through Coordinated University Studies) alliance started their green campus initiatives with a concept of environmental sustainability and green practices with the aim of influencing staff and students’ practices and behaviour (Holgaard et al., 2016). The COPERNICUS’s Charter is to integrate sustainable development in all university’s actions and function as fundamental status.

Practices in the classroom and campus can influence students’ behaviour and attitude through experiences. Lozano, Huisingh and Delgado (2006) showcased ‘Sustainable Campus Programme (SCP)’ (p. 37) (at the Monterrey campus in Mexico) as a campus approach model that provides students with the opportunity to look at the daily academic and campus practices from ESD perspectives, including reports on use of water, energy and office stationery, as well as how waste is managed, by using ‘basic principle of eco-efficiency’ (Lozano, Huisingh and Delgado, 2006, p. 41).

3.7.5 Community

Networking and collaborating with other stakeholders such as other HEIs, governments, businesses, NGOs, alumni, and civil society can be considered as one of the potential approaches. There can be two main communities or sets of stakeholders for HEIs: an internal community and an external one. The former includes all the people in a particular HEI such as teaching staff, students, administrators, and all other employees. There can be many ways to categorise and consider external stakeholders, and Figure 3.5 divides external stakeholders into proximate and distant communities. The stakeholders in the proximate communities (outside the university) may include, but not limited to, graduate alumni, other HEIs and research institutions, business and enterprise entities, government, and civil society organisations, etc. The outermost layer (distant community) may include stakeholders or partners of regional, international, and global level. In the internal community, the roles and engagement of teaching staff and leaders of HEIs are important because their acceptance, commitment and active participation largely influence the achievement of ESD integration. At the same time, external communities can be supportive structures for potential resources and mutual learning communities through networking and partnerships. Different stakeholders’ involvement and collaboration were strongly encouraged in ‘support framework’ model proposed by Mbah, Shingruf and Molthan-Hill (2022) based on their learning of policies and practices for climate change education in South Asia. This is also aligned with the community
approach of 4Cs+RP model although they discussed more specifically about climate change adaption education rather than ESD.

The organisational transformation could be enhanced by its strength of networks and partnerships as well as the institutional knowledge and capability of utilising such available resources and opportunities. A case study on the Network of Higher Education Stakeholders for Sustainability (UK) also gave an important lesson about the influence of network density and a clear governance vocabulary on the interactions, coordination, and fund flow (Vargas et al., 2019). In addition, further research studies were recommended by Vargas et al. (2019) on ‘the role of governance at network level for sustainable development in higher education in order to understand how networks’ governance happens in practice’ (p. 476). There have not been studies on comparative assessment of different networks. Networking and partnership approaches are under-researched although one of the SDG’s Goals is to promote partnership and collaboration (Dlouha et al., 2017). It can bring more opportunities for HEIs to commence their transformation. At the same time, it is needed to acknowledge challenges that might be faced by HEIs in the shift from industrial economy to a knowledge-driven economy as there have been struggles with

‘revolutionary cultural shifts, loss of direction and vision, re-invention of identity, and the redefining of leadership’ (Egizii, 2015, p. 1741).

Networking should not remain restricted to HEIs, but rather be extended to business partners, Civil Society Organisations (CSO) and International Development Organizations. In the model of ESD integration shown in the Figure 3.5, the stakeholders in the proximate communities and the distant communities complementarily support the students’ learning process and research opportunities. Engaging with potential employers has become a popular topic amongst HEIs because they need to prepare graduates with attributes well suited to meet their societal, professional and career needs. A research study by García-Aracil (2015) on the graduates’ employability representing eight different disciplines shows that

‘a well-designed degree programme, that is, a broadly focused, academically prestigious, vocationally oriented, and whose content and objectives are known to the employers, contributes to an increase in earnings and attracts higher scores for job satisfaction’ (p. 751).

In addition to formal learning at HEIs, non-formal education activities can potentially contribute to students’ values, attitude, behaviour, and competence. Collaborating with
NGOs or CSOs can be considered to potentially expand the students’ learning opportunities through extra-curricular activities or formal modular courses. It could be offered as either ‘elective’ or an ‘institute-wide course’. As an alternative option, students’ internship programmes might be arranged. These extra-curricular activities might deliver personal and social benefits for students that engage with them, that may help their employment prospects (Stuart et al., 2011). In Myanmar, for example, Kalyana Mitta Development Foundation (KMF)46 collaborated with university environmental clubs/associations, Student Unions, and two Education universities. They supported the green campus movement and intensive trainings such as ‘Eco-Youth Camp’ and ‘Education for Peace’ (Kalyana Mitta Development Foundation, 2018). Participating and learning in these activities could be helpful in young learners’ transformational development in addition to classroom-based learning. Soe (2014), in her study of students and teachers’ perceptions on the extracurricular activities at a private university in Myanmar, verified the significant benefits of students’ participation in extra-curricular activities on their social lives, life-skills development, and carrier opportunities. Existing literature is limited on the relationship of non-formal learning and development of graduate attributes in higher education. It is lacking in the context of ESD, particularly in Myanmar.

Alumni community, as another potential stakeholder in the proximate communities, can be welcomed for their contribution through their contextually relevant feedback and suggestions based on their professional experiences. Egizii (2015) highlights the importance of alumni for an HEI because

‘they are valued, vital, lifelong stakeholders of an educational community and, should be kept informed and involved in its vision and priorities’ (p. 1744).

Moreover, Egizii (2015) claims that a lot of benefits can be gained through building such external relationships with different stakeholders and alumni network, for instance understanding the real-world situation and the needs of the employment sector, or the opportunities for the students’ learning process like study visits or internships, or graduate employment opportunities. This practice is likely suitable for a situation in which ESD has been adopted and conceptualised. More studies are needed to

46 It is a Myanmar NGO I founded and led for twelve years from 2008-2019.
understand the potential development of ESD graduate attributes through building partnerships and collaborating with these stakeholders including the alumni. There is no doubt that more studies are needed to understand Myanmar HEIs’ engagement with diverse layers of communities – how HEIs and their stakeholders interact and mutually support or influence each other to contribute towards the development of ESD related graduate attributes.

3.7.6 Culture

Another aspect to consider is policy changes and adopting sustainability values and practices in HEIs’ programmes and mandates. That could be seen as cultural approaches because practices and decisions are expected to be made according to agreed policies which in turn are guided by the values and philosophical stands of the organisations. Cultural and community approaches seem to be alike as it is generally meant to be aimed at developing good practices which are shared and carried forward as cultural norms by the key stakeholders (members of the HEIs) alongside the institutional values and vision. The community approach can be considered as activities and practices of different stakeholders whereas culture can be viewed as the social values and perspectives guiding or leading to the activities and practices in general.

Moore (2005) called for cultural change and HEIs’ community engagement by proposing seven recommendations for integrating sustainability education (based on a case study of the University of British Columbia) in which staff, teachers and students engaged and discussed how to integrate sustainability at all levels of decision and activities in the university. From another perspective, the transformative development of HEIs should integrate ESD policy, but practices mean ‘a profound cultural change more than a technical shift’ (Anand et al., 2015, p. 922). In addition, it is critical that sustainability education should be implemented by value-focused thinking and inclusive consideration (Moore, 2005). In this way, HEIs could support students’ learning process of sustainability education through facilitating transformative practices which could be gradually nurtured as cultural practices or community of practices (Tummons, 2018).

To date, education is being questioned for its purpose as the globalised economic system is pushing HEIs’ for employable skilled workers. Sterling (2017) argues that HEI’s policy and practices are being challenged and impeded by current global economic systems. Then, the paradigm shift of education reform needs to start by questioning the purpose of higher education and what kinds of competence or attributes should be aimed for. What Sterling calls for aligns with the idea of three ‘Hs’ (Head, Heart, and Hand) in the consideration of educational reform aiming by
‘a broadening of perception (the affective dimension), a shift towards relational thinking or conception (the cognitive dimension), and manifestation of integrative practice (the intentional dimension)’ (2017, p. 41).

All these learning domains can be embedded in the whole HEIs’ cultural practice. More understanding is undoubtedly needed to verify how these cultural aspects of HEIs could contribute to the nurturing of such graduate competencies or attributes. According to the argument of Burford et al. (2013), UN’s Sustainable Development concept is missing one important pillar such as a ‘cultural-aesthetic, political-institutional and religious-spiritual dimension’ (p. 3036). These values, attitudes, and spirit should be nurtured through the cultural practices in HEIs to build a holistic set of graduate attributes as discussed earlier.

Reflecting on SDG 17, ‘to strengthen the means of implementation and revitalise the global partnership for sustainable development’ (United Nations, 2015a, p.14), learning from synergy and collaboration could be added value for the HEIs. For this reason, interdisciplinary learnings and collaborative cultures can be considered in the institutional level. It may be amongst the HEIs or even with the stakeholders at national and international levels. Referring to learning theory, Sterling (2013) highlighted the importance of deep understanding of educational paradigms and questioning the purpose and policy of higher education for transformative process despite the challenges. Often the cultural approach is interchangeably used to mean a whole university approach. However, in this research enquiry, all the principles, policies, practices, and the stakeholders will be viewed by cultural approach as the underpinning sustainability values and desirable ESD view.

3.8 Educational reconstruction of HEIs

As discussed earlier, HEIs are expected to contribute to addressing the global challenges and searching for better solutions and approaches to sustainability. Rethinking and reorganizing HEIs might be needed to ensure future graduates have desirable ESD attributes to be able to contribute to addressing global issues. Nevertheless, it is acknowledged that such transformation is hard, challenging, and a long-term process for HEIs (Holmberg et al., 2012) which also needs external support from government and other national and international stakeholders. The potential for ESD integration depends very much on the current state of HEIs and the country they are located in. For some countries integration will require relatively small changes, for
others it requires a more fundamental transformation or reconstruction of the HEIs, particularly where the country context is also changing dramatically.

Educational reconstruction is defined in different ways and Aran Milton (2013) agreed with Barakat and Zyck (2009) (cited in Aran Milton, 2013) to use ‘recovery’ as a proper term by claiming that it could encompass a wider scope of meaning than ‘reconstruction’. Moreover, he stands with the argument made by Barakat and Zyck (2009) that the latter term was narrowly defined as physical reconstruction in his doctoral thesis (Aran Milton, 2013). In fact, reconstruction is not necessarily or strictly defined as being for the physical or infrastructure rebuilding and this research has adopted the idea of Arnhold et al. (1998) in using different types of educational reconstruction processes.

Education is considered as having a vital role in the reforming process of war-torn countries or countries severely affected by natural disasters or ethnic/religious conflicts. At this level, the concept of education for reconstruction developed by Arnhold et al. (1998) provides a framework through which to study HEIs in Myanmar which have suffered from civil unrest, various conflicts, and civil wars. Esson and Wang (2018) used this model as a conceptual framework for the case study of the reform process of Yangon University before the military coup in 2021. The model, based on the experiences of countries with prolonged civil wars and conflicts like Bosnia, Rwanda, etc., includes five components of reconstruction:

‘Physical reconstruction

Ideological reconstruction

Psychological reconstruction

Provision of materials and curricular reconstruction

Human resources’ (Arnhold et al., 1998, p. 11)

3.8.1 Ideological reconstruction

Of most relevance for this study is ideological reconstruction, which could be a potential driver for Myanmar HEIs to ask critical questions: what roles are HEIs expected to play to contribute towards the desirable future of the country; how might HEIs in Myanmar need to transform themselves to integrate ESD; and what attributes are expected that graduates should develop by learning at these HEIs. Moreover, it is aligned with the cultural practices in the proposed ESD integration model as all the decisions, activities
and practices could be informed by the sustainability concept once ESD has been conceptualised in HEIs. Then, it could influence the curricula determining what knowledge, concepts, attitude, and behaviours are to be addressed as the learning outcomes for a particular courses or disciplines as well as the expected generic graduate attributes. Capacity building and professional development activities for the teaching staff, non-teaching staff and the leaders of the HEIs could be a part of ideological reconstruction and it can be linked to human resources development. In addition, the list of ideas synthesised based on the DESD's strategies (2005-2014) and the UNESCO’s ESD Road Map (2020-2030) which have been discussed earlier are consistent with and can be incorporated in this ideological reconstruction.

### 3.8.2 Psychological reconstruction

Psychological reconstruction might play a critical role for HEI’s transformation in Myanmar as it is needed to investigate the required changes to be made in different aspects of HEIs such as leadership styles, decision making, collaboration with stakeholders, teachers’ behaviour and relationship with students, students’ engagement, and a service providing mindset of staff in the supporting departments and units. Arnhold et al. (1998) claimed that ‘psychological problems ranging from demoralisation to severe trauma’ could be inevitable to be addressed in a country with prolonged conflict or civil wars (p. 19). In Myanmar, there is a collective traumatised experience of being oppressed by the military dictatorship for several decades in the past and currently since 2021. This suggests investigation into the necessity of trauma healing and mental wellbeing support for university teachers as they have been suffering during the current political crisis, too.

### 3.8.3 Provision of materials and curricular reconstruction

The model also looks at the supplies of necessary materials or facilities like teaching materials and resources related to library, laboratories etc., and the curricular reconstruction process. For Myanmar HEIs, the requirement of curricular reconstruction may be varied depending on the individual HEIs’ need, however the Institute of International Education (IIE) reported that ‘most of the curriculum being offered inside Myanmar’s universities are seriously outdated’ (IIE, 2013, p. 19). From another perspective, it should be reconsidered in the general sense of reforming higher education based on the political pathway to be determined in the future. The graduate attributes to be expected and determined might include some mental and moral trainings according to the nature of ‘post-crisis situation’ as well (Arnhold et al., 1998, p. 19).
3.8.4 Physical reconstruction

Indeed, the needs of HEIs in Myanmar is quite diverse like Denis Simon’s remark: ‘the entire system requires nothing less than a complete renovation – from the physical infrastructure to the academic curriculum’ (IIE, 2013, p.17). Due to the deficient budget and facilities supplied by the Myanmar government, as well as the lack of international aid and prolonged economic sanctions by developed countries, the infrastructure and facilities of Myanmar HEIs need to be upgraded (British Council, 2013a; Comprehensive Education Sector Review, 2013; IIE, 2013). In this case, the reconstruction of the physical infrastructure and facilities can be overlapped with the campus approach of ESD integration which were not covered in these reports.

3.8.5 Human resources

The community approach of the ESD integration model is reflected in the human resources in this educational reconstruction model. A programme of capacity building is likely to be needed to increase the number of staff as well as improve the quality of teaching. Professional development of staff members might need to be holistic and contextualised. Moreover, human resources from the proximate communities can be called for their cooperation but Arnhold et al. (1998) noted it should be carried out with great care for undesirable consequences of conflict sensitivity or misconception. They acknowledged the need of well-trained teaching staff in such a reconstruction process of the post-conflict situation. Collaboration with different stakeholders from distant communities might be helpful if it is wisely and strategically incorporated to speed up and upgrade the quality of HEIs’ services. The perspectives, resources, and willingness of those stakeholders in the proposed model of ESD integration and the several types of human resources being discussed in the educational reconstruction model are consistent in both ESD integration and HEIs’ transformation processes.

3.9 Crafting and Justifying Research Enquiries

The reviewed literature about ESD integration in the international context, together with the country context of Myanmar, has confirmed that there is a need to understand the sustainable development of Myanmar expected by its nationals. As ESD was apparently shaped and influenced by western philosophers and scholars, the first research question has been adopted to understand how ESD might be conceptualised in the context of Myanmar HEIs. The role of graduates’ attribution towards the sustainable development of Myanmar which is to be expected and conceptualised in the first question became a second question to be explored. The third question is to study what changes might be
needed in the HEIs’ practices or policies for their transformation if ESD is to be integrated. As discussed in both Chapter 2 and this Chapter 3, the HEIs’ reform needs to be conducted in the time of a favourable situation because the previous reforms were halted by the coup in 2021. Thus, considering ESD integration within the HEI’s transformation processes for Myanmar context framed the third research question.

RQ (1) How might ESD be conceptualised in the Myanmar HEIs’ context?

The reviewed literature has shown that ESD concepts have been widely discussed amongst scholars from developed countries and the UN’s ESD was mostly informed by western philosophies and ideologies (such as United Nations, no date b; Brundtland et al., 1987; Calder and Clugston, 2003; Landorf, Doscher and Rocco, 2008; Holgaard et al., 2016). While the role of HEIs has been argued for the third mission of universities (for example Newman, 2008; Fadeeva and Mochizuki, 2010), it is important to be conceptualised in a particular context if ESD is to be operationalised (Landorf, Doscher and Rocco, 2008). Taking up the concept that there is no one-size-fits-all solution, it is necessary to understand Myanmar nationals’ expectations on the role of HEIs for the country’s sustainable development. As discussed in Chapter 2, the term ‘taing-yin-thar’ is controversial. Likewise, ‘nationals’ and ‘citizens’ are complicated issues in Myanmar due to the ethno-religious based political conflicts rooted in the history (see more detail in Holliday, 2014; Cheesman, 2017; Martin Smith, 2018). I use ‘nationals’ in this thesis to refer all the individuals who were born in Myanmar regardless of holding their citizenship or not because there are many people who still cannot get that kind of official registration. On the other hand, ‘Myanmar nationals’ in this thesis do not intend to claim as ‘national race’ by aggregating all ethnic minorities to be Myanmar or Burmese from burmanisation perspective. I would rather use it as individuals or people of Myanmar regardless of their ethnicity or religious belief.

The ideological reconstruction process of Arnhold et al.’s (1998) model informs the research question (1) asking how educational communities in an HEI conceive ESD. And the research question will help them to re-discover the purpose of their HEIs in contributing to the sustainability of society by considering ESD from diverse perspectives in Myanmar context.

The country context (Chapter 2) has proven that there is a need to reconstruct HEIs in Myanmar and to ask how ESD can be integrated during the reconstruction process. The country has been ruled by the military dictatorship for several decades and the on-going situation of civil wars, and democratisation might be a key part of the educational reform process. Therefore, ideological reconstruction is assumed to be relevant in this case and
it helped and informed the first research question. Moreover, the findings of the in-country scoping study showed that university teachers should be aware of ESD and a mutual understanding of what ESD means to Myanmar HEIs is needed. These informed and justified the first research question.

RQ (2) *What are the graduate attributes to be expected from integrating this conception of ESD in Myanmar HEIs?*

Alongside the ESD conceptualisation, it is required to answer what graduate attributes are expected by the HEIs’ community if ESD is to be integrated. The reviewed literature proved that more studies are needed to understand what graduate attributes should be set out from ESD perspectives. Also how it should be developed based on the expectations of stakeholders such as university students and teachers while there have been lots of studies on different evaluation and measurement techniques on the achievement of graduate attributes quantitatively. Fadeeva and Mochizuki (2010) call for designing curriculum contents for integrating ESD concept and teaching methods alone cannot be adequately addressed without any clear definition of learning outcomes and comprehensive competencies that learners should acquire. They also made a critique:

‘UNESCO has provided only descriptors for ESD in connection with the United Nations decade of Education for Sustainable Development (DESD), but these describe the characteristics of the educational offering (inputs) rather than outcomes for students (outputs)’ (Fadeeva and Mochizuki, 2010, p. 251).

As discussed earlier, certain studies on different ESD integration approaches and different projects have been done such as teachers’ capacity development for ESD in Asia-Pacific region and green campus models, but it is still under researched to study the most locally appropriate and culturally relevant graduate attributes to be developed in accordance with the countries’ context and institutional context. This is associated with conceptualised ESD in a particular context.

In Myanmar, MSDP and NESP generally mentioned about capacity development of teaching staff, required competency development for university students, and the opportunity for the students’ accessibility to quality education being equivalent to the international HEIs’. However, they did not clearly describe what kinds of graduate qualifications are to be expected from an ESD perspective. Also, some universities have recently initiated developing learning outcomes for their specific disciplines or degrees,
for example the CHINLONE project (CHINLONE, 2018). Although the NESP aimed to establish a Higher Education Quality Assurance Agency (HEQAA), there was no concrete plan for the universities to set their own graduate attributes and learning outcomes. Therefore, this research question is critical and consistent to the existing context of Myanmar HEIs. Moreover, the university students who participated in the scoping study expected a wide range of knowledge, skills, and competencies as a set of generic attributes apart from the disciplinary content. This is a positive insight for the research to commence a deeper study on the expected graduate attributes related to ESD from university students and faculty members.

RQ (3) **What transformations in Myanmar HEIs’ educational policy and practices are needed to develop these graduate attributes?**

The proposed adapted model of the 4Cs+RP holistic approach (Curriculum, Culture, Campus, Community, Pedagogy and Research) helped scoping to understand the complex systems of activities and processes in the HEIs’ context. It also helped to explore the areas that needed to be changed for the HEIs’ transformation in contributing to developing ESD related attributes. It is also noted that the holistic approach of ESD integration in particular in the HEI context is still under-researched. Most of the research covered on the ESD integration is embedded in a particular approach such as curriculum or third mission approach or campus approach. However, not many studies have looked at the complex system of individual HEIs within which there can be different elements functioning and influencing each other and inter-relating with outside elements. These inform the third research question - to look at the systems of an HEI before seeking the necessary changes ESD integration.

As discussed, all the HEIs in Myanmar have been strictly controlled by the respective ministries for many years. Thus, they are very likely to face challenges in making a change in a concept, a procedure, or a practice. HEI’s nature in the Myanmar context might be different from other countries. This is due to the prolonged historical tension and conflicts amongst different ethnic or faith groups. Also, the experiences of revolutions in its decolonisation process. Findings from the scoping study and published literature have informed that it is crucial to understand HEIs’ systems in considering the integration of ESD during the reconstrucion process.

The proposed model of ESD integration (practices) (Figure 3.5) is considered alongside the educational reconstruction model of Arnhold et al. (1998). It will explore any changes which might be needed in the policy and principles for Myanmar HEIs and to what extent
they might be useful to inform HEIs’ transformation in Myanmar through comparing them with the research findings.

3.10 Chapter Summary

This chapter has extensively reviewed the literature, from the sustainability or ESD concept in its historical roots to the potential model of HEI’s transformation through which ESD integration could be made. This doctoral research aims to understand how Myanmar nationals view and interpret sustainability or sustainable development, and consequently, how ESD might be conceptualised in the Myanmar HEIs context. The concepts of ESD in higher education and different approaches of its implementation in international, regional, and sub-regional levels have been reviewed to ensure the research’s conceptual framework is consistent. At the same time, it is claimed to be contextualised.

As HEIs are expected to prepare the graduates with relevant competences, attitude and values required to contribute to the implementation of sustainable development, it is needed to question what graduate attributes should be expected in this aspect for desirable Myanmar’s sustainable development. Amongst diverse views and discussions about the graduate attributes in the published literature, there remains a gap in the literature to study generic graduate attributes related to ESD, particularly for Southeast Asian context and Myanmar HEIs. Even HEIs in the western developed countries, including the UK, mostly refer to the list of competences developed and recommended by UNESCO. However, this research questions if these are relevant and applicable to Myanmar HEIs and society. Thus, the literature review introduced the three ‘Hs’ model (Head, Heart, and Hand) which is friendly to traditional beliefs in Asian and Myanmar society.

The last part of the literature review focuses on two models: ESD integration and educational reconstruction. This research proposes a modified model of ‘4Cs+RP’ (curriculum, community, campus, culture, research, and pedagogy) considering all possible aspects of integration at HEI’s practices. The education for reconstruction model proposed by Arnhold et al. (1998) mainly informs the emergence of three main research questions for this thesis. As Myanmar HEIs have been strictly controlled by centralised administrative bodies and the recent education reform was halted by the coup in 2021, HEIs’ transformation is an important part of the study considering all potential changes of practices and principles required for the ESD integration. The combined use of ESD integration model and educational reconstruction processes is
helpful to conceptualise the research enquiry framework, approaches, and data analysis process.

In summary, this research is new not only to Myanmar but also to many other least developed countries (LDCs) or developing countries particularly with experiences of prolonged political crisis and civil wars. The study also aims to make a potential contribution of new learning and ideas towards further learning and implication in each individual HEI. The lack of published literature on ESD conceptualisation and integration amongst the HEIs in ASEAN and the lack of ESD related research for Myanmar HEIs have highlighted an important knowledge gap that has informed the research questions.

The following chapter explains the in-country scoping study, an important learning step of this doctoral research in the early literature review stage. As has been highlighted in the former chapters, ESD integration in Myanmar higher education is the main gap in the existing literature. Thus, this scoping study also supports developing the research conceptual framework and three main research questions.
Chapter 4 In-country Scoping Study

4.1 Introduction

As noted in previous chapters, Education for Sustainable Development (ESD) is relatively new to Myanmar’s education community. It was noted that ESD was incorporated in the new curriculum for Basic Education (primary, middle, and secondary schools) in the education reform process during 2015-2020. However, it has not yet been discussed or adopted widely amongst the Higher Education Institutions (HEIs) in Myanmar, except for some preliminary introductions through the Transformation by Innovation in Distance Education (TIDE) project and initial consideration for four-year degree programme for Educational Colleges. Due to the paucity of published literature on the role of HEIs around sustainability, sustainable development, and ESD in Myanmar, Chapter 3 covered these topics at international and regional levels more broadly (as it could not have a Myanmar focus). As a result of this deficiency in the literature, it was necessary to do an in-country scoping study, primarily aimed at discovering some key features of the existing situation to determine the scope of research further and help develop the research questions. In addition, this scoping study helped test the feasibility and reliability of the (initial) research methodology.

The results of the scoping study, as described in this chapter, are used to:

1) explore the current situation of ESD implementation in Myanmar HEIs,
2) scope out university students’ and teachers’ understandings and their perspectives on the role of HEIs for sustainable development in Myanmar, and
3) investigate students’ expectations of graduate attributes (non-disciplinary) if ESD is to be integrated with higher education (HE)

Starting with the methods used in the scoping study, the chapter first describes the university teachers’ perspectives on ESD and then the students' views on ESD in HE. The chapter ends with synthesising the key findings and recommendations from the scoping study and a summary.

4.2 Purpose and methods employed in the scoping study

To better understand the context of ESD in Myanmar HEIs and to inform the research questions, this scoping study was undertaken in Myanmar in December 2019, following full ethics approval by the Human Research Ethics Committee (HREC) of The Open University (Reference No. HREC/3423/Lwin) (See Appendix 1). The study mainly
involved semi-structured interviews with university teachers and focus group discussions (FGD) with university students on their understanding of ESD and the factors that they think are important in higher education for ESD. In addition, a literature search was done at the Universities’ Central Library on the Yangon University campus as part of the fieldwork.

**Interview with teachers:** Seventeen individuals representing ten universities across five locations (Yangon, Mandalay, Sagaing, Naypyitaw, and Loikaw) participated in the semi-structured interviews. These participants brought diverse expertise, spanning various disciplines and specialisations such as science, art, agriculture, and engineering. The interviews were conducted adhering to the prepared semi-structured question guidelines (See Appendix 2) and following the guiding principles set forth by the HREC (Human Research Ethics Committee).

**Focus Groups with students:** In four cities, namely Yangon, Mandalay, Loikaw and Sittwe, focus group discussions were conducted, and a total of 37 participants took part in these sessions. The purpose of selecting four different geographical locations was to cover the range of students’ backgrounds and fields of study.

- Yangon is the capital city of Myanmar with several universities offering diverse disciplines and accommodating many students from various parts of Myanmar. Moreover, potential participants with different socio-economic backgrounds and socio-cultural experiences studying there.
- Mandalay is the second largest city of Myanmar and the hub of students from upper (northern) Myanmar with different cultural and socio-economic backgrounds, too. Compared to Yangon, it was assumed that students in Mandalay might have slightly fewer opportunities for exposure to public events and international affairs.
- Loikaw, the capital of Kayah State, is the eastern part of Myanmar and is a mountainous landscape of several ethnic minority groups. It was chosen to include students from remote areas where access to higher education is more difficult and as an under-developed and war-affected location.
- Sittwe was selected to cover the different range of voices from the ethnic minority groups residing in the West of Myanmar. It is the capital of Rakhine State and was selected for its remoteness, representation of a minority ethnic group, and its geographic area (coastal area).
The invitation was shared through social media on the researcher’s networks. All participants were fully informed before they consented to participate, including the purpose of the scoping study and data anonymisation. Both facilitating group discussions and taking notes were carried out by the researcher himself. All the information discussed in group discussions was recorded as written notes (FGD-1, FGD-2, etc.) without personal data. The final researcher’s notes on each FGD session were written in English. Myanmar language was used as the medium of instruction and discussion except for some terms described in Myanmar and English.

Data from interviews and focus group discussions were translated into English shortly after January 2, 2020, in Myanmar. The data were manually processed and analysed. Microsoft Excel was used for the frequency of references in each code across all participants, although qualitative data were the key source.

Before being analysed, the data were thoroughly read and checked to ensure their clarity and understandability. Then the key textual points were highlighted and listed. After that, all these points were grouped under different themes based on their similarities and semantics. Then the groups were named according to their thematic nature, such as professional development of university teachers, curriculum, leadership of the universities and multi stakeholders’ involvement, etc. The interview and FGDs data were analysed by the same method.

Each thematic group was counted to notify how frequently the participants highlighted it. However, this only partially represents the degree of importance of each theme and the number of participants who responded to a particular question. The main purpose was first to see how teachers view the elements in their HEI context as key features for the HEIs’ transformation and potential ideas of ESD integration in their HEIs’ systems. Similar techniques were applied to the students’ perspectives, except for an additional question about their expected graduate attributes.

### 4.3 Teachers’ perspectives on ESD in HEIs

Generally, interview participants (teachers) agreed that ESD was important as it prepares the young generation with good values and practices for a desirable future. They see university as a training ground to equip young learners with proper skills and knowledge for society’s required human resources. One teacher highlighted the undergraduate student experience as a critical period in one’s life during which they are accumulating new concepts and values. Furthermore, another teacher said that it is a foundational stage for their social and personal development, including internalising a
new vision in addition to their disciplinary knowledge and skills. The interview data revealed sixteen important categories for ESD implementation in Myanmar HEIs (see Table 4.1). These are the outputs of the first part of the exploratory enquiry in the interview process.

**Table 4.1 Categories to be considered for ESD implementation in Myanmar HEIs**

<table>
<thead>
<tr>
<th>No.</th>
<th>Categories for ESD integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Professional Development of University Teachers</td>
</tr>
<tr>
<td>2</td>
<td>Curriculum</td>
</tr>
<tr>
<td>3</td>
<td>Infrastructures</td>
</tr>
<tr>
<td>4</td>
<td>Culture of cooperation</td>
</tr>
<tr>
<td>5</td>
<td>The motivation of University Teachers</td>
</tr>
<tr>
<td>6</td>
<td>Network and International Cooperation</td>
</tr>
<tr>
<td>7</td>
<td>Leadership of Universities</td>
</tr>
<tr>
<td>8</td>
<td>Quality Assurance System/ Exam System</td>
</tr>
<tr>
<td>9</td>
<td>Integration of Environmental Awareness and Concern</td>
</tr>
<tr>
<td>10</td>
<td>Multi-stakeholder's involvement</td>
</tr>
<tr>
<td>11</td>
<td>Peer Learning amongst University Teachers</td>
</tr>
<tr>
<td>12</td>
<td>Research</td>
</tr>
<tr>
<td>13</td>
<td>Student's willingness to learn</td>
</tr>
<tr>
<td>14</td>
<td>Social Awareness/Skills</td>
</tr>
<tr>
<td>15</td>
<td>Art and emotional intelligence</td>
</tr>
<tr>
<td>16</td>
<td>University's Vision and Mission towards ESD</td>
</tr>
</tbody>
</table>

*Source: From Semi-Structured Interviews, Scoping Study (December 2019)*

To ensure the participants' understanding of HEIs' role in ESD implementation and to look at their perspectives of important factors, a follow-up question was used to identify the most important (priority) needs to integrate ESD effectively, and seven categories of important needs were listed along with their frequency (see Table 4.2).
Table 4.2 Important ‘Needs’ for ESD Implementation in Myanmar HEIs

<table>
<thead>
<tr>
<th>No.</th>
<th>Needs</th>
<th>Description</th>
<th>Frequency</th>
</tr>
</thead>
</table>
| 1   | Teachers’ Awareness & Capacity Development | Pedagogical skills  
International experience  
Ability to use multi-media  
Motivation and ESD awareness  
Cross-learning amongst academic staff | 12        |
| 2   | Curriculum                           | Review from a sustainability perspective  
Interdisciplinary connection (e.g., Engineering, environmental/socio-economic sciences)  
Extra-curriculum activities/ Programmes | 5         |
| 3   | Resources                            | Experts to train the academic staff  
Financial resources  
Library facilities and learning resources  
Facilities/teaching aids (e.g., software) | 5         |
| 4   | Leadership                           | Awareness/commitment of HEIs’ leaders | 4         |
| 5   | Policy and Systems                   | Review the current examination system  
Balance ratio of students-teachers  
Better human resource management (especially staff allocation and transfer)  
Upgrade the University of Distance Education (UDE) by enhancing its teaching-learning process.  
As core graduate attributes, raise environmental and social awareness and sympathy in university education.  
‘Art and Emotional Intelligence’ are considered graduate attributes.  
Linking HEIs’ vision/mission to SD and promoting awareness | 4         |
| 6   | Culture of cooperation               | Stronger cooperation across different departments and HEIs  
Networking and partnership with international institutions | 3         |
| 7   | Stakeholders’ participation          | All stakeholders’ involvement  
Student’s willingness to learn | 2         |

Source: From Semi-Structured Interviews, Scoping Study (December 2019)

The role of university teachers was most frequently mentioned, followed by curriculum and availability of resources. Other needs were about leadership support, better policy, and systems of HEIs, promoting a culture of cooperation, and encouraging stakeholders’ active participation.
4.4 Students’ perspective on ESD in HEIs

The FGDs with university students explored their expectations of higher education and their opinions on ESD implementation. Moreover, a wide range of generic skills and knowledge, in addition to their disciplinary ones, are expected from their university education:

- Improve their leadership and management skills,
- Enhance social skills and communication skills for teamwork,
- Upgrade their emotional intelligence,
- Broaden their knowledge of local to global issues and cultural awareness,
- Develop their digital skills, media literacy and research skills,
- Upgrade their English language proficiency and presentation skills,
- Increase their readiness in professionalism and potentiality for employability,
- Develop cognitive skills like critical thinking, logical thinking, and analytical thinking, and
- Develop their ability to apply their major subjects (e.g., locally relevant applied chemistry for some areas).

Amongst this list, leadership skills, management skills, social skills and emotional intelligence were frequently expressed by participants in all four FGDs, whilst the rest were also considered important graduate attributes. In addition to these points, the participants wanted the following improvements in Myanmar HEIs:

- The university teachers should apply more interactive and innovative teaching methods and support students more effectively by providing critical feedback on their research projects or assignments. They recommended more investment in university teachers’ Professional Development (PD), promoting academic freedom and recognising their dignity.
- Transferring the staff to remote areas as a penalty should be halted in the government’s administrative system, including HEIs. Faculty members with good experience and qualifications work in the remote site for only 1 or 2 years before returning to the major cities. This is perceived as unfair for the students in the remote locations, and it was intensely discussed in both Kayah and Rakhine States, where ethnic minority students feel desperate for a change to this practice.
- Better measures should be applied to ensure anti-corruption (particularly regarding staff promotion), allow decentralisation, and enable the academic staff recruitment process related to a Professional Standard Framework.
University admission systems should favour students' choices and interests. Quality Assurance Systems should be developed to ensure desirable knowledge and skills development. To help build this, improvement is needed in the current assessment methods, pushing both students and teachers towards exam-oriented teaching and learning.

The current practice of budget distribution amongst the universities should be fair and transparent. Better information management should be done for more effective communication and comprehensive public relations.

Universities should have freedom and autonomy for cooperation with other non-governmental organisations (NGOs) or international organisations and campus management.

Most universities in Myanmar have poor laboratory facilities, creating fewer opportunities for students to access practice and learning. Other facilities like libraries, sports, and canteens (cafés) need to be renovated and upgraded to become safe, reliable, and environmentally friendly learning spaces.

The participants also mentioned that students should actively engage in extracurricular activities and social movements on campus.

To integrate ESD in HEIs, participants suggested that the Myanmar government should:

- start with changes from the basic education level,
- develop a better educational policy for the future generations,
- make sure that university teachers understand the goal and visions of their institutions and build their confidence by empowering them, and
- facilitate the job satisfaction of the academic staff.

Some focus groups claimed that sustainable development should be added to the curriculum content. One group recommended establishing a particular unit or department to train the teaching staff from all HEIs on ESD awareness and related skills. The participants encouraged extracurricular activities as they perceived that students should take opportunities to gain experience through non-formal and informal learning processes. Student exchange and civic education programmes were also fostered. Moreover, the participants in the FGDs highlighted freedom of expression and discussion as an important necessity. Innovative learning opportunities (e.g., field trips, presentations, group discussions) should be created, and the teaching and learning aims should be a social impact.

In short, student participants want more practical work, experiential learning, teachers’ coaching support, and access to learning resources and reading materials for effective
and independent learning. Most discussions by the students’ focus groups covered the overall development or transformational aspects of HEIs in Myanmar rather than the ESD-specific perspectives. However, comprehensive growth and transformation are fundamentally important for better ESD integration.

4.5 Key findings and recommendations

The key findings and recommendations of the scoping study are:

- As noted in Chapter 2, ESD does not have a high profile amongst the HEIs in Myanmar, and more SDGs awareness is needed amongst the academic staff, according to the responses by some interviewees (university teachers). The teachers’ professional development was a focal point of discussions in both interviews (teachers) and FGDs (students), especially in innovative teaching in HEIs to meet developing a wide range of expected skills and knowledge or ESD graduate attributes discussed in Chapter 3.

- The curriculum approach is a question of the best strategic direction – to integrate ESD in the existing curricula, teach as stand-alone modules, or use a ‘hidden’ curriculum approach or something else.

- Having proper awareness of SDGs and a deeper understanding of ESD amongst academics across all disciplines might be helpful for the application of a hidden curriculum approach in the context of Myanmar HEIs.

- Review of current systems (including curriculum, teaching, learning, and assessment) is called for as part of a Quality Assurance System and more studies on graduate attributes and employability are recommended.

- Transformational development in HEIs’ leadership, administration, and management, including human resources, are highly recommended. This is also reflected in the reviewed literature in Chapter 3 and will be covered in the findings and discussions in Chapter 8.

- Government and policymakers must provide the required support and resources to meet these expectations.

- All stakeholders’ interests and participation must be recognised at all levels of the educational reform process. It is aligned with what has been discussed in the 4Cs+RP model in Chapter 3.

- Basic needs for HEIs’ facilities, e.g., infrastructures, libraries, laboratories and learning spaces for both students and teachers, should be prioritised. This point is supported by physical reconstruction in the model of Arnhold et al. (1998).
Regarding the teachers’ professional development and upgrading the quality of university leadership, further cross-checking with other relevant stakeholders’ views should be undertaken because it is also aligned with a strategic programme component of the National Education Strategic Plan (NESP), i.e., to establish a National Institute for Higher Education Development (NIHED) for the capacity development of the professionals and leaders of HEIs (Ministry of Education, 2016).

The expected graduate attributes discussed in the students’ focus groups showed different abilities ranging from thinking skills through emotional intelligence to many other skills required for their personal lives and professional works. The ‘3Hs’ model (Head, Heart, and Hand), discussed in the literature review (see 3.6.2), and these graduate attributes expected by the students in the scoping study are helpful to affirm the second research question – to explore what graduate attributes to be expected from integrating ESD in Myanmar HEIs. There could be a certain set of graduate attributes which are relevant or potentially contributing to building the desirable sustainable future for Myanmar. Reflecting on holistic development of UNESCO’s ESD competency in Chapter 3 and the context of Myanmar in Chapter 2, students’ development can be considered based on the three sets of attributes: Head, Heart, and Hand.

Moreover, it can be clearly observed that the role of HEIs in implementing ESD are aligned with the 4Cs+RP model discussed in the literature review (see 3.7) because the discussions from both focus groups and individual interviews covered all the elements in the model: curriculum; campus; community; culture; research; and pedagogy. The recommended changes to be made for Myanmar HEIs’ improvement are also consistently reflecting the HEIs’ transformation based on the Arnhold et al.’s (1998) model of education for reconstruction. Findings from both reviewed literature and this scoping study informed in developing the last research question – to investigate what changes in policies and practices to be made for the transformation of Myanmar HEIs.

4.6 Chapter Summary

The scoping study, which was conducted alongside the initial literature review, was conducted in the first year of this doctoral research, to understand the context of ESD in Myanmar HEIs. The responses from 17 university teachers and 37 students in the scoping study helped determine the research scope. Then, continuous as well as iterative literature review informed this research enquiry. Consequently, both intensive literature review and the findings of scoping study helped shaping the research questions because the knowledge from those prior studies affirms that ESD is still new
to Myanmar HEIs, and it is important to appreciate how ESD is understood or can be conceptualised in the Myanmar context. Most scoping study participants were not yet aware of SDGs and ESD, and the literature review has shown a significant research gap in Myanmar HEIs’ engagement in ESD integration. Therefore, this scoping study also contribute to affirming and justifying the research scope and questions.

Both focus groups and interviews covered the graduate attributes to be expected for ESD. The students’ responses to graduate attributes also relate to necessary changes to be made in the teaching, learning, assessment, and university leadership. Moreover, both groups of participants emphasised transforming the HEIs in various aspects, which is also related to developing expected graduate competencies through a quality education system. All the key areas covered in the scoping study such as potential ESD integration, higher education reform process for Myanmar HEIs can be related to the models reviewed in Chapter 3. It shows that more detailed studies are needed to understand the whole context and affirms the third research question – what changes to be made for Myanmar HEIs’ transformation.

In addition to these purposes, the experiences from this study informed the research approach and data collection methods in many ways, such as to ensure the invitation process is as widely distributed as possible, to ensure participants are sufficiently informed of their consent, better to use a volunteer’s assistance in focus groups, and to use audio recordings in both interviews and focus group for more effective data collection. Moreover, these experiences helped design and plan the research and data management. Carrying out the scoping study, including HREC approval, interviewing participants, and facilitating focus groups, provided valuable experience, and helped to develop important skills for the main research. Even though the main data collection was unexpectedly moved online, this scoping study was an important stage for the researcher’s development. Similar approach, except using online mode of data collection, was applied in the main research data collection and the models discussed in the reviewed literature and key findings from this scoping study supported the data analysis stage because the actual data from the main research reveal very similar patterns and results particularly in the second and the third research questions.

In short, this in-country scoping study helps fill the literature gap in understanding ESD in Myanmar HEIs and supports the scoping and framing of the research design and questions. It also affirms the research enquiry approach and develops the researcher’s knowledge and skills for the main research. The next chapter details the full research methodology, adapted to cope with a global pandemic and an in-country military coup.
Chapter 5 Research Methodology

5.1 Introduction

The previous chapters have explained the background context of both international and local ESD implementation (what is to be studied), the main purpose of this research, and how the research questions were scoped and developed (why this study was undertaken). This chapter details the adapted research approach and methods in the changing context (how it was studied). As discussed in Chapters 3 and 4, Education for Sustainability (ESD) is not only a contested term in international communities but also relatively new to the Higher Education Institutions (HEIs) in Myanmar. The HEIs in Myanmar bear two unique features: the centralised control by the military regime (historical context) and the recent reforms hindered by the coup (current political context). For these reasons, this research aims to understand how ESD could be viewed and integrated in Myanmar HEIs, which need to be reconstructed. However, this doctoral research project was interrupted and influenced by the global pandemic lockdown (2020-22) and the political turmoil in Myanmar, the country to be studied (2021-2023). The original research design, i.e., case studies of two universities in Myanmar, had to be dropped after four months of preparation due to the military coup in February 2021. After a two-month study-break, a new research enquiry was designed in discussion with supervisors - a mixed methods approach using online survey, interviews, and focus groups to generate quantitative and qualitative data to be largely analysed through an interpretivist approach using a grounded theory method. It was decided that a mixed methods approach could be appropriately employed to answer the three original research questions (RQ):

RQ (1) How might ESD be conceptualised in the Myanmar HEIs’ context?

RQ (2) What are the graduate attributes to be expected from integrating this conception of ESD in Myanmar HEIs?

RQ (3) What transformations in Myanmar HEIs’ educational policy and practices are needed to develop these graduate attributes?

This research aims to investigate these questions from the perspectives of Myanmar university teachers, students, and key informant interviewees with different socio-cultural and professional backgrounds. Indeed, it relies on the abundant qualitative data acquired but, in addition, a quantitative survey of graduate attributes is also an important source of data to answer RQ2.
The chapter is set out as follows.

- philosophical orientation and research paradigm (section 5.2),
- preparation (section 5.3),
- research data collection (section 5.4),
- data processing and analysis (section 5.5),
- reliability and validity (section 5.6), and
- chapter summary (section 5.7).

5.2 Philosophical orientation and research paradigm

5.2.1 Ontological and epistemological stance

Aiming to understand how ESD can be conceptualised in the context of Myanmar HEIs, ‘sustainability’ or ‘sustainable development’ are the key terms or texts to be explored and understood in Myanmar society. It is necessary to recognise in which situations these texts are used or how they are expressed. The latter is known as context which can be understood as ‘encompassing external (institutional and cultural) factors and/or internal, cognitive factors’ (House, 2006, p. 342). Then, it is necessary to understand the related context and situations in which the text is used or expressed with a particular intention to explain. The knowledge that the first research question (RQ1) attempts to understand – how ESD can be interpreted, expected, and to be operationalised relating to the contextual factors in Myanmar HEIs - means it was ontologically orientated to relativism because the nature of knowledge to be studied in this research is relative to a specific society or cultural context (Bernstein, 1983) and the concepts (e.g., sustainability or ESD) in this research may be differently represented depending on how people in Myanmar society think about or view it (O’Grady, 2002). Relativism, which is different from positivism and sometimes synonymously used as pluralism, is simply explained by O’Grady that ‘there are alternatives – where there is more than one canonical or valid account of reality’ (2002, p. 5). Likewise, the second and third research questions (RQ2 and RQ3) - to investigate the stakeholders’ perspectives and priorities on the ESD graduate attributes and the required changes to be made for the HEI’s policies and practices and ESD integration - are similarly based on the participants’ understanding, interpretation, and their value laden disposition.

The subjective approach has been employed as a suitable epistemological assumption because it was enquired through ‘the interpretive understanding of the social action’ (Weber, 1947, cited in Bryman, 2016, p. 26) based on the research participants’ experience, knowledge, ideas, expectation, or conceptions. Such an interpretivist
approach embraces the logic of inquiry which attempts to understand the social phenomenon which is different from the phenomenon being investigated by the natural science and historians and social scientists (Hammersley, 2013). The key difference from physical science explained by Hammersley (2013) is that interpretivism appreciates that people:

‘actively interpret or make sense of their environment and of themselves; that the ways in which they do are shaped by the particular cultures in which they live; and that these distinctive cultural orientations will strongly influence not only what they believe but also what they do’ (p. 26).

The theoretical foundation of knowledge acquisition in this research is characterised by a predominantly inductive enquiry and the knowledge to be acquired is specified as being culturally or contextually unique. Therefore, an interpretivist approach has been mainly employed for this type of study. However, a quantitative study was conducted to understand the priority ranking of the desirable ESD graduate attributes and how priority rankings were associated with socio-demographic factors in responding to RQ2. Therefore, a quantitative survey for the graduate attributes was employed for RQ2 along with qualitative inquiry techniques such as semi-structured key informant interviews (KII) and two focus group discussions (FGDs) with university teachers and students to answer RQ1 and RQ3.

### 5.2.2 Adapted research enquiry framework

The original research design had to be adapted due to the political changes in Myanmar, making it impossible to carry out in-country data collection work due to safety and ethical issues. An alternative approach was developed i.e., to study Myanmar university teachers and students who are doing their post-graduate studies in Thailand and other neighbouring countries. They were considered as potential as well as relevant research participants to help answer the proposed RQs due to their higher education experience in Myanmar, and more importantly it was safer for them to participate in the FGDs compared with those living inside Myanmar. In addition, some potential KII participants were also residing outside Myanmar. These attempts to understand people’s ideas, perspectives, and expectations are matched with a qualitative enquiry approach rather than a narrowly scoped quantitative survey. Therefore, qualitative strategy was selected as the most suitable approach to answer RQ1 and RQ3 and to prepare the potential list of graduate attributes for the RQ2 which was also contributed by the quantitative study. Table 5.1 summarises the adapted research enquiry framework to answer the RQs.
Table 5.1 Research enquiry framework

<table>
<thead>
<tr>
<th>Sub-Questions</th>
<th>Required data/information</th>
<th>Data collection method</th>
<th>Data Analysis method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Question 1) How might ESD be conceptualised in the Myanmar HEIs’ context?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 What are the desirable features of sustainable development of Myanmar?</td>
<td>Previous Myanmar government’s commitment and strategies for SD, its plan in HE policy and HEI related information</td>
<td>Literature and official documents (government policies, reports)</td>
<td>Literature review</td>
</tr>
<tr>
<td></td>
<td>Different stakeholders’ perspective on their desirable sustainable development of Myanmar</td>
<td>KII and FGD</td>
<td>Thematic Analysis</td>
</tr>
<tr>
<td>1.2 What should be the role of HEIs for the sustainable future of Myanmar?</td>
<td>Different stakeholders’ perspectives on HEIs’ roles for SD for Myanmar - ESD</td>
<td>KII and FGD</td>
<td>Thematic Analysis</td>
</tr>
</tbody>
</table>

Research Question 2) What are the graduate attributes to be expected from integrating this conception of ESD in Myanmar HEIs?

| 2.1 What graduate attributes should be expected to contribute to the sustainable development of Myanmar? | Attitude, behaviours, and competencies required as graduate attribute for the SD of Myanmar | KII and FGD | Thematic analysis |
| 2.2 What are the most important ESD related graduate attributes that Myanmar HEIs need to consider? | FGD participants’ perspectives on the priority graduate attributes | Jam-board survey with FGD participants | Quantitative analysis |
| Prioritised ESD related graduate attributes | Online survey (stakeholders related to HEIs) | Quantitative analysis |

Research Question 3) What transformations in Myanmar HEIs’ educational policy and practices are needed to develop these graduate attributes?

| 2.1 What are the key elements in the Myanmar HEIs’ context for developing ESD related graduate attributes? | HEIs’ stakeholders’ perspective on what can potentially contribute to the development of expected graduate attributes | KII and FGD | Thematic analysis |
| 2.1 What could be the potential changes to be made in the practices and principles of HEIs for their transformation in enabling ESD integration? | Important changes to be made in the HEIs’ systems (policy/principles and practices) | KII and FGD | Thematic analysis |
| 3.3 How these elements, policies, and practices are inter-related in contributing to the development of ESD graduate attributes? | A diagram showing the interacting elements or activities in the Myanmar HEIs’ context to contribute to developing ESD graduate attributes | collected qualitative data and analyses | Matrix-coding and Influence diagram |

Note: KII = Key Informant Interview, FGD = Focus Group Discussion
5.2.3 Choice of data collection and analysis methods

This section briefly introduces the full range of data collection and analysis methods used (see Figure 5.1) and more detailed procedures and justifications are explained in the following sub-sections.

![Flow-chart of research data collection and analysis procedures](image)

*Figure 5.1 Flow-chart of research data collection and analysis procedures*


**KIIIs and FGDs for qualitative data:** The interviews with key informants, namely politicians, scholars/academics, businessman, and leaders from HEIs and Non-governmental Organisations (NGOs) or Civil Society Organisations (CSOs), were employed according to the claim by Hammersley (2013) that it is ‘the best way of eliciting accounts of people’s experience and perspectives’ (p. 54). Similarly, the FGD technique was employed as it is considered effective and relevant to capture the ideas, thoughts, and perspectives from a group of participants with similar experiences and to understand ‘why people feel the way they do’ and ‘the ways in which the individuals collectively make sense of a phenomenon and construct meanings around it’ (Bryman, 2016, p. 502).

Focus group is ‘an organised group discussion around a given topic, which is monitored, guided if necessary, and recorded by a researcher’ according to Stewart and Williams (2005, p. 396). The term online focus groups are widely used but can use different modes of communications over different time periods. Stewart and Williams (2005) discussed two types: ‘synchronous’ (the discussions are all at the same time) or ‘asynchronous’ (discussions can be made for a certain period via emails or any other social media platforms) (p. 402). Synchronous online focus groups were employed in this research.

**Using online mode:** Having recognised risk and safety concerns in such a politically sensitive situation in Myanmar as well as travel constraints with Covid-19 related restrictions, snowball sampling and targeted sampling were applied to explore and recruit the potential participants (Watters and Biernacki, 1989; Browne, 2005; Leighton et al., 2021). It was more sensitive and difficult to invite university teachers because most of them protested the military coup by participating in the Civil Disobedience Movement (CDM) and they had great concerns for their safety. As a general assumption, university students were relatively more confident as well as having less risks than teachers to participate in the focus groups. Moreover, the researcher’s social contacts were helpful in the participant invitation process.

Responding to the global pandemic restrictions necessitated a wider use of digitally assisted (online) data collection methods amongst social science researchers (Harper et al., 2020; Hall, Gaved and Sargent, 2021; Shamsuddin, Sheikh and Keers, 2021). As this research was also subject to the pandemic travel restrictions, internet-based research data collection was employed for both qualitative and quantitative data. Zoom Video Conferencing was used for both key informant interviews and focus group discussions to collect the qualitative data required for RQ1 and RQ3. There are many
good reasons to use it - accessibility, convenience, safety, and comfort. Participants can keep their video screen on or off, use pseudonyms for their identification, and can use the chat box or private chatting if they preferred or needed to (Dodds and Hess, 2021).

**Online survey:** There has been an increased reliance on the internet (email or web-based) surveys amongst various researchers, institutions including educational and commercial ones, with some benefits - lower costs, faster speed, less pollution, more potential responses in combined use with other communication modes and fewer resources required compared with a traditional mailing survey (Fricker and Schonlau, 2002; Marta-Pedroso, Freitas and Domingos, 2007; Fleming and Bowden, 2009) whilst it is still being discussed about the reliability of virtually collected research data (Baltar and Brunet, 2012). Although there are a lot of benefits, some limitations have to be acknowledged too, such as potential limitations to get access to internet (Marta-Pedroso, Freitas and Domingos, 2007; Bryman, 2016), high uncertainty of participants’ engagements or responses, and challenging situation of shifting from traditional face-to-face interview regarding power relationship (O’Connor and Madge, 2003; Marta-Pedroso, Freitas and Domingos, 2007). However, this method was selected with an assumption that most of the university students and graduates invited to take part in this survey might be using smart-phones and have internet access.

Moreover, an opportunity to get responses from *‘hard-to-reach/ hard-to-involve population’* is acknowledged by Baltar and Brunet (2012, p. 58) and it has been recommended as a *‘convenience sampling’* by Fricker and Schonlau (2002, p. 354) for some research that does not need probability-based statistical inferencing. Although the targeted respondents for the online-survey do not fall under a hard-to-reach population, the given context of ongoing political conflicts and crisis could be a barrier for them to express their opinions openly and safely. It is justifiable to use the web-based survey to reach them for their opinions. Sampling will be explained in more detail in the following sub-section. After carefully designing and pre-testing a web-based survey (Jisc Online Survey) as suggested by Fricker and Schonlau (2002), the online survey (Appendix 3) was conducted to study Myanmar national’s perspectives on their priority ranking of the selected graduate attributes (RQ2).

47 [https://www.onlinesurveys.ac.uk/](https://www.onlinesurveys.ac.uk/)
Research data analysis: Firstly, systematic analysis was carried out to list all possible graduate attributes from the pool of qualitative data. Then, they were quantitatively studied for their priority ranking based on the data of online survey which also had three open ended questions. Statistical Package for Social Sciences (SPSS) was applied for the quantitative analysis in which descriptive and non-parametric tests were mainly used. The qualitative data from the online survey were transferred to NVivo and analysed together with the existing qualitative data from KII and FGDs. Thematic analysis was employed for the qualitative data in addressing the research questions 1 and 3, as well as generating the thematic groups of graduate attributes for the RQ2. Themes related to the expected features of sustainable future or sustainable development in Myanmar were developed based on the coding process using all sources of qualitative data. The same approach was applied to the themes for ESD, related graduate attributes, and the potential approaches of ESD integration, and the educational reconstruction for HEIs’ transformation.

5.3 Preparation

5.3.1 Ensuring ethical research

As this research had to learn from the participants in a politically sensitive time and circumstances, protecting the research subjects for their anonymity, safety, dignity, and consent were seriously considered and carefully handled throughout the project (Shamoo and Resnik, 2002). Following the General Data Protection Regulation (GDPR) guidelines based on the compliance training of The Open University (OU) (UK) and the procedural review of the OU’s Human Research Ethics Committee (HREC), the research data management plan was carefully developed, consulted with supervisors, and reviewed and approved by HREC as a part of ethical clearance process. The following key elements were considered in the research data management plan:

- the required data which must be important as well as sufficient to answer the respective research questions
- the methods for collecting and storing those data
- the title formats of the video/audio and text files (transcripts)
- the folders to keep different files: recorded video/audio, text files, and the survey files including back-up files
- the data files with different names according to their types and stages
- coding to prepare pseudonyms for personal and organisational names
• other precautionary tasks and reminders such as recording, using passwords for important files, Virtual Private Network (VPN), etc.
• destroying and deleting both physical and digital primary data

This research project was reviewed by the HREC twice, once for the original research plan then again for the amended plan following the pandemic and the military coup. It was approved with the reference code HREC/3767/Lwin (Appendix 4), and the ethical review covers:

• the consent forms
• participant information sheet
• information leaflet
• research data management plan
• semi-structured questionnaires to be used in the focus groups and interviews
• online survey format, and
• research project outline.

The experience of the in-country scoping study in 2019 was of significant help to the researcher in terms of both HREC application, preparation, ethical conducts, and qualitative research enquiries in the context of Myanmar culture. There were no sensitive or vulnerable groups, for example, children, disabled people, criminal and terrorism-related groups, or sensitive topics like religious affairs in the research enquiry. Besides, all the participants were well informed and encouraged to contact the researcher for any complaints if they have any uncomfortable or uneasy feelings during the invitation, interview or focus group discussions, and follow-on communications. The participants were respectfully informed to contact the supervisor for any complaint or feedback regarding the researcher’s conduct.

The potential research participants had the research carefully explained to them, including the purpose and process of data collection, and how it would be used. They were informed of their freedom of decision making to either participate or not participate, and if they chose to participate, they had the option to withdraw their participation even during the interview or focus group discussions (Shamoo and Resnik, 2002). They could withdraw their discussion points, even after the interviews or focus groups, without a requirement to give any reason, up to the point of data processing for analysis. In addition, they were informed that they could turn off their video, use any pseudonyms in the Zoom video conference, and use the chat box for the focus groups. Due to the politically sensitive period, the researcher went through the time-consuming process -
contacting participants individually to check any worries or concerns and to elicit suggestions or requests before the data collection day. Moreover, advice from peers and supervisors were sought to ensure the smooth, safe, ethical, and effective KIIIs and FGDs.

A volunteer participated to assist the researcher during the focus groups. Monitoring the entire process, she could provide the researcher with important reminders/ comments/ feedback/ suggestions to ensure equal participation, timely flow of discussions, and to help with the balance of the group dynamic and overseeing the participants’ voice or text-messages in the chat box. Having an assistant in the online focus groups was helpful in many ways, although the main purpose was to ensure the researcher’s ethical conduct and all practices by receiving her feedback after the focus groups.

In fact, ensuring ethical research conduct not only applies to the consent processes and interview practices, but it is also related to all the activities throughout the project, including the research data management. Moreover, participants were respectfully informed about progress and the researcher shared early results and findings via webinars. Overall, the data collection process went well because most participants were familiar with using Zoom. The videos were recorded only on the researcher’s computer. Then, it was transferred to an external hard disk for backing up with passcodes. To ensure the participants’ anonymity, the data were carefully handled during transcribing and translation processes as discussed in the data management plan.

5.3.2 Risk mitigation

This type of internet-mediated research data collection is very likely to be safe for both researcher and participants. However, detailed guidance was given to the potential participants for their safety in using electronic equipment or devices in the briefing session as well as the beginning of the interview or FGDs. Some people in Myanmar are afraid of using mobile phones or computers during heavy rain, thunder, and lightning. Therefore, they were encouraged to pause if they were not comfortable to continue in that situation.

Also, the participants were invited to choose their most suitable time and space to participate in the online interviews and focus groups. Their comfort and safety were considered as high priority during the COVID-19 pandemic situation. They were informed that no sensitive information would be collected and there was no likelihood for any risk of serious psychological or emotional problems.
The individual interviews went well as all the key informants were mature and familiar with the internet and the Zoom. In addition, it was relatively easier because the researcher and the interviewees could easily negotiate for any required changes, and the researcher could facilitate and manoeuvre the flow of the interview by observing the interviewee’s motivation and interests. Nevertheless, it was challenging to conduct the focus group with university teachers at that time due to social tension between two groups of government employees including them: those who joined CDM and those who did not. It was of great concern to the researcher that politically polarised participants may have posed a risk to each other. Despite the concerns, both focus groups were smoothly as well as effectively completed with thorough consideration, consultations, and preparedness.

5.3.3 Sampling and participants selection in the given context

Being different from quantitative research, which is often based on probabilistic sampling, the qualitative data collection commonly, but not limited to, applies ‘purposive sampling’ – a method to select the potential sample members from specific groups of people with relevant categories or characteristics which are strategically considered as being matched with the research questions (Teddlie and Yu, 2007; Bryman, 2016). In other words, the research questions provide guidance of what type of cases or persons should be selected to answer them (Bryman, 2016). Following the two levels of sampling as suggested by Bryman (2016), the context and the participants were considered in sampling for the qualitative research data. For example, the key informant interview participants were considered based on the diverse ethnic and socio-economic backgrounds including their professional areas. For the focus groups, Myanmar university teachers and students studying abroad were targeted as the relevant participants for the proposed RQs because of their experience in the context of Myanmar HEIs and the purpose of avoiding undesirable harms or risks.

As discussed in the remote data collection, university teachers apparently became a hidden population while the CDM movement rose to its peak. Both CDM and non-CDM groups had been threatened and pressured by sources. In such a condition, they were inactive in social media and social contacts to minimize their potential harms/risks, even though they were studying in foreign countries. Such a condition has led this research to use ‘targeted sampling’ which was explained by Watters and Biemacki (1989) as
Risk mitigation was carefully overseen, not only for the university teachers, but also for the students and the key informants. Indeed, different approaches to sampling were applied, including criterion sampling, snowball sampling, and opportunistic sampling (Bryman, 2016). Amongst them, snowball sampling was employed through all potential social media contacts and networks in the given context of global crisis (Baltar and Brunet, 2012; Bryman, 2016; Leighton et al., 2021). Teddlie and Yu (2007) claimed that a lot of qualitative researchers conduct ‘sampling using multiple purposive techniques’ in which two or more purposive sampling strategies or techniques are used (Teddlie and Yu, 2007, p. 83). This research needed to consider a wider range of criteria for the research participants: experiences, cultural and professional backgrounds (for the KIIs), the targeted stakeholders of HEIs (teachers and students), and the accessibility and safety due to the context, hence multiple sampling techniques were appropriate.

All the participants, for both KIIs and FGDs, were contacted through the researcher’s social contacts and introduced personally (see Table 5.2). Some webinars were undertaken ahead of the participant invitation, to introduce this research and its research questions. The presentation part of such webinar was recorded so that those who did not attend the live webinars could watch the recording to familiarise themselves with the research. These webinars were intended to be accessible and to help build trust and a good relationship between the researcher and the potential participants before the data collection step. To ensure the accessibility to the potential participants, the ethical research data collection process, and the achievement of reliable quality data, the research participants selection process was carefully undertaken through proper consultation with supervisors and some participants who were already known to the researcher. For instance, an alternative technique was used to collect the data from the three KII participants residing in Myanmar (see the data collection). Identification of potential samples were carried out based on their backgrounds (such as professional, ethnic, and academic backgrounds) and accessibility, and the justification was reviewed with supervisors.

Regarding the online survey, the sampling criteria for the potential respondents were all of the following:

- Myanmar nationals (regardless of their residing places)
• university students or graduated from any HEIs in Myanmar
• those who were over 18 years old (students in their first year are mostly 16-17 years old therefore they were excluded for their limited experiences in the HEIs).

Table 5.2 Sampling and participant selection processes for the data collection

<table>
<thead>
<tr>
<th>Data collection method</th>
<th>Applied sampling techniques and recruitment processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Informant Interview (KII)</td>
<td>Produced a list of potential participants with their socio-cultural and professional backgrounds after consulting with a friend (a potential KII participant) and supervisors. Additional potential participants were added to the list based on the suggestions from supervisors and a friend. Each of potential participants was contacted to determine their interest and availability for taking part, and they were provided with the information sheet. A short list of interviewees was prepared with up to 10 to 11 in case some might drop out for any reason. Each of them was contacted, introduced to the research, invited for interview, and provided with the consent form. The ones who responded with completed consent forms were confirmed and scheduled for interview.</td>
</tr>
<tr>
<td>Focus group with teachers and students</td>
<td>Discussion was made with some friends and potential participants, and they introduced the researcher to some more people and networks. The interested parties (e.g., networks and people) who could further extend the invitation were contacted and requested to link to relevant people. The invitation for introductory webinars was made with digital posters through social networks of interested parties. Webinars for the potential sample groups (mostly based in Thailand) were conducted and the attendees were provided with the participant information sheet. Webinar attendees who expressed an interest to participate in the research were contacted individually, given more details, asked about any concerns, and informed of the possible times of the focus groups (timings had to be negotiated with all the potential participants’ available schedules). Once the participants number reached up to 10-12 for each focus group, the list was confirmed, and the invitation was made to confirm the FGDs. Then the focus group discussions were conducted as scheduled with very few ‘no-shows’.</td>
</tr>
<tr>
<td>Online survey</td>
<td>The list of potential social contacts like friends, organisations and networks were prepared (44 contacts including the researcher himself). They were contacted and requested to help in spreading the survey invitation once it was launched. Then the survey was launched by sending to all these potential social contacts and by posting in the researcher’s Facebook page which was further shared by more friends in their networks.</td>
</tr>
</tbody>
</table>

95
According to the ‘Digital 2022: Myanmar’ report, there were approximately 25 million internet users, 21 million social media users and 73 million cellular mobile connections in Myanmar in January 2022, whilst the population of the country was counted as 55 million (Kemp, 2022). Therefore, it was assumed that a web-based survey could reach a large number of the targeted populations. As the survey was rolled out beyond Myanmar through social networks, Myanmar nationals living in other countries could also take part. Nevertheless, the potential limitations of reachability, accessibility to internet, and probable non-responses, should also be acknowledged (Bryman, 2016). As this web-based survey targeted a large population of university students and graduates using multiple sampling techniques, as well as awareness raising through webinars, the invitation was spread as widely as possible, and the resultant sample is ‘of unknown representativeness and it is impossible to know what the responses rate to the questionnaire is since the size of the population is unknown’ (Bryman, 2016, p. 192).

5.4 Research data collection

As discussed earlier, this research relied on the qualitative data from seven KIIs and two FGDs to answer the RQ1 and RQ3, as well as to prepare the ESD graduate attributes for the RQ2 which was then explored quantitatively through the online survey data to understand the prioritisation of the graduate attributes. This section details the data collection methods and procedures.

5.4.1 Key Informant Interviews (KIIs)

Potential key informants were identified based on their diverse professional and ethnic backgrounds as well as accessibility. The research aimed to interview one professional per field. Originally, two to three potential key informants were listed for each professional field to allow for potential dropouts due to accessibility or unwillingness to take part. The following list of diverse professional fields were considered relevant to provide insights and useful data for the RQs.

1) Politician
2) Development professional
3) Academic
4) Environmentalist
5) Journalist

Each citizen may have more than one mobile phone or sim-card.
Based on the individual’s accessibility, interest, availability, and commitment to participate, seven key informants (see Table 5.3) accepted to participate in the interviews. Some informants have dual roles and professional experiences. Moreover, the researcher has known all of them personally and their academic backgrounds. Having consented to participate in the research interview, they were sent a list of semi-structured questions and explained individually through emails or social media platforms such as Facebook messenger or Signal ensuring their confirmation, their satisfaction, and understanding of the process. Amongst seven key informants, three were living inside Myanmar while the remaining four were outside of the country during that time.

### Table 5.3 Key Informant Interviewees’ profiles and mode of interview

<table>
<thead>
<tr>
<th>No.</th>
<th>Job/Role</th>
<th>Professional Stand</th>
<th>Mode of Interview</th>
<th>Interview Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>KII-1</td>
<td>Education Development Manager</td>
<td>Higher Education and ESD</td>
<td>Zoom</td>
<td>06/05/2021</td>
</tr>
<tr>
<td>KII-2</td>
<td>Politician (MP)</td>
<td>Development and Gender</td>
<td>Zoom</td>
<td>23/05/2021</td>
</tr>
<tr>
<td>KII-3</td>
<td>NGO officer</td>
<td>Peace, development, and Ethnic minority</td>
<td>self-recorded audio</td>
<td>26/05/2021</td>
</tr>
<tr>
<td>KII-4</td>
<td>Writer/ Businessman/ School Founder</td>
<td>Social justice, education, ecology, and peace</td>
<td>self-written text</td>
<td>31/05/2021</td>
</tr>
<tr>
<td>KII-5</td>
<td>Professor</td>
<td>Agriculture</td>
<td>self-written text</td>
<td>06/06/2021</td>
</tr>
<tr>
<td>KII-6</td>
<td>NGO founder</td>
<td>Development and environment</td>
<td>Zoom</td>
<td>07/06/2021</td>
</tr>
<tr>
<td>KII-7</td>
<td>NGO leader/ PhD student</td>
<td>Natural Resources and Human Rights</td>
<td>Zoom</td>
<td>20/06/2021</td>
</tr>
</tbody>
</table>

49 Member of Parliament. MP will be used in the quotes in the following chapters, but it notes that this person was a former MP.
Although participants living in Myanmar had been considered out of scope due to security concerns, three relevant professionals based in Myanmar expressed an interest to be interviewed. In discussion with supervisors, it was agreed that these professionals would be very useful contributors, and alternative methods of collecting the questionnaire responses were used to minimise security concerns, i.e., their self-recorded or written files through a secure channel. Therefore, different modes were applied for the KIIs: three interviewees who were residing inside Myanmar sent their responses to the questionnaires in a self-recorded audio file or a text file to the researcher whilst the rest living outside Myanmar were interviewed through Zoom video conferences. Each online interview session took an hour, and it was recorded on the researcher’s computer.

5.4.2 Focus Group Discussions (FGDs)

Participants for the focus groups were divided into two different groups: 1) university teachers (FGD-1) and 2) university students (FGD-2). The participants in the former group (FGD-1) were the teachers from different HEIs in Myanmar and they were doing their post-graduate studies (master’s and PhD) in neighbouring countries at the time of research data collection. The latter group (FGD-2) included Myanmar students who were studying abroad.

Generally, male dominance can be obvious in such discussions in Myanmar society. However, the participants in both focus groups were educated individuals and there was no male participant in teachers’ group. There was also equal participation in the students’ group. Given that most of the students, in Myanmar culture, are not likely to speak up in a meeting in which the teachers are also present, it was appropriate to have separate focus groups for them. Moreover, a minimum gap of different levels/ranks of the teachers had been carefully considered to ensure a balanced power dynamic amongst themselves although the group was relatively homogeneous in social status according to Carey (1994) cited by Wilkinson (1998). This meant the potential for any undesirable power pressure between students and teachers was removed and their perspectives could be captured separately. It also meant that each group was an appropriate size to have good coverage of information to address the research
questions. Most potential participants for FGD-1 who showed up were found to be assistant lecturers and lecturers\textsuperscript{50}.

They were contacted through the researcher’s social networks (using pamphlets, webinars) and individually explained about the purpose of the data collection once their signed participant information sheets had been received. Receiving their signed consent forms, the schedule was confirmed with mutual agreement through a google form. Then, they were provided with the Zoom links and security passcodes. To save time in the focus groups, some preliminary questions were sent to participants through email (pre-FGD). Their responses were summarised and presented before each discussion for a particular question related to desirable sustainable development in Myanmar, roles of HEIs for sustainable development, and the expected graduate attributes.

Amongst 16 potential participants for FGD-1 (teachers), 13 replied with interest, 12 responded their consent forms, and 10 participated in the focus group (see Table 5.4). For FGD-2 (students), 15 potential participants out of 21 who were contacted relayed their interest and consent to participate, but only 9 appeared on the day of the focus group (see Table 5.5). Both FGDs had a good number of participants because 6-10 participants were recommended by Morgan (1998) for a traditional face-to-face focus group and 5-12 participants were recommended by Dodds and Hess (2021) in their review as an appropriate group size for online FGD. Considering the drop-out rate or possibility of ‘no-show’ (Morgan, 1998; Moore, McKee and McCoughlin, 2015), a greater number of potential participants than expected were strategically invited as recommended by Wilkinson (1990), cited in Bryman (2016).

\textsuperscript{50} Ranking of teaching staff in Myanmar HEIs are varied based on their administrative ministries. Generally, the graduates who are qualified for post graduate studies can be recruited as novice level of academic staff called ‘tutors’ or ‘demonstrators’. Then, they can be promoted as ‘Assistant Lecturers’ after getting their masters’ degrees and some years of teaching experiences. They can be promoted as Lecturers, Associate/Assistant Professors, and Professors consecutively. The term ‘Associate Lecturer’ is not used in Myanmar.
### Table 5.4 List of FGD-1 participants’ profiles

<table>
<thead>
<tr>
<th>No.</th>
<th>Code</th>
<th>Discipline and Current Programme</th>
<th>Academic Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>P1</td>
<td>Agriculture (Master)</td>
<td>Lecturer</td>
</tr>
<tr>
<td>2</td>
<td>P2</td>
<td>Chemical Engineering (PhD)</td>
<td>Lecturer</td>
</tr>
<tr>
<td>3</td>
<td>P3</td>
<td>Electrical Engineering Education (PhD)</td>
<td>Assistant Lecturer</td>
</tr>
<tr>
<td>4</td>
<td>P4</td>
<td>Computer (PhD)</td>
<td>Lecturer</td>
</tr>
<tr>
<td>5</td>
<td>P5</td>
<td>Educational Psychology (Master)</td>
<td>Assistant Lecturer</td>
</tr>
<tr>
<td>6</td>
<td>P6</td>
<td>Education Theory and Management (Master)</td>
<td>Assistant Lecturer</td>
</tr>
<tr>
<td>7</td>
<td>P7</td>
<td>Zoology (PhD)</td>
<td>Lecturer</td>
</tr>
<tr>
<td>8</td>
<td>P8</td>
<td>Bio-Medical Technology (Master)</td>
<td>Assistant Lecturer</td>
</tr>
<tr>
<td>9</td>
<td>P9</td>
<td>Bio-Medical Technology (Master)</td>
<td>Assistant Lecturer</td>
</tr>
<tr>
<td>10</td>
<td>P10</td>
<td>Agriculture (PhD)</td>
<td>Lecturer</td>
</tr>
</tbody>
</table>

### Table 5.5 List of FGD-2 participants’ profiles

<table>
<thead>
<tr>
<th>No.</th>
<th>Code</th>
<th>Location</th>
<th>Discipline</th>
<th>Programme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>P11</td>
<td>India</td>
<td>Civil Engineering</td>
<td>Bachelor</td>
</tr>
<tr>
<td>2</td>
<td>P12</td>
<td>Thailand</td>
<td>Remote Sensing and GIS</td>
<td>Master</td>
</tr>
<tr>
<td>3</td>
<td>P13</td>
<td>Thailand</td>
<td>Geo-Technology</td>
<td>Master</td>
</tr>
<tr>
<td>4</td>
<td>P14</td>
<td>USA</td>
<td>Wildlife Conservation</td>
<td>Master</td>
</tr>
<tr>
<td>5</td>
<td>P15</td>
<td>Thailand</td>
<td>Educational Management</td>
<td>Master</td>
</tr>
<tr>
<td>6</td>
<td>P16</td>
<td>Thailand</td>
<td>Urban Environmental Management</td>
<td>Master</td>
</tr>
<tr>
<td>7</td>
<td>P17</td>
<td>Thailand</td>
<td>Engineering</td>
<td>Master</td>
</tr>
<tr>
<td>8</td>
<td>P18</td>
<td>USA</td>
<td>Natural Resources Management</td>
<td>Master</td>
</tr>
<tr>
<td>9</td>
<td>P19</td>
<td>Thailand</td>
<td>Conservation Ecology</td>
<td>Master</td>
</tr>
</tbody>
</table>

Inclusion of diverse cultural and academic backgrounds of the participants was critical for this research to understand the diverse perspectives of sustainability and ESD concepts in the Myanmar context. The final participants were from different ethnic groups (such as Kachin, Kayin, Chin, Shan, Inn-thar and Bamar) and different religious backgrounds (such as Christians, Muslim, and Buddhists) and different disciplinary fields (see Table 5.4 and Table 5.5). They were all Myanmar citizens with experience of education system in Myanmar but currently living outside the country. Generally, both
FGDs went well and each lasted two hours with a 10-minute internal break. It was slightly difficult to facilitate to ensure inclusivity and active engagement of every participant. Generally, most of the participants actively engaged in the discussions but two to three participants were more active in both FGDs.

The quality of FGD can be influenced by many factors, an important one is the researcher’s facilitation skills: to check and balance the participants’ full presence and equal participation, as well as to adjust the seniors’ dominance in the group. At the same time, the researcher himself needed to take care of all logistical arrangements and processes. To help this, a volunteer with community development experience was invited to assist in the focus groups. She not only assisted in some logistical tasks but also co-facilitated on aspects such as time keeping, checking the energetic level of the participants, ensuring the researcher’s questions or instructions were clear for participants, and to make sure the session was recorded. Having a co-facilitator or assistant in the focus group was helpful and supportive, it helped the main facilitator (researcher) with keeping time and the flow of the group discussion, as well as providing some logistical support and helping to maintain energy levels (Krueger, 1997). It is also discussed in the researcher’s reflective learning (see Chapter 9).

Although these online focus groups were financially efficient as it saved budget for the travel costs and time for both the researcher and the participants, it did require several negotiations over the participants’ availability due to their different time zones. The researcher needed to prepare his physical setting, including overhead webcam, appropriate lighting, audio, and microphone checks, and with some flip chart paper and marker pens to hand. Rehearsal practice sessions were made with a volunteer. The participants were familiar with Zoom through the introductory webinars and individual contacts. Both FGDs were recorded and securely filed on the researcher’s computer.

5.4.3 Online Survey

Based on the initial analysis of the qualitative data from seven KII and two FGDs, key thematic areas were identified for the graduate attributes. Then, 14 graduate attributes were identified through sieving systematically from the qualitative data and selected through iterative process of consultation with both supervisors and the research participants. They were prepared with descriptors to be tested by using an online survey.

The list of graduate attributes was sent back to the research participants (both KII and FGDs) for their verification and comments before conducting the online survey. Once their confirmations with satisfaction were received, the survey was designed in the Jisc
Online Survey platform with a clear layout in which respondents can simply select the priority rank in the given range of 0 (zero) to 9 (nine) to each given graduate attribute (see Figure 5.2). The priority rank was ranged from ‘not important at all (zero)’ to ‘most important (nine)’ towards the sustainable future of Myanmar. This was followed with three open questions that enabled respondents to:

- provide some comments on the given graduate attributes
- add any additional attributes not already included that they considered important
- to make any general comments or suggestions e.g., about graduate attributes or the survey.

It took only 6-8 minutes for the respondents to complete the survey, and it was prepared in both Myanmar and English languages to overcome any language barriers. The survey design was compatible for both smart-phone and computer users (see Online Survey Form in Appendix 3). A preliminary test was carried out with the help of ten volunteers to ensure the convenience of use and accuracy. Some corrections and amendments were made based on the suggestions of the volunteers.

Recommending graduate attributes by scoring

<table>
<thead>
<tr>
<th>Social Abilities</th>
<th>0 (not relevant at all)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9 (essential/most relevant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Social abilities: Being reflexive and open-minded for feedbacks; Social</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dealing skill such as interpersonal communication skill, negotiation skill,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>conflict resolution skills, and being able to build social network; Being</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>good in teamwork such as being collaborative, adaptable, flexible, and confident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>to discuss, question or debate.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 5.2 An example of an attribute to be rated in the online survey**

The survey was launched on 18th July 2021 with an initial closing date of 15th August 2021 and initially capped at a maximum of 300 responses. However, due to requests from people who wanted to respond, the closing date was extended by ten days (to 25th August) and capped at a maximum of 500 responses. All social network contacts and...
friends were contacted and requested to share amongst their networks to reach a larger number of potential respondents. In total, 417 responses were received by the closing date. The survey succeeded by reaching a greater than planned number of respondents, even in the context of the pandemic and military coup. It showed a great contribution of friends/social networks’ collaborations and the powerful connectivity of social media platforms for effective research data collection.

5.4.4 Follow-on survey of FGD participants

The initial analysis of the online survey data showed no significant variations in prioritisation of graduate attributes, mostly the participants prioritised all the given graduate attributes as important for Myanmar HEIs from an ESD perspective (see Chapter 7 for more detail). However, there were some interesting differences when analysed by demographics, which will be explained with the survey results in Chapter 7.

To complement the online survey and help differentiate prioritisation of attributes, another online survey of the FGD participants was undertaken but this time doing their priority ranking of the 14 graduate attributes using Google Jam-board\(^5\) as an online application tool. Participants had to place each graduate attribute (mentioned on the post-it notes) in a matrix with two dimensions: degree of importance and degree of impact over time (see Figure 5.3). The matrix was composed of three levels on each axis – Low (L), Medium (M), and High (H). All the graduate attributes were provided on the left-hand side of the Jam-board and the participants had to drag them and move to the cells of their preferred ranks e.g., High-High, or High-Medium or Low-Low, etc. They were informed that the colours of post-it notes have no special meanings. Participants could do this until they were satisfied during the given period: 21 February 2022 to 07 March 2022. 15 out of 18 invitees responded to this request.

Jam-board is a helpful, feasible, visualised, and convenient digital/online board for the participants to move the post-it notes as they wish. Participants posted a note ‘DONE!’ at the bottom as a signal of completion for the researcher. Then, their emails in the shared link were changed into a viewer status to make sure that it could no longer be mistakenly changed by themselves. After the deadline, all the Jam-boards were downloaded and saved as ‘pdf.’ files.

\(^5\) It is a free version of Google application tools. [https://jamboard.google.com/?pli=1](https://jamboard.google.com/?pli=1)
5.5 Research data processing and analysis

5.5.1 Transcribing and Translating

Before transcribing the recorded video files, the researcher watched them carefully to understand the discussions more clearly. Some notes were taken for any unclear voice or message, which was then checked with the participants to validate what they had said, particularly to ensure some minor distortions in a few video files.

With a volunteer’s assistance, a remotely co-transcribing process was employed to transcribe all the recorded Zoom video files (interviews and focus groups) and to save time. It was carried out in the Zoom video conference in which checking the text, spellings, and required correction were simultaneously made. The researcher had prepared the codes to anonymise the participants and some organisations’ names before co-transcribing. Transcribing interview files could be considered time consuming, boring, and tiresome (Brinkmann and Kvale, 2019) but by co-transcribing with an experienced typist, the researcher found it to be effective, productive, and interesting.

52 There was no reliable auto-transcription for Myanmar Language and auto-translation from Myanmar to English in the Zoom application.
Moreover, it deepened the researcher’s reflective learning on his interview techniques and group dynamic of the focus groups, and it helped with developing initial ideas for the analysis (Brinkmann and Kvale, 2019).

A simple transcript format was used as the research was not related to conversational analysis or the participants’ behaviours and mood in the interview process. Only a few symbols were used to simplify such as (.) for a gap in the speech and (Laughter) for the participants or researcher’s laugh. After being transcribed, each transcript was sent back to the respective participant as per the agreed consent to let him/her read and verify the consistency and accuracy. Most participants replied with their confirmation, and only three to four made subtle changes and one provided additional information in their reply. Then, editing the transcripts was completed based on their comments, suggested corrections, and additional information before being translated into English Language.

Translation was conducted by a professional translator (from Myanmar to English) and the researcher checked the translated versions (in English) for accuracy, consistency, and spelling before they were ready to be used for analysis.

5.5.2 Qualitative analysis

As mentioned earlier, this research heavily relied on the large amount of qualitative data mainly acquired from seven transcripts of KIIIs, two transcripts of FGDs, and some qualitative data from open comment questions of the online survey. There were two parts of qualitative analysis in this research.

An initial stage of qualitative analysis was carried out to sieve the selected graduate attributes before the quantitative study. Firstly, the key messages related to the graduate attributes (the desirable knowledge, skills, attitude, and behaviours regardless of the disciplinary competencies) were highlighted by using appropriate names (or codes) and categorised into different thematic groups. Then, the list of graduate attributes together with respective descriptions were discussed with the supervisors. Then they were sent out to the research participants for their review and checks. Once the participants’ responses were considered in the revision, it was discussed again with the supervisors and finalise the fourteen graduate attributes to be surveyed. In fact, this initial qualitative analysis was conducted in systematic review and analysis without using NVivo software. Then they were prepared in the Jisc Online Survey format for the quantitative study.

The second part of the qualitative analysis was to analyse all the acquired qualitative data from interviews, focus groups and some additional comments from the Online
Survey NVivo 12\textsuperscript{53} to help answer all three RQs. The photographs of the flipcharts (with some notes and diagrams) from the two FGDs were also used as the data sources in the NVivo software. Being different from a quantitative analytical software like SPSS\textsuperscript{54}, NVivo software has no buttons to identify themes or concepts but is a programme that can be useful like a research assistant to manage the concepts generated by the researcher (Woolf and Silver, 2018). However, the researcher needs to do ‘100 percent of the intellectual work’ as it does not do any analytical functions for the research (Woolf and Silver, 2018, p. 2).

Braun and Clarke (2006) suggested six phases of thematic analysis which were widely used (Kiger and Varpio, 2020) in qualitative research:

1. familiarising the data
2. coding
3. initial themes
4. reviewing themes
5. defining and naming themes
6. reporting

As Woolf and Silver (2018) claim that there is no rigid order of activities in the qualitative analysis, these phases were not strictly followed in sequence and there were several stages of iteration and back-and-forth amongst phases 2, 3, and 4.

**Familiarisation with the data**

Relistening to the recorded video and audio files as well as reading the transcripts before the analytical process was of great help for the researcher to become familiarised with the data. After the transcripts had been checked and edited, they became ready for the analytical procedures. All the transcripts and the responses from the online survey (in English) were uploaded in the NVivo software.

**Coding**

Open coding and mixed methods of different coding (e.g., Process coding, In Vivo coding and Versus coding) were mostly applied in this research. The codes were thoroughly checked and reviewed before the second cycle coding. Some patterns and

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\textsuperscript{53} A Computer Assisted Qualitative Data Analysis Software (CAQDAS)

\textsuperscript{54} Statistical Package for Social Science
Initial themes emerged in the second cycle coding process, but the researcher used inductive coding (grounded theory approach) in the beginning without aligning the codes to the models, e.g., ESD integration and educational reconstruction, etc. There were many layers of hierarchy in the branching of coding in the beginning of the process. Coding also covered what the researcher said in the KII's and FGD's to ensure confirmation of what the participants said, e.g., paraphrasing and validating. They were supportive as a pool of references including what the researcher uttered and confirmed with what the participants wanted to say. However, in writing and discussion in the thesis, it was carefully checked if a particular message came from the participants or the researcher's comments, paraphrase, or annotations.

Initial themes

Initial themes and categories emerged after the second cycle coding. It took time to develop a thematic framework because some codes were observed in many overlapping themes, and some were found difficult to be named with a suitable theme or category. Nevertheless, both reviewing and initial theming were carried out back and forth as an iterative process to finalise a stable framework. All the codes were checked as a final step before being merged into a group of similar thematic meanings or categories.

Reviewing themes

This step built upon the former stage, and the researcher has made several changes and moved around the codes and checked references amongst the themes. The sub-themes in ESD integration originally had a category for 'systems' but it has been moved to HEI reconstruction theme later because the data showed more inclining to some changes required to be made in order to support ESD integration practices. Reviewing the categories and naming them was informed by the models discussed in the literature. There were six approaches of naming the themes discussed by Constas (1992) and because the data in the sub-categories were mostly aligned with those in the models, 'referential' (Constas, 1992, p. 259) approach was employed since in this initial theming phase. It can be noted that deductive reasoning was applied in this stage of theming although inductive approach was used in the initial coding process following the discussed models: revised ESD integration model (4Cs+RP) and Educational Reconstruction proposed by Arnhold et al. (1998).

Defining and naming themes

The final stage of defining and naming the themes was easier to do after the robust coding and theming processes. Concept mapping was applied to look at the themes and
their relationships (see an example in Appendix 15). The sub-themes under the desirable sustainable future and the role of higher education for sustainable future (ESD) were explored as the first step. The sub-themes under the desirable graduate attributes for the sustainable development were studied as the second step. Thirdly, the potential ESD integration approaches and the needs in higher education for reconstruction process were investigated as the last theme. Writing memo and annotations in NVivo were helpful for the writing stage, and the researcher’s reading the coded references and interpreting them with an induction reasoning process were the key parts of the thematic analysis. Moreover, the analytical processes were informed by the research questions and the theory (ESD integration model and education reconstruction model here in this research) in the later stage. More detail will be discussed in the following chapters.

5.5.3 Quantitative analysis

The quantitative analysis was mainly employed to confirm the important graduate attributes to be considered from ESD integration in the HEIs for the sustainable development of Myanmar and their priority ranking using the non-parametric tests. As noted above, the online survey was employed to measure respondents’ perspectives of priority values for the selected graduate attributes. The quantitative data from the Jisc online survey was analysed by using SPSS software (IBM SPSS Statistics 27) to explore if the selected graduate attributes were differently prioritised and such an analysis included different respondent demographics which were viewed by descriptive analysis.

Due to the nature of the data which were not a normal distribution, non-parametric tests (mainly Kruskal-Wallis test, Friedman test, and Mann Whitney U test) were applied to check the priority ranking of the fourteen graduate attributes, and to understand the relationships of some demographic data, such as age groups, gender groups, education levels, and their residing locations, and the priority ranking levels of the graduate attributes. The attributes could be arranged from the highest to the lowest level of priority values. However, it was impossible to group the graduate attributes as different clusters because there were no significant differences of different groups of similar attributes.

The data from the follow-on testing (Jam-boards) were simply analysed to see the priority rank of each graduate attribute through examining their mean scores based on the frequency of responses for a particular attribute in the different priority cells - the three levels were scored as 1 (Low), 2 (Medium), and 3 (High) in the Jam-boards. The two scores from the degree of importance and the degree of impact over time were multiplied as a priority score for each participant and finally an average for each graduate
attribute was calculated based on the number of respondents and total priority scores. In addition, non-parametric tests were applied to check the median values and the mean ranks to arrange the order of ranking. After all this, these analyses were compared against the statistical results from the online survey to see if there were any similarities or differences.

5.6 Reliability and Validity

Reliability, as a simple definition, is the degree of replicability of a research study or the extent to which the research study method could likely produce the same findings in the replicated studies at any time (Kirk and Miller, 2011; Bryman, 2016). However, reliability in qualitative research enquiries has been discussed as a controversial issue whenever it is seen through a quantitative lens (Bryman, 2016). Kirk and Miller (2012) argued that a method could provide reliable data even if the answer is invalid. On other hand, a method might give a valid data although it could be more reliable. Qualitative studies differ in both ontological and epistemological nature from the quantitative ones. It is widely known and accepted that such non-hypothetical research enquiries are not representing the whole population, and the results cannot be generalised.

There appear two main considerations: reliability of the method (if two different methods can provide the same answers/data from the same research subjects or not) and validity of the answers/data (whether the data/answers really represent the research subjects’ feeling, expectation, behaviours, conceptions etc.). Sustainability is a concept which can be differently viewed and defined by different individuals, however reliability in this qualitative enquiry is likely to be characterised by a need to provide the same answers or interpretations through applying the same research method with different research participants living in the same context of Myanmar. But this research was to explore a phenomenon or an individual or a group of peoples’ perspectives, feelings, and conceptions in a unique cultural or political context (Kirk and Miller, 2011). In the qualitative research, particularly in this thematic analysis, reliability could be replaced with data saturation or theoretical sufficiency which can be achieved when a certain number of interviews have been conducted. In other words, saturation is reached when no new themes appear or be developed even by adding extra information or data according to Glaser and Strauss (1967) cited in Nelson (2017). Then it is a reliable stage of making a theorisation in thematic analysis research or grounded theorists’ approach. Based on the experience of conducting four focus groups in Myanmar during the scoping study, the researcher could feel and see this phenomenon. The information from the first two focus groups were similar and it was significantly noticed that all the same points
and themes were discussed in the following third and fourth focus groups in different locations. Two FGDs with 19 participants (teachers and students) and 7 KIs from diverse professional and ethnic backgrounds in this research were assumed to be able provide a sufficient pool of data based on the consultation with supervisors and the literature.

To ensure the data accuracy and authenticity, different steps of verification were made in this research. Firstly, the transcripts were sent back to the research participants for their final check and any additional comments until their confirmations were received before analysis. Secondly, the list of graduate attributes was discussed with supervisors and the fourteen attributes were sent back again to the research participants (both KIs and FGDs) to get their feedback and comments. After the online survey had been closed, follow-up checks were made with the research participants of FGD using Jamboard to get their view and perspectives on the priority ranking of the graduate attributes. A webinar presenting the preliminary findings was conducted for general audience, including the research participants, to collect their verification and comments. In this way, research rigour was achieved through cycles of feedback and iterative discussions with the participants. Both transcription and translation were managed with great care and attention as it is important to hold the most reliable meanings and interpretations although the transcripts are not true-to-type copies of its originalities but are ‘decontextualized conversations’ according to Brinkmann and Kvale (2020, p. 9).

However, validity of the qualitative research is not ended in the data collection process, but it entails the whole research process (Kvale, 2011). Echoing Kvale’s claim that validation is ‘to check’, ‘to question’ and ‘to theorise’ (2011, p. 5–6), the data collection was thoroughly designed with appropriate research questions informed by both the literature review and in-country scoping study. Moreover, consulting with the research participants has been carefully made throughout the process to check any concerns and security issues. In this way, the theoretical conception of research enquiries was aligned with the methods of data collection and analytical process together with interpretation of the research finding.

**5.7 Chapter summary**

The chapter has discussed the methods and justification of the research data collection and analysis and how and why the research enquiry methods had to be adapted. As the research aimed to explore how ESD and related graduate attributes were viewed and expected from the research participants’ perspectives, it has employed an interpretive
approach, mixed methods - relying on the qualitative strategy and subjective approach together with a quantitative study on the graduate attributes, and grounded theory method. Research data management and participant recruitment processes were cautiously handled due to the higher risks and potential likelihood of ethical issues being imposed by the COVID-19 pandemic regulations and the political crisis in Myanmar. The participants outside Myanmar were mainly invited for interviews and to the focus groups to minimize undesirable risks and harms. Remote data collection was employed for qualitative and quantitative data, which were analysed using NVivo software and SPSS software. More importantly, this chapter has discussed the research methods, procedures, and justifications to help ensure ethically sound research practice, to provide reliability and validity, and a well-informed and comprehensive research strategy and approach. The discussions in the following chapters will respond to the three main RQs based on both the qualitative and quantitative enquiries discussed in this chapter.
Chapter 6 Conceptualisation of Education for Sustainable Development in the Higher Education Context of Myanmar

6.1 Introduction

Chapter 4 explained how the three main research questions were developed based on the limited published literature and understanding of the scoping study. Chapter 5 discussed how the research enquiry and data collection methods, and analytical processes were conducted. Education for sustainable development (ESD) is important to address the global issues as previously discussed. At the same time, it is necessary to understand how it could be conceptualised in the context of higher education institutions (HEIs) in Myanmar. This chapter discusses the first research question (RQ1):

*How might ESD be conceptualised in the Myanmar HEIs’ context?*

which examines the conceptualisation of sustainable development and ESD in the context of Myanmar HEIs from the relevant stakeholders’ perspectives based on the qualitative data of seven Key Informant Interviews (KII), two Focus Group Discussions (FGDs), and responses for the open questions of the online survey. The responses to semi-structured questionnaires used in both KII and FGDs are the main sources of qualitative data responding to two sub research questions (RQ): RQ 1.1 desirable features of sustainable development (future) of Myanmar and RQ 1.2 the roles of HEIs to contribute to the desirable sustainable development for Myanmar (or ESD). This chapter discusses:

- Themes and sub-themes related to the desirable sustainable development or future for Myanmar (Section 6.2)
- Roles of HEIs for the sustainable development of Myanmar (Section 6.3)
- Conceptualised ESD in the context of Myanmar HEIs (Section 6.4)
- Chapter summary (Section 6.5).

6.2 Desirable sustainable future or development of Myanmar

Echoing Brundtland’s Report (Brundtland *et al.*, 1987) and the discussion of Sen (2013), sustainability can be referred to as the qualities of people’s lives, their natural environment, the political context, the enabling situation of economic development and people’s satisfaction with it, and the way people enjoy their lives or public services. Secondly, it may be a process, criteria or determinants of human activities which predict homeostasis for society or the natural environment. In other words, sustainable
development can be defined as the progress or well-functioning social and ecological systems without bringing any harms or deterioration that can threaten the present or future generation’s wellbeing and ability to meet their needs. Thus, sustainability in this thesis will be observed from both conditional statement (ends) and pathways/process (means) (Strange and Bayley, 2008; Sen, 2013).

The research participants were asked what sustainability means to their personal lives. While asking the participants in both KII s and FGDs, ‘sustainable development’ was intentionally paraphrased and inter-changeably used as ‘sustainable future or desirable conditions they would like to see in the future of Myanmar’ to capture a holistic view of their understandings. As explained in Chapter 5, a robust process of coding, developing categories, and theming were inductively conducted. Following the naming convention suggested by Braun and Clarke (2006), the emerged themes were named based on the codes and categories. Eventually, the following five themes were produced to conceptualise the desirable sustainable future in Myanmar as expected by the research participants as shown in Table 6.1.

<table>
<thead>
<tr>
<th>Desirable sustainable development/future for Myanmar</th>
<th>Coded References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic view</td>
<td>47</td>
</tr>
<tr>
<td>Environmental view</td>
<td>57</td>
</tr>
<tr>
<td>Philosophical view</td>
<td>51</td>
</tr>
<tr>
<td>Political view</td>
<td>40</td>
</tr>
<tr>
<td>Socio-cultural view</td>
<td>23</td>
</tr>
<tr>
<td>Total coded references</td>
<td>218</td>
</tr>
</tbody>
</table>

The total number of coded references for each respective theme can be seen in Table 6.2 across the diagonal line (shaded in yellow) and the environmental view contributed the largest number of coded references towards the desirable sustainable development. The discussion of each theme will be interwoven with other thematic aspects as some of the coded references are shared across two or more thematic views, i.e., some observations are inter-related or overlapping. For example, the economic view can be a lens to look at all other aspects which influence it and vice versa.
Table 6.2 Intersectional coded references across five thematic views for desirable sustainable development in Myanmar

<table>
<thead>
<tr>
<th></th>
<th>Economic view</th>
<th>Environmental view</th>
<th>Socio-cultural view</th>
<th>Political view</th>
<th>Philosophical view</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic view</td>
<td>47</td>
<td>27</td>
<td>4</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Environmental view</td>
<td>27</td>
<td>57</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Socio-cultural view</td>
<td>4</td>
<td>1</td>
<td>23</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Political view</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>Philosophical view</td>
<td>6</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>51</td>
</tr>
</tbody>
</table>

6.2.1 Economic View

The sustainable future of Myanmar, as desired by the research participants, can be viewed from two main economic perspectives: 1) fair opportunities and inclusive development, and 2) environmentally friendly economy. They considered economic development from social justice and environmental perspectives because almost all the coded references (the data excerpts) seem to embrace the values of social justice and environmental friendliness. The discussion of economic development was strongly rooted in ecological resilience, and sustainability in ecosystems was largely reflected in the students’ group.

There was a discussion of environmental conservation management considering local communities' economic conditions in the FGD-2 (students). P19 (Participant 19), based on her work experience in the protection of endemic deer species in the central dry zone of Myanmar, highlighted the importance of understanding the economic context in wildlife conservation management. Regarding the hunters who were doing hunting for their survival, she claimed that:

“We must find alternatives to help them change their livelihoods.” (P19, FGD-2)

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55 The data excerpts coded in a particular theme or subthemes captured from the original transcripts.
Her discussion was supported by P12 with an example of electrofishing\textsuperscript{56} threatening the ‘Ayeyarwady dolphin’ which is an endangered species\textsuperscript{57} in the Ayeyarwady river.

Regarding livelihood and economy, the data showed that education was seen as a foundation of all citizens for job opportunities which could, in turn, reduce the burden on pressuring the natural resources. P10 in the FGD-1 (teachers) viewed education as a wise investment to build up the nation with good education. She claimed that natural resources utilisation could be made sustainable without causing any undesirable impacts if:

“We can raise the awareness on how to sustain our natural resources, and we can raise the awareness through education.” (P10, FGD-1)

The data revealed a cyclical relationship of interdependence amongst these elements: education, job opportunities, reliance on natural resources, economic development, and alternative livelihood options. According to a KII-2’s perspective, there is a link between the political dimension and economic view because he claimed that:

“Youth have opportunities to work on their dreams and people can feel safe to walk at midnight' if there is a good government.” (KII-2, former MP)

People can get good access to education to improve their employment opportunities, and business can be smoothly operated under a healthy political system as claimed by KII-2. Nevertheless, it is critical to look at the type of education that can also bring about unexpected harmful impacts to the natural environment according to David Orr’s argument if it is not aligned with sustainability concepts and principles (Orr, 2004). It was congruent with P2’s view (in her pre-FGD responses) that citizens should have proper knowledge to avoid the activities fuelling climate change.

Furthermore, the participants wanted a sustainable economic development model without bringing negative consequences to social or ecological aspects while a favourable political condition was desired for the business sector. For instance, KII-3 raised her concerns about the Chinese business investments in Kachin State where several acres of banana plantations were cultivated in a mono-cropping pattern and

\textsuperscript{56} Fishing method using electrocution which is banned in Myanmar.

\textsuperscript{57} Ayeyarwady (or Irrawaddy) dolphins are found in the South and Southeast Asia and entitled as endangered in https://www.worldwildlife.org/species/irrawaddy-dolphin
potentially hazardous agrochemicals were being intensively used. She does not welcome such development because she expects:

"The development that can uplift people from the whole nation." (KII-3, NGO staff).

Additionally, she provided a metaphor to remind people about the mindset of taking care of the natural resources:

"I want our people to realize that we are cutting down the branches which we all are sitting on." (KII-3, NGO staff)

Both KII-3 and KII-6 shared the same perspective and value by highlighting the fair use of natural resources and for the solidarity of all citizens and ethnic groups across the country. KII-6 criticized the current industrial economy by saying:

"And for those who exploit natural resources, they gain benefits for just once and we local communities will suffer for our lifetime." (KII-6, NGO founder)

Their views were echoed with the critique made by KII-7. He made a strong criticism of large-scaled extractive industries and business interventions drawing on evidence of disasters and ecosystem degradation in Myanmar. He used the term ‘capitalism’ and criticised it from his standpoint of political ideology:

“So, if we continue to seek growth with this extractive nature of capitalism, there will no longer be any sustainability.” (KII-7, PhD student)

Additionally, he complained about some NGOs’ approaches to local economy development by promoting Private-Public Partnership or promoting monocrop oriented agricultural investment, which is apparently relying on foreign markets. For instance, local farmers who were cultivating ‘Yam’ (elephant foot yam) in Chin State had no idea of how to use it when the market collapsed because:

“. . . they did not know how to eat it because it was not their local food.” (KII-7, PhD student)

For individual wellbeing, KII-4 viewed sustainability as a basic need for human beings:

“Fairness or sufficiency in food, clothing, shelter medicine and education”
(KII-4, Writer)
To interpret his perspective, sustainability can be determined by the fulfilment of citizens’ basic needs for their livelihood and social security.

As an overall outlook, the participants of both KII's and FGDs looked at the national economy without losing sight of the wellbeing of grassroots communities. They consciously discussed all the potential impacts on the natural environment which might directly affect the local people’s economy based on their experience. In summary, the participants’ desirable sustainable future is seen through an economic lens which expects:

- fulfilment of citizens’ basic needs
- accessibility to education that can prepare sustainability awareness and relevant competencies
- employment opportunities or alternative livelihood options to reduce the burden on natural resources
- favourable political condition for economic development together with strong implication of environmentally friendly practices and policy
- fair share of benefits amongst all the ethnic groups and citizens
- not to neglect at the expense of industrial economy, and
- strengthening the equality and social justice while maintaining the ecological resilience for future generation.

6.2.2 Environmental view

This theme has the largest number of coded references (57 references) amongst the five themes for desirable sustainable development of Myanmar. There were more coded references related to environmental view in the KII's data than those in the FGD’s one, particularly in KII-3, KII-6, and KII-7 who have been working in the NGO sector. Most participants expressed their undesirable situations in responding to the question of desirable conditions for the sustainable future of Myanmar by referring to this aspect. The participants’ emphasis on the undesirable conditions they have witnessed were consistent with what have been discussed in Chapter 2: heavy reliance on the resource-based national economy and less prioritised investment in educational development for several decades.

KII-1 shared what he had witnessed regarding the positive and negative impacts of natural resources or environmental management on communities’ wellbeing. He gave an example of victims’ terrific suffering from the Cyclone Nargis in the delta area of Myanmar in 2008. According to his claim, massive deforestation of mangrove forests led
to increased vulnerability of the people in such a delta area. In contrast, he provided
evidence of positive impact from a balanced natural ecosystem due to better
agroforestry practices in Shan State. He affirmed the importance of maintaining the
ecosystem through wise use of natural resources for economic prosperity:

“The ecosystem must be healthy because we are interdependent. We can
be healthy only when the ecosystem is healthy.” (KII-1, Education
development manager)

As discussed by KII-3 in the economic view, ecosystem deterioration due to heavy
application of agrochemicals in agriculture and the use of inappropriate fishing
techniques in rivers had compounded her concerns about health issues related to
polluted and/or toxic air, water, or soil because she believed that these can be
bioaccumulated and eventually ingested by humans. Moreover, she questioned the
middle or large-scale investment in agri-business and mining industries under the name
of ‘development’. She proposed that the society needs a change of mindset and to adopt
a new concept of development. For example, she wanted to drop the material
development concept which excessively depends on the intensive use of natural
resources. In addition, she raised a question of who owns the natural resources and
how to use them. She also pointed out the misconception of certain ethnic groups who
take the view that they should use all their natural resources, otherwise it would be
exploited by others. This point is related to the prolonged ethnic conflicts, particularly
between the majority Burman group and diverse ethnic minority groups, and these
tensions are deeply rooted in both inequitable sharing of natural resources and political
power as discussed in Chapter 2.

Regarding sustainable practices in old traditions, KII-3 praised the local wisdom or
indigenous knowledge of ancestors from whom Myanmar society needs to learn in terms
of how they survived and lived harmoniously with nature without damaging it. She gave
a couple of examples - how they took care of their rivers and forest, how they fished,
how they harvested wild vegetables, and how they replenished bamboo in the forests.
She claimed that:

“This is a sustainable way of consuming, our ancestors did not consume all
the species right at once, they understood the importance of co-existence
for sustainability.” (KII-3, NGO staff)
Like some other participants in the focus groups, KII-3 also suggested integrating environmental awareness in the education system to foster young children’s awareness and attitude in terms of loving and caring for nature.

Knowledge and technology advancement were considered in terms of efficient use of natural resources. According to KII-3, it should be strictly controlled to extract the required resources to meet what society needs but not society’s greed. She expected innovative technologies to reduce the requirement of natural resources and harmful effects on nature by promoting and applying green technologies and energy which do have less detrimental effects, and energy efficient designs and innovations. Aligned to this, she emphasised the importance of making policy and regulations strong enough to protect the natural environment and resources as this is still lacking in Myanmar. KII-3 is the only participant who predominantly discussed sustainability issues from an environmental perspective amongst all the participants of both KIIIs and FGDs.

Most of the participants agreed that educating young children and students in terms of knowledge of environment and ecology as well as the cultivation of love and respect for nature was important. KII-4 made this point by embracing all different types of educators such as writers, poets, teachers. He highlighted the role of leadership in showing the light or pathway for people. His message went beyond the general science of environment by emphasising the affective skill of valuing the environment:

“We (educators, writers and artists) have to work hard to let the value of environment (with fresh air, water and fishes, and green forest) be seen and valued.”  (KII-4, writer)

Environmental issues were mostly reflected from an economic development perspective amongst the participants in the focus groups. They wanted to have strong policy and regulations to keep the resilience of ecosystems and ensure sustainable use of natural resources while economic prosperity is being sought. Respectively, they demand a good balance of economy and environmental sustainability. Participant P14 in FGD-2 stressed the need for political systems that enable economic development as well as avoiding destructive behaviours of businesses:

“The future of sustainable Myanmar should have a good and strong political system, a developed economy and the economy that can balance the businesses and the environmental degradation.”  (P14, FGD2)
In general, the students' group desire economic development as they want to see the country as a developed nation, whilst they also highlighted the importance of environmental concerns.

The data shows a cyclical relation of interdependence – having good political systems paves a way for economic development, and a stronger economy can potentially advance knowledge and technology, which in turn can reduce dependency on a resource-based economy. Without environmentally friendly economic development, there can be negative consequences upon ecosystems and wellbeing of society.

The participants' view of sustainability through an environmental lens can be summarised as follows:

- Natural ecosystem health and human’s health or wellbeing are inter-dependent
- Business activities need to be environmentally friendly and should be checked with health and ecosystem concerns
- Undesirable impacts of extractive industries and market-oriented economic model should not be neglected
- Green technologies and businesses should be encouraged for the national economy and environmental affair
- Myanmar society should learn from the ancestors’ traditional practices and indigenous knowledge for sustainable livelihood and natural resources utilisation
- Environmental education should be started since young age and grades to respect and love for nature.

6.2.3 Political view

There was no coded data in FGD-1 related to the sustainable future of Myanmar from a political perspective. Recognising that the HEIs in Myanmar have been under the central government's control, consequently the university teachers who are government employees were strictly prohibited from engaging in political affairs or discussing them. This means that it is understandable that the university teachers seldom discussed political affairs in a group of people they were unfamiliar with. These topics are too sensitive for them to discuss. However, P11 and P14 in the students’ focus group discussed it to a limited extent. Amongst the key informants, six participants discussed their political perspectives regarding sustainability, or a desirable future based on their professional experiences. It is interesting to note that KIs employed in education, such as an educational development manager and a professor, did not make any explicit discussions from a political perspective.
A stable and strong political system was frequently mentioned by the participants of KIIIs, and FGD-2 based on the historical background and the current crisis of the country:

“So, the future of Myanmar should have a good and strong political system, a developed economy, and the economy that can balance the business and the environmental degradation.” (P14, FGD-2)

Additionally, P14 also warned that these political terms are being used in some countries without having the full extent of democratic practices, like Thailand and Singapore, whilst these countries are seemingly good enough in term of fulfilling the basic living-standards of their citizens and have less problems.

Some KII participants discussed democracy and people power as important matters. Sustainability needs to be embedded as a core value in all different sectors according to KII-2 who also brought up the rule of law. Peace, particularly from social security and freedom perspectives, was raised as a determinant in achieving sustainability by KII-2, KII-6, and KII-7:

"We must have a rule of law that guarantees safety for a woman to walk alone at midnight.” (KII-2, former MP)

"Sustainability will be perceived in coupled with peace and good governance in Myanmar society.” (KII-4, writer)

KII-6 supports the idea of peace which is also linked to economic development by remarking that:

“… we cannot proceed to democratisation only by election.” (KII-6, NGO founder)

Ideologically, the participants prefer democracy and interpreted it as ‘people power and freedom.’ To KII-2 and KII-6, the term democracy means the citizens’ power of decision and sustainable development is a public owned entity:

“You cannot talk about development because the owners of the sustainable development are the public. They must have access to it. People ought to be happy about that.” (KII-2, former MP)
“In the end, only the citizens have the answers. All the answers relevant to peace, sustainability advancement from economic perspectives, and armed struggles belong to our public. They have all the answers.” (KII-6, NGO founder)

KII-2 made his clear expectation of a democratic system in which the government’s role must be confined to be public centred services. He added that the citizens should be strong enough to control the government:

“So, the government will automatically be tamed if there are more people who aren’t afraid of the government.” (KII-2, former MP)

KII-6 also highlighted the critical need of peace through political solutions to move forward towards economic development of the country. However, KII-7 raised his deep concerns about the free-trade and open-market oriented systems which he doubted for the sustainability of the local economy. After criticising capitalistic political economies, he claimed that political solutions can be associated with other aspects of sustainability issues:

“Sustainability can be achieved only if we can address political injustices and socio-economic injustice.” (KII-7, PhD student)

His discussions were aligned with KII-2’s desirable political system. Ideologically, KII-2 preferred a social democratic system for Myanmar by saying:

“There will be competitions, but not like American liberal democracy. We designed a model which leaned more towards social democracy.” (KII-2, former MP)

Underpinned by historical oppression and tragedies, participants emphasised federalism when they discussed education systems or natural resources management. Regarding government’s administration and implementations, KII-3 proposed integrating sustainable development across all the ministries - it should be embedded in their policies and all the staff should be well-informed about it.

The participants’ view of sustainable development through a political lens can be summarised as:
• Strong and stable political system should be established to address all other sustainability issues like peace, economic development, and environmental management issues
• People power is needed for democratisation
• The government’s role should be providing public services
• Sustainability should be embedded as core values across all ministries and ministry staff should be fully aware of it
• Better regulations are needed to minimise the undesirable impacts of economic development in trading with international business entities
• Rule of law and social security are a priority need for fundamental peace at a community level
• Political solutions that can address socio-economic injustices are desired.

6.2.4 Socio-cultural view

Another dimension of sustainability can be viewed through a socio-cultural lens. As previously discussed, sustainability as a process or pathway can be just as relevant as an outcome. Some participants in FGD-1 expressed their desire for a peaceful society in which inclusiveness and values are appreciated without any discrimination. Freedom is valued and demanded especially by some participants of minority ethnic groups in FGD-2 based on their experience of being oppressed and dominated by the majority cultures in Myanmar.

Regarding religious and cultural freedom, KII-2 proposed:

“Freedom of spiritual practice and spirituality should be considered in the development concept.” (KII-2, former MP)

P2, as expressed in her pre-FGD responses, desired an inclusive society with collaborative practices. She highlighted the importance of networking as it may foster accessibility to required resources and technical support through cooperation or collaboration. It can be interpreted as a socio-cultural perspective because Myanmar society needs solidarity and peace in terms of collaboration and partnership which have been set out as a separate goal in the SDGs.

Fairness is the prominent aspect of social value in KII-3’s argument that socio-economic development should benefit the whole nation rather than a small group of elite citizens. This sentiment was also reflected in the environmental and economic views. In addition, it is congruent with some discussions in the reviewed literature which noted monopolised
resource use by a small group holding political power (Lall, 2016; International Crisis Group, 2020).

KII-4 emphasised the fulfilment of basic needs in an individual’s life such as safety, social security, and fundamental human rights as sustainable livelihood by embracing a wide range of social aspects:

“For an individual life, one needs good health, good friends, freedom, relaxation and happiness (including spiritual and mental outlook), environment with culture of peace or at least comfortable atmosphere with negative peace, fairness or sufficiency in food, clothing, shelter medicine and education.” (KII-4, writer)

Galtung claims that ‘peace is absence of violence’ (2018, p. 35). To be specific, Galtung and Udayakumar (2013) described it as a situation free from ‘not only direct violence but also structural violence’ (p. 3). Also, Galtung (2018) refers to the terms ‘negative peace and positive peace’ (p. 51) by referring to a situation lacking physical or direct violence (negative peace) and lacking structural violence or having social justice (positive peace).

In this case, KII-4 used the term ‘negative peace’ (Galtung’s definition) to describe a situation lacking physical or direct violence such as killing, torturing, and wars etc. Moreover, he expected the culture of peace or non-violence to be practiced in Myanmar society.

Communities in some parts of Myanmar have traditional beliefs or ritual practices to take care of the lakes, rivers, mountains, or forests. Regarding these cultural practices, KII-7 argued that some traditional belief systems are supportive of environmental conservation, and they should keep using their own practices regardless of lacking scientific justification or evidence.

The coded references in the socio-cultural view consistently match with the key principles of social sustainability discussed by Rashid et al. (2021) in their reviewed literature which appear as ten clusters:

“Equity, community and participation, basic needs, safety and health, infrastructures and facilities, local characteristics and cultural values, livelihood and satisfaction, social capital, governance and politics, and employment and job opportunities” (pp. 297–298).

In brief, the participants’ view of sustainable development through a socio-cultural lens can be summarised as:
• Freedom, fairness, rights, and sufficiency in basic needs should be acknowledged as crucial elements from a social security perspective
• Respecting the diverse values, inclusiveness, and collaborative culture should be practiced for building a peaceful society
• Traditional beliefs and cultural practices should be fundamental rights.

6.2.5 Philosophical view

Some data related to ethical values, cultural norms, and ideological aspects were clustered as a philosophical view although they are somewhat like the socio-cultural view because they appeared as philosophical ideas guiding the desirable features and qualities of a sustainable society. Participants’ philosophical perspectives for the desirable sustainable development in Myanmar were observed in all the transcripts of KII and FGDs, except KII-1.

Feasibility and consistency should be considered as the key principles for implementing sustainable development according to P2 (in the pre-FGD responses) because she claimed that sustainable development models or approaches must be accessible, implementable, affordable, and relevant to local culture and context. P6 from FGD-1 suggested considering efficiency as part of sustainable development which should not be dependent on exploiting too much natural resources or large amounts of energy and time. On the other hand, P8 suggested to be mindful of some cutting-edge technologies for their relevancy to the local context. Although these concepts have been reflected in the environmental and socio-cultural views, here participants emphasised the values and the way actions and interventions are implemented. Thus, the key message here is relevancy - whatever development intervention is to be brought up or implemented, all these conditions and principles should be thoroughly considered.

P15 described her desirable sustainable development as added value from an economic perspective; for instance, a person should earn more than what he had in the past. Her message can be interpreted as improvement or progress. However, it is also important to be mindful about the existing qualities or values as KII-5’s claiming:

58 Pre-FGD responses were presented by the researcher during the FGDs, so they were included in the two transcripts for FGDs.
“To achieve sustainable development, the first thing to be considered for a person or an organisation is to implement something without diminishing one’s existing qualities. We must be able to maintain all the strengths and positive sides.” (KII-5, Professor)

From an ecosystem perspective, sustainability can be viewed as ‘a whole system’ - things or components are inter-connected according to P16 in FGD-2. She claimed that social life and natural ecosystem are inter-dependent on each other. She also added the concept of sustainability:

“I think, it refers to a type of practice on adapting ourselves to be sustainable during natural disasters, and how we can grow resilience towards the stress and challenges caused by natural disasters. Such practice is not just for us, it should be passed down to our future generations.” (P16, FGD2)

From another perspective, sustainability is seen as a process and ability to understand the context to make a better choice amongst the available options. Ability to make better choices with less negative consequences could be the means of sustainable development according to KII-3.

KII-2 perceived sustainability as process oriented rather than the progress or goal oriented. As an alternative view, he expressed his inspiration of Bhutan’s Gross National Happiness (GNH) model\(^59\) in which happiness and fulfilment of the people’s lives are deeply anchored:

"We did not prioritise to have great wealth, yet people must be happy, and they could dream and have fulfilling lives rather than owning a huge amount of money. I was influenced by the happiness index of Bhutan, and Laos also focuses on people’s happiness." (KII-2, former MP)

Moreover, he wished to see people enjoying their freedom of spiritual practices. He even proposed spirituality be embedded in the concept of sustainable development. Regarding freedom, KII-6 claimed that farmers should have freedom of choice for their farming practices and people deserved to live in peace because she witnessed many ethnic people in Kachin State suffering from prolonged civil wars. Thus, she demands

freedom and safety which are overlapping with KII-4’s negative peace perspective in the socio-cultural view.

Some of the observations in this philosophical view are overlapped with some in the economic one. Social justice and equality were a dominant feature of this philosophical view of sustainable development. KII-3 affirmed that development and wellbeing had to be shared amongst all citizens and not to be concentrated in a small group of elites. She proposed such philosophy of community spirit is an important element of sustainability. KII-2 and KII-4 shared similar opinions, wishing to see fair opportunities of all citizens. These expectations were driven by ethical and social justice values which were deeply echoed by KII-4 feelings about the ongoing Myanmar crisis and their hope for people’s lives to be fulfilled with basic needs, safety, and human dignity.

Another perspective of a pitfall in development, as pointed out by KII-5, was undesirable dependency on foreign aid. Therefore, self-reliance was considered as one of the core values or essence of sustainability as discussed by KII-5. He claimed:

“I would not like to see my country just expecting foreign aids with project proposals and the development type too much depending on the outsiders’ support.” (KII-5, Professor)

To choose an appropriate middle way was significantly highlighted by KII-7 by referring to the concept of ‘yin-yang’\(^6\): a balance of individual and collective freedom; social democracy; traditionalism and modernization; for self and for others (Western and Asian); human vs nature (anthropocentrism vs ecocentrism); and market and self-sufficiency. He preferred a middle-path to a sustainable future using the yin-yang concept of having an optimum condition with a mixture of two different qualities. One of his messages covering a balance of social values was:

\(^6\) An ancient Chinese philosophical concept which embraces mutually perpetuating complementary forces of two different qualities. (Yin-Yang - Oxford Reference, no date)
“Our Myanmar society normally takes care of each other, we show sympathy to others and our family members, sometimes we even forget about ourselves. I don’t want it to be that much extreme. However, I don’t want to see a society in which people only think about themselves like in some Western countries.” (KII-7, PhD student)

In addition, KII-7 invited Myanmar society to question what education means and to what extent people are happy that their intellectual development comes from higher education. He proposed redefining education based on Myanmar values and attitudes and not just for the social status or rankings. Thus, he invited a rethink of higher education:

“We only care about status too much in Myanmar, I think. Parents feel irresponsible if they cannot send their children to universities and help them graduated. I think we need to change way of our thinking a lot, you know, if we really need to pursue higher education. If we do, we need to ask questions of how much intellectual interests we have.” (KII-7, PhD student)

Participants’ view of sustainable development through a philosophical lens can be summarised as:

- Development practices or processes should be locally relevant, culturally acceptable, financially reasonable, and technically feasible to be able to contribute to a sustainable future, whilst the existing qualities and strengths of the society are maintained
- Sustainability is process within, and an outcome of, an interdependent complex system, therefore the whole system should be considered
- Learning for harmonious co-existence and resilience should be undertaken and transferred these life-skills to the new
- Making appropriate choices, preferably in a middle-way that considers the yin-yang principles, which would potentially contribute less negative and more positive impacts
- Happiness, peace, spirituality, social justice, and freedom are valued and should be promoted in society
- Accessibility to public services, fulfilment of basic needs, self-reliance and resilience should be enabled and nurtured
• Education is valued and the concept of higher education should be redefined through changing ways of thinking and understanding the source and drivers of intellectual interests.

Overall, a desirable sustainable development or future for Myanmar can be conceptualised based on these five thematic views: economic; environmental; socio-cultural; political; and philosophical. As mentioned earlier, some coded references are shared across all five themes, meaning there are some intersectional values, concepts, or attributes in the overlapping areas amongst the themes. The next section will discuss how HEIs could contribute to ESD when aiming for the desirable sustainable development of Myanmar.

6.3 Roles of HEIs for sustainable development of Myanmar

Having explored how the desirable sustainable development or future of Myanmar can be viewed through five thematic lenses which was grounded in the qualitative data, it is important to set out what ESD in Myanmar should look like at a nationwide scale. Having scoped the role of HEIs for ESD in Myanmar, this section discusses another five lenses on the role of HEIs as their contributions to ESD (see Table 6.3). Therefore, this section attempts to complement answering the first research question - how ESD might be conceptualised in the Myanmar HEIs’ context through understanding the relevant stakeholders’ expectations and perspectives. Amongst the five sub-themes, the second one, i.e., ‘preparing the students with sustainability literacy and appropriate attributes’ is associated with the second research question (RQ2) which will be discussed in more detailed in the following chapter.

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6.3.1 Investing in education as a foundation of society

In this theme, higher education is viewed as an investment for the nation. The theme emerged from the discussions of only one participant from FGD-1 (P10), five participants from the FGD-2 (P12, P14, P15, P18, and P19), and there was no contribution from the KII participants for this theme.

P15 remarked that education is an investment and a foundational learning ground for the young on how to survive, live harmoniously in society, and contribute to the sustainable future of society. Similarly, P10 agreed to the education investment concept for building a sustainable future. She strongly criticised leaders’ past mistakes and decisions, referring to examples of undesirable impacts due to their lack of sustainability awareness. She also wished to see better investment in education and sustainability awareness:

“There are now floods, heatwave, and extreme weather and these are all the impacts we are suffering now. So, we don’t have awareness on how to sustain our natural resources, and we can raise the awareness through education and teach about them since at the young age.” (P10, FGD-1)

Although they discussed the role of higher education, participants emphasised how it was crucial to prepare good leaders with sustainability knowledge through good education from a young age. P10 (teacher) and P15 (student) claimed that proper investment in education to develop sustainability literate graduates who might contribute to sustainable policy and practices for Myanmar’s development. In this way, P10 affirmed that the resource utilisation and energy requirements could be potentially minimised through proper knowledge and sustainable technologies supported by HEIs. Therefore, it can be interpreted as an important investment for Myanmar in preparing smart citizens and leaders to address the country’s issues and implement sustainable development. This is also reflected in the following theme - preparing the graduates with sustainability skills and attributes. P15 supported this idea by saying:

“. . . education is the most fundamental foundation for everyone and every nation.” (P15, FGD-2)

Their view is aligned with P14’s, which highlighted the importance of investment in higher education, including vocational institutions, for better human resources so that it can potentially reduce the reliance on natural resources exploitation for national income. Moreover, P14 said it would lead to better cooperation of the citizens in development interventions for the country if more people received a good education. Preparing
sustainability knowledge and competencies will be discussed further in the curricula approach of the 4C+RP model for ESD integration in Chapter 8.

P12 and P19 want better facilities and infrastructures like laboratories or libraries and P18 pointed to the need to promote quality in distance education. These claims are matched with the reviewed literature (British Council, 2013a; IIE, 2013). These kinds of investment or needs in the infrastructure or facilities of HEIs will be reflected in the campus operations in the ESD integration (4Cs+RP model) and the physical reconstruction in Arnhold et al.’s (1998) educational reconstruction model in Chapter 8.

Based on the participants’ perspectives, ESD in the context of HEIs in Myanmar can be viewed through a lens of investing for the future society as follows:

- Investment should be made in higher education and basic education to prepare smart citizens with sustainability literacy, competencies, and attributes to contribute to appropriate decisions or activities in the development implementation.
- Investment in higher education should be made for more human resources with proper knowledge and skills to increase the likelihood of reducing the natural resource-based economy.
- Improving the quality of education and the number of sustainability literate graduates are likely to impact development policy and practices positively.
- More investment in higher education should be made to improve the quality of education provision, which is also a target of SDG 4, such as proper facilities, teaching quality, or improving some systems in HEIs.

**6.3.2 Preparing students with sustainability literacy and attributes**

In this section, the role of HEIs in contributing to ESD is viewed through the lens of preparing students for the development of sustainability related knowledge, concept, skills, attitude, and attributes. This theme is directly related to the SDG target 4.7 and contributed the largest number of coded references (90 out of 172) (see Table 6.3). The section covers three components:

- awareness of sustainability before higher education
- teaching students for sustainability related competencies and attributes, and
- Equipping students with resilience and other life skills for personal lives or society.
Firstly, sustainability education, according to P10, should be provided from early schooling as a foundation before higher education. Indeed, children’s behaviour and practices should have been prepared for in their younger ages according to the findings of Otto et al. (2019) - showing that the children’s environmental attitudes and behaviours significantly increased during ages 7 to 10, remained until 14, then decreased up to 18. P10 suggested basic awareness and practices like waste management should be nurtured in earlier ages/grades before going to college or university. It could be interpreted that students should have prior knowledge and awareness of environmental sustainability before they study at HEIs to further improve their knowledge and capabilities.

Secondly, all students at higher education should be equipped with sustainability related knowledge, attitude, and skills. This point was discussed a lot amongst the participants of both KIIs and FGDs and is related to the second research question (RQ2): desirable graduate attributes from ESD perspective. KII-1 argued that graduates should have a certain level of knowledge of climate change, environmental conservation, and some related experiences regardless of their specialised disciplines. Moreover, he critiqued the curricula in Myanmar HEIs as very few modules include the study of environmental aspects. In addition, he remarked:

“We have a limited number of people who are doing interdisciplinary studies.” (KII-1, Educational development manager)

Although an ‘Environmental Science’ degree programme was started by Yangon and Mandalay Universities in 2016-17, the courses were led by the Department of Geography, and more interdisciplinary studies are still needed even in these courses, as critiqued by KII-1. Regarding the curricula content related to appropriate sustainability literacy, is reflected by what KII-4 proposed:

“Every student must learn ecology, geography, and philosophy in their first two years (freshman and sophomores⁶¹)” (KII-4, writer)

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⁶¹ KII-4 intended to refer to the earlier years of the undergraduate programme (e.g., first year or second year) and it is more commonly used in the medical universities in Myanmar.
Similarly, KII-1 claimed that these environmental related modules should be offered as an elective one for all undergraduate students in their earlier years:

"... it should be a holistic perspective being inclusive of all important components such as human beings and natural environment including animals, soil, water, and air etc. It should be designed by different scholars and experts from different departments." (KII-1, Educational development manager)

Likewise, KII-3 recommended that:

"We need to make sure that our students specializing in chemistry, zoology, and botany that their disciplines are interdependent with sustainable development in some ways." (KII-3, NGO staff)

And she expressed her expectation of future impact:

"Academic disciplines can also make direct contributions. These graduates from various disciplines would work in diverse professions. They might become civil servants, businessperson, or community leaders. No matter which career they choose, when they become adults and leaders in their households, they will find it easier to follow the preparing government's policies in protecting the natural environment from destruction." (KII-3, NGO staff)

According to KII-1, KII-3 and KII-4, Myanmar HEIs should offer sustainable development or sustainability related courses as either a compulsory module or an elective one for all the fresher students (year 1 or 2) from all different disciplines/degree programmes. It is consistent with some authors’ claim that HEIs should provide and facilitate the students’ learning opportunities and processes to improve their attitude, awareness, skills, and making sustainability relevant decisions and choices (see Mochizuki and Fadeeva, 2010; Zizka and Varga, 2021). In this case, HEIs need to clarify what the term ‘sustainability literacy’ means to them and then define the relevant graduate attributes for sustainable development as discussed in the reviewed literature (see Sterling, 2004, 2012; El Ansari and Stibbe, 2009; Stibbe and Luna, 2009; Zizka and Varga, 2021).

To develop sustainability literacy, KII-3 stressed the importance of learning from the ancestors’ practices, some of which could be justified as sustainable ones. The HEIs in different geographic locations can provide opportunities for their students to learn Indigenous knowledge and practices – how they took care of their environment whilst
using natural resources. The students can link such sustainable practices and Indigenous knowledge to their disciplines. This idea is related to the pedagogical approach in the proposed ESD integration model (4Cs+RP) and a similar idea has been shared by KII-4’s view that:

“Universities must provide education with reasoning skills. They need to help the students or learners equipped with intelligence, which is getting closer to the level of wisdom.” (KII-4, writer)

KII-5 argued that learning for skills and knowledge of specialised areas is not sufficient to be classed as 'educated people' because he insisted that they also need to be qualified and professionally ethical in contributing to the betterment of society. He added the role of HEIs for developing students' more generic skills:

“The role of universities can be expanded by integrating activities to improve students' interpersonal skill, team working skills, negotiating skill, communication and leadership skills, time and resource management skill, project and business management skills through both in-class and extra-curricular activities.” (KII-5, Professor)

Specialist universities, like agriculture or forestry, should integrate the sustainability concept as suggested by KII-3. It is also consistent with KII-5’s idea to let the students learn about ecology, biodiversity, climate change, deforestation, gender, human rights, psychology, and conflict resolutions beyond their specialised modules. In addition, KII-5 wanted the students to be well informed by the universities' visions and missions which should also embrace sustainability values and approaches. KII-3 and KII-5’s claims can be interpreted that the theories and concepts in the lessons should relate to the real world to facilitate the students’ preparation for their future application rather than memorising facts and theories from books. Preparing the university students with sustainability literacy or skills for the desirable future is exactly congruent with the main concept of ESD in the UN’s SDG target 4.7.

Thirdly, higher education is also perceived as a preparedness for survivability or ability to enjoy a better quality of life. From P18’s perspective, sustainability means:

“Education should provide that knowledge and qualifications for the students to survive well in any situations. I think that's sustainability.” (P18, FGD-2)
He affirmed that one must be able to thrive for survivability and be strong enough to overcome the potential challenges or constraints. P15 supported this idea by claiming:

“... if every individual can apply education completely and sustainably, no matter where the person is or any kind of career that he/she pursues, that person can contribute to others in his/her community and the society in one way or another.” (P15, FGD-2)

It can be interpreted that such personal development or individual's lifelong sustainable journey can potentially be supportive for both self and societal level sustainability (Stibbe and Luna, 2009). On the other hand, it could also be interpreted as resilience as highlighted by P17 (he used ‘gritty’ in the follow-up conversation for the transcript verification process):

“The most important thing is to be resilient. Job markets will become much more competitive due to the continual improvement in automation and AI, so resilience is very important. Even if we cannot know everything about distractive technology, we must know how to use them well. For example, regardless of the Covid situation we are in (zoom) right now, this comes along with the development. We should be resilient to handle this situation well.” (P17, FGD-2)

P14, P17, and P18 shared similar views - HEIs should help the students to learn how to cope with stresses and challenges from any difficult situations. Likewise, a perspective that HEIs’ role is to prepare or strengthen competencies for individual survival and livelihood as well as for community support, was also shared by KII-5 referring to ‘a Myanmar model of Five Strengths’ as discussed in Chapter 3.

Lastly, the participants’ desirable graduate attributes are somewhat like the ESD graduate attributes recommended by the UNESCO (UNESCO, 2017; QAA and Advance HE, 2021). For example, P17 encouraged promotion of personal or social abilities such as cultural sensitivity, morality, and mutual respect amongst the diverse ethnic communities. Moreover, KII-2 expected education to empower the students and improve their independent learning skills. KII-1 and KII-4 insisted on the students' development in critical thinking and environmental literacy. Finally, the importance of these knowledge and skills highlighted by P14 was:

“Knowledge is more than grades and qualifications mentioned on the papers.” (P14, FGD-2)
Some open comments in the online survey contributing to this thematic view can be noted as follows:

“Universities need to create a learning space for both theory and practice.”
(a respondent, online survey)

“Balanced learning on both theories and practical skills is needed for quality education outcomes.” (a respondent, online survey)

“May I suggest learning contemporary studies and having professional peers in one's dedicated fields!” (a respondent, online survey)

The roles of HEIs in contributing to ESD in Myanmar viewed through the lens of preparing students with sustainability literacy and relevant competencies can be summarised as:

- Universities should integrate ESD related knowledge and skills (or graduate attributes) alongside specific disciplinary skills and knowledge to foster smart citizens and leaders.
- Students should develop generic ‘life skills’ for their survivability, for their quality of lives, and for their capabilities in contributing towards the wellbeing of their communities or sustainable development of the country.
- Development of graduate competencies or attributes are related to the ESD integration and the HEIs’ reconstruction processes, as discussed in the reviewed literature.
- Suppose more citizens have developed these skills from their learning at HEIs. In that case, it will increase the likelihood of their contribution to addressing the sustainability issues and locally relevant sustainable development implementations in Myanmar.
- Some of these competencies observed in the data are like those UNESCO recommended ESD competencies.

6.3.3 HEIs as exemplar learning hubs

The third thematic view on the roles of HEIs for ESD is a learning hub, in other words, HEIs are expected to practice as a model or prototype of a sustainable community. According to KII-3, sustainable management should be practiced at the universities as a role model by normalising some activities, for instance waste management. What she
proposed was reflected in the campus approach in the 4Cs+RP model and it can also be considered in the ideological reconstruction in the Arnhold et al.’s (1998) model:

“It is also important that the concept of sustainable development is not only taught in the classrooms, but it should also be integrated and practiced across the whole university.” (KII-3, NGO staff)

KII-3 and KII-6 suggested federal education as an important aspect of foundational learning - to understand the diverse traditions and promoting solidarity for a peaceful society. KII-6, drawing on her personal experiences, wants to encourage a culture of mutual learning in universities which should allow for social spaces and peer-to-peer learning for students’ improvement and mutual understanding that could lead to more solidarity in the nation. Likewise, KII-3 suggested promoting democratic culture through nurturing cultural sensitivity, mutual respect, and ability to work in multi-cultural contexts. Similarly, P15 claimed that:

“. . diversity education can help a graduate to know how he/she can communicate with people in professional settings and to have fundamental social knowledge of what good performance is.” (P15, FGD-2)

Regarding inclusion and diversity, KII-7 proposed an inclusive recruitment process by, for instance, recruiting teachers and staff from different ethnic groups, religions, gender, and sexual orientations. This could then be a practical intervention of HEIs to create a culture of mutual understanding and peace as claimed by KII-7. Moreover, teachers and students’ participation in the curricula development and designing teaching learning process could be trialled according to KII-7. As discussed earlier, all these awareness, skills, and practices could be developed through both formal and informal ways based on the participants’ claims. In this case, P17 has affirmed his belief:

“If we can nurture such kind of education, I think, we are one step closer to sustainable future” (P17, FGD-2).

These observations have been reflected in the country context (Chapter 2) which has discussed how inter-ethnic conflicts and prolonged dictatorship in Myanmar has necessitated some social skill development amongst citizens for building a peaceful multi-cultural society.

Moreover, KII-2 elaborated the potential benefits of non-formal learning through students’ engagement in clubs and associations, e.g., Students' Unions or Environmental Clubs, which was also supported by Soe (2014). KII-2, based on his
personal inspiration of Students’ Unions for their movement and learning, affirmed that potential development of such social abilities could be improved through engaging in those clubs or associations. Thus, it can be interpreted that learning from both formal and informal situations are likely to support development of those discussed skills and knowledge such as environmental management, cultural sensitivity and mutual respect, social cohesion, and democratic practices. This was supported by KII-3’s claim that:

“. . the university can teach such concepts and normalize the practices at the same time across the entire institution as a campus operation approach” (KII-3, NGO staff).

To ensure this, KII-5 asserted the idea of institutional process:

“These components should be integrated in university’s mission and vision, and these missions should be often reminded” (KII-5, Professor).

He affirmed that if these institutions can display sustainable practices, beliefs, great attitudes and apply them, the students will learn about it through experience and process. In other words, it can be interpreted that HEIs should be able to accommodate or facilitate as a learning hub to fulfil the students’ skill development. In fact, the whole university approach proposed by KII-3 was far beyond the campus approach because it can include all the activities of HEIs - curriculum, research and campus operations as discussed by McMillin and Dyball (2009).

Based on the observations, participants’ expectation of HEI as a learning hub can be summarised as:

- HEIs can be used as learning hubs for all: students, teachers, and staff members.
- Sustainability should be learned, tested, and practiced as part of daily operations.
- HEIs are expected to be a learning ground and role model of mutual respect, democratic culture, and celebrating diversity by adopting and integrating ESD in their policies and activities.
- Learning from the experiences and learning through cooperation, communication, and teamwork amongst the students or between the students and the teachers, desirable sustainable literacy will potentially be developed and spread in society.
6.3.4 Research and innovation

As another view of ESD in the context of Myanmar, HEIs are expected to contribute to sustainable development of the country through research or innovation. This is because research activities are mostly implemented by universities and there are not many independent research institutions in Myanmar. Participants in FGD-1 (teachers) discussed the HEIs’ research activities based on the comparison of their research experience at Myanmar universities and their new experiences of post-graduate studies in other countries. P2 and P6 stressed that locally relevant research activities should be prioritised, and their findings and solutions should be applied to address issues in society rather than focusing solely on publications. Their idea was congruent with KII-3’s claim:

“Federal education necessitates to stipulate regional policies, laws and guidelines and they will be beneficial to produce context-relevant research through HEIs. This would be an amazing contribution. This context-relevant research can contribute to providing facts and findings to regional governmental departments and parliament.” (KII-3, NGO leader)

P6 recommended Myanmar HEIs undertake more collaborative research activities with different stakeholders, particularly the private sector. And a good system of sharing research findings and knowledge exchange was suggested by P2. However, P19 and KII-2 made a strong critique about the poor quality of training and supervision support for post graduate research students in Myanmar. They insisted on supporting independent learning and quality research projects to become well qualified graduates or researchers. Similarly, P14 assumed that there was apparently no interest in research or research-informed decisions or activities amongst the ministries in Myanmar. He wanted HEIs to provide the required support for the research activities. In teaching and learning systems, KII-3 and KII-5 suggested research projects for undergraduate students to develop their research skills and research-based thinking:

“I also think that there should be some research which are applicable for bachelors’ degree level. These small-scale research at bachelors’ degree level can enhance students’ interests to conduct regional and policy level research when they pursue their masters’ degrees.” (KII-3, NGO staff)

“Universities should facilitate students to gain exposure to projects, research experience, and experiments.” (KII-5, Professor)

Regarding the policy focused research, KII-1 said:
“I think HEIs should mainly focus on policy advocating research, not just producing research papers. They should really concentrate on providing advocacy and inputs to the policy makers. These advocacy research should also be group works with inter-disciplinary approach instead of individual’s effort.” (KII-1, Educational development manager)

KII-1, like P2’s claims, gave the same message to prioritise on the application of research instead of being oriented to publishing. He wished Myanmar HEIs would prioritise the policy advocating research projects and integrated research programmes – looking at a particular case from different perspectives or disciplinary lens. He affirmed that only quality research can influence the policy makers’ interests and decisions.

From the online survey, a few respondents made related suggestions: HEIs in Myanmar need to carry out quality research to inform or advocate better policy recommendations for the sustainable development of the country, and to train both undergraduate and post graduate students for their research competencies and to develop qualified researchers:

“Need more research on applying knowledge and skills for sustainable development” (a respondent, Online survey)

“Laws, policies, and regulations should be based on the results of research.” (a respondent, online survey)

“Group wise research should be encouraged.” (a respondent, online survey)

HEI’s contribution to ESD in Myanmar via research and innovations can be summarised:

- HEIs in Myanmar should engage with different stakeholders advancing technologies or seeking new knowledge or strategies through research collaborations to address the sustainability issues or promote sustainable development in Myanmar.
- HEIs should promote quality research to inform local and national policy.
- The quality of research projects and research related competencies amongst the faculty members and the research students should be upgraded.
- Learning about research as well as research-based learning process should be encouraged at undergraduate level. HEIs should provide required support for research activities.
6.3.5 Influencing Policy

This is the last thematic view, which is also related to the former one: research and innovation. This view has also been discussed in the reviewed literature (Fadeeva and Mochizuki, 2010; Zizka and Varga, 2021) encouraging HEIs to engage in influencing policy and social engagement in addition to their two main tasks: teaching and research. Likewise, the research data in this theme suggested that HEIs need to engage in social justice and/or environmental affairs. For instance, in the United States, HEIs are expected to engage with different stakeholders and provide relevant recommendations, through reliable research projects and innovative practices (Higher Education Sustainability Act - The Campaign for Climate Literacy, no date). The UK HEIs’ network has been actively engaging in policy advocacy by informing the government or decision makers about sustainability related issues (EAUC, no date). KII-7 supported this idea:

“I want to see HEIs as institutions that can check and balance politics. These institutions should be able to shape our nation’s future. I want our HEIs to be like that and our HEIs need to be independent.” (KII-7, PhD student)

Myanmar HEIs could contribute to influencing policy related to natural resources management and economic development issues by providing insightful research findings as insisted by KII-1:

“The role of HEIs is for policy advocacy and to influence policy makers.” (KII-1, Education development manager)

KII-3 supported this from a federal perspective:

“Such academic works can contribute to shaping regional policies.” (KII-3, NGO staff)

Although HEIs’ role in influencing policy received fewer references in the coding compared to other sub-themes, there was a consistent message about the potential and importance of relevant research to influence policy. In brief, HEIs in Myanmar could inform the policy reform process leading to the country’s most desirable sustainable future by providing locally relevant recommendations.

6.4 Conceptualised ESD for Myanmar HEIs

This concluding section summarises the answers to the first research question (RQ1):
How might ESD be conceptualised in the Myanmar HEIs’ context?

In the desirable sustainable development/future of Myanmar (section 6.2), five views emerged from the thematic analysis: political; economic; environmental; socio-cultural; and philosophical views. A democratic government and a healthy political system without any physical violence or civil wars have been expressed as a desirable political future. In the economic view, fulfilment of basic needs, fair opportunities and sharing of benefits, just distribution of power and caring the environmental health system are the key concepts for a sustainable future. Regarding the environmental view, destructive and unethical industries or businesses without sound sustainable environmental management should not be allowed. Education needs to be re-enforced to ensure all citizens care and use the resources respectfully, and learning from ancestors’ sustainable practices should be encouraged. The socio-cultural view reflects the philosophical views regarding ethical values and social justice. It embraces values such as inclusive decision making and appreciating diversity, mutual respect, and collaboration, sharing power and resources in a just and fair manner, fulfilment of basic needs, happiness and freedom of faith and cultural practices. Without these qualities, there will likely be more conflicts and violence over natural and social environments. According to the ethical values and moral constructs in the philosophical view, development interventions need to be locally relevant and feasible, and should not lead to dependency. Current generations need to be resilient to climate change and should be able to pass this knowledge on to future generations.

These desirable sustainable development/future features of Myanmar can be considered in a nationwide reform process with ESD in Myanmar. Regarding the role of HEIs for ESD, more investments are needed in Myanmar HEIs in providing quality service and facilitating students’ learning process and research activities. Moreover, the HEIs should act as learning hubs for HEIs’ communities and the public. These might prepare the students with desirable graduate attributes to contribute to the expected sustainable development or future of Myanmar. The HEIs’ learning hubs and the graduates will potentially help build more awareness and normalise sustainability practices amongst wider communities.

On the other hand, the advancement in research and innovation contributed by the HEIs can help inform policy and recommendations for contextually relevant development. The graduates equipped with relevant sustainable literacy and attributes will potentially contribute to desirable sustainable development implementations in the country. These ideas for HEI’s contributions or engagement in ESD are much like those discussed and
claimed for ESD in the literature (for example, Griesel, 2003; McCabe, 2010; Nomura and Abe, 2011; ISCN, 2018b; Liu and Kitamura, 2019; Abunasser, AlAli and Al-Qahtani, 2022).

There were also interesting elements in the themes of ESD in the Myanmar HEIs’ context that were not widely highlighted in the published literature. These significant features in Myanmar HEIs’ ESD concept could be noted as follow.

- HEIs need to invest and put efforts in policy focused research and actively engaged in policy influencing process.
- HEIs need to learn from the alumni and the communities, including indigenous knowledge and traditional practices.
- ESD in Myanmar context is somehow like a common international/Western view that would more readily link sustainability with environment or climate change but the focus on justice, equity, etc., is a strong reflection of the Myanmar context.

Based on this conceptualisation of the factors deemed necessary for a desirable sustainable development/future of Myanmar and the roles of HEIs in contributing to the national level ESD, an influence diagram62 has been developed to provide a visual summary of the relationships between these factors (see Figure 6.1).

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62 I used visual paradigm (non-commercial use) to draw the influence diagrams in this thesis: [https://online.visual-paradigm.com/](https://online.visual-paradigm.com/)
6.5 Chapter summary

This chapter has discussed the observations based on the qualitative data: KII, FGDs, and open comments from online survey. It has answered the first research question with two main themes: desirable sustainable development or future (RQ1.1) and HEIs’ contribution to ESD in Myanmar context based on the research participants’ perspectives (RQ1.2). The former was viewed through five thematic lenses: economic; environmental; socio-cultural; political; and philosophical views. Democratic government and people power were a key focus. Social justice, maintaining good (sustainable) cultural practices, and freedom in socio-cultural aspects were also highlighted. Development in the economy is desirable, but it needs serious attention to environmental and social impacts.

The later theme, i.e., HEIs’ contribution to ESD was conceptualised in another five different sub-themes. HEIs should be supported more for quality delivery and research interventions which can prepare graduates with relevant attributes and inform the local and national policies for sustainable development. In addition, HEIs are expected to
develop as exemplary learning hubs and promote research-based learning to prepare smart citizens who can contribute to addressing sustainability-related issues. The observations of the analyses are congruent to what has been discussed in the reviewed literature and some of the findings are reflected in the proposed models: 4Cs+RP model for ESD integration and educational reconstruction model of Arnhold et al. (1998).

Some of the discussions in the second theme inform and relate to what to be discussed in the following chapter – desirable graduate attributes from ESD perspectives.
Chapter 7 Graduate Attributes for the Sustainable Development of Myanmar

7.1 Introduction

This chapter follows on from exploring the conceptualised education for sustainable development (ESD) in the context of Myanmar higher education institutions (HEIs) in the previous chapter. The chapter addresses the second research question RQ (2):

What are the graduate attributes to be expected from integrating the conception of ESD in Myanmar HEIs?

It has two sub-questions:

RQ2.1: What graduate attributes should be expected to contribute to the sustainable development of Myanmar?

RQ2.2: What are the most important ESD related graduate attributes that Myanmar HEIs need to consider?

This chapter examines two sets of graduate attributes: 1) a prompted (quantitative) set and 2) an unprompted (qualitative) set. The former set (14 graduate attributes) was quantitatively investigated in term of priority rankings based on their relevancy and importance in contributing towards desirable sustainable development for Myanmar and the latter attempted to provide a deeper understanding of the broader thematic views (7 graduate attributes). Both sets of graduate attributes primarily emerged from the qualitative data sources: seven key informant interviews (KIs) and two focus group discussions (FGDs). Moreover, they were also compared with attributes developed by different institutions. Indeed, the chapter examines these graduate attributes for their relevancy and potential contribution to the sustainable development for Myanmar so that they can be considered as part of ESD integration amongst Myanmar HEIs.

The chapter begins with the definition of graduate attribute used in this thesis and a brief description of the two sets of graduate attributes and how they emerged from the qualitative data (section 7.2). Then, the seven thematic components of graduate attributes will be discussed first to respond to the sub question RQ 2.1 (section 7.3), although this thematic analysis was conducted after the online survey. It is followed by the observations on the quantitative analyses of the priority ranking of the desirable graduate attributes and some associations with demographic data responding to RQ 2.2 (section 7.4). After that, there are observations on the priority ranking of these fourteen...
attributes by the FGD participants using Jam-boards (section 7.5), then the analyses from these two methods are compared. The fourteen graduate attributes are viewed in the three Hs model (section 7.6) and the chapter concludes with a summary (section 7.7).

### 7.2 Graduate attributes that emerged from the data

Graduate attributes, as discussed in Chapter 3, are defined in various ways. The most discussed and used definitions in the literature (see Edwards, 1996; Hager and Holland, 2006; Svanstrom, Lozano and Rowe, 2008; McArthur, 2011; Egizii, 2015; Spronken-Smith et al., 2015; Hill, Walkington and France, 2016; Kensington-Miller et al., 2018; Abunasser, AlAli and Al-Qahtani, 2022) can be categorised as knowledge, skills, attitude, and behaviours that the graduates are expected to have developed during their studies at HEIs in addition to their specialised/disciplinary ones. This research embraces the idea of three Hs (head, heart, and hand) (Sipos, Battisti and Grimm, 2008) and that attributes are more than knowledge and competencies. Therefore, the term graduate attribute, particularly from an ESD perspective in this research, is a generic term covering non-subject discipline attributes including, but not limited to, attitude, behaviour, values, skills, and competencies most relevant to sustainable development.

From the perspective of integrating ESD in Myanmar HEIs, the initial list of graduate attributes emerged from the qualitative data acquired through seven Key Informant Interviews (KII)s and two Focus Group Discussions (FGDs) with university teachers and students from Myanmar and were then refined through verification and an iterative consultation process. The fourteen graduate attributes developed from this systematic and in-depth analysis were tested using an online survey with a large number (n=417) of respondents to understand their priority rankings in the Myanmar context. The online survey also included open questions for additional comments and suggestions (see Chapter 5). The data from the 417 responses to the online survey were quantitatively analysed using SPSS software.

Then, another thematic analysis of the qualitative data was conducted using NVivo software and the qualitative data from the open questions of the online survey were used alongside the main sources from the KIIIs and FGDs. Another set of seven graduate attributes emerged from this thematic analysis in NVivo. These two sets of graduate attributes, introduced in Table 7.1, will be detailed and examined both quantitively and qualitatively in this chapter.
One difficulty that arose was naming an attribute for a particular group of qualities as some of its skills and abilities can be shared across two or more attributes’ names. For example, some qualities in social abilities or personal abilities can also be found in professionalism or leadership. Similarly, certain qualities of all other attributes can match employability skills because all these skills or attributes are commonly discussed as employability skills (see 7.3.2). Therefore, it is not easy to pair up these two sets of attributes as they are not fully related. However, this comparison has been tried with the purpose of matching the meanings of the descriptors in related groups.

Table 7.1 Comparison of two sets of graduate attributes to be studied

<table>
<thead>
<tr>
<th>Seven categories of Graduate Attributes from Thematic analysis (broad view)</th>
<th>Fourteen Graduate Attributes from systematic and in-depth analysis (specific view)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainability literacy and practice</td>
<td>Environmental literacy</td>
</tr>
<tr>
<td>Social abilities</td>
<td>Social abilities</td>
</tr>
<tr>
<td></td>
<td>Cultural sensitivity</td>
</tr>
<tr>
<td>Professionalism</td>
<td>Professionalism</td>
</tr>
<tr>
<td></td>
<td>Research knowledge and skills</td>
</tr>
<tr>
<td>Personal abilities</td>
<td>Personal abilities</td>
</tr>
<tr>
<td></td>
<td>Resilience</td>
</tr>
<tr>
<td></td>
<td>Thinking proficiency</td>
</tr>
<tr>
<td>Leadership and entrepreneurship skill</td>
<td>Entrepreneurship</td>
</tr>
<tr>
<td></td>
<td>Management skill</td>
</tr>
<tr>
<td>General knowledge and life skill</td>
<td>Digital literacy</td>
</tr>
<tr>
<td>Employability skills</td>
<td>Work experience</td>
</tr>
<tr>
<td></td>
<td>Teaching</td>
</tr>
<tr>
<td></td>
<td>Language proficiency</td>
</tr>
</tbody>
</table>

7.3 Seven graduate attributes from thematic analysis in NVivo

As discussed earlier, the initial fourteen graduate attributes were tested out in an online survey in which some qualitative data were collected. After that, the qualitative data from KII s, FGDs, and the responses in the online survey were analysed using NVivo.
However, the chapter begins with this broader view or a higher-level grouping of seven ESD graduate attributes (i.e., to nest the fourteen specific attributes into the higher level groups as per Table 7.1) in order to make comparison with those adopted by the UK Quality Assurance Agency (QAA) and Advance HE (based on the UNESCO’s recommended competencies) although this method followed the online survey. Amongst the seven thematic categories emerged as relevant graduate attributes (Table 7.2), personality and employability had the largest numbers of coded references whilst leadership and entrepreneurship had the least. This section examines this broader view of these thematic components as desirable graduate attributes from the perspective of ESD integration in Myanmar HEIs.

Table 7.2 Seven categories of graduate attributes from thematic analysis (NVivo)

<table>
<thead>
<tr>
<th>Theme: Expected graduate attributes for the desirable sustainable development of Myanmar</th>
<th>Coded References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employability skills</td>
<td>77</td>
</tr>
<tr>
<td>General knowledge and life skill</td>
<td>18</td>
</tr>
<tr>
<td>Leadership and entrepreneurship skill</td>
<td>11</td>
</tr>
<tr>
<td>Personal abilities</td>
<td>101</td>
</tr>
<tr>
<td>Professionalism</td>
<td>15</td>
</tr>
<tr>
<td>Social abilities</td>
<td>35</td>
</tr>
<tr>
<td>Sustainability literacy and practice</td>
<td>11</td>
</tr>
<tr>
<td>Total coded references</td>
<td><strong>268</strong></td>
</tr>
</tbody>
</table>

As discussed earlier in Chapter 3, the UK Quality Assurance Agency (QAA) and Advance Higher Education (HE) adapted and adopted the eight competencies for sustainability recommended by the UNESCO. Following the three Hs model of Sipos, Battisti and Grimm (2008) and the UK’s QAA and Advance HE’s categorising (QAA and Advance HE, 2021), most of these seven thematic attributes in this set can also be sub-grouped into cognitive (Head), psychomotor (Hand), and affective domains (Heart). Comparing these seven graduate attributes against the UNESCO’s ESD competencies (see Table 7.3), five out of seven attributes in the research analyses were paired up whilst it was acknowledged that they were not fully related to their counterparts.
Table 7.3 Comparison of ESD graduate attributes from this research and UNESCO’s recommended competencies

<table>
<thead>
<tr>
<th>Seven categories of ESD graduate attributes emerged from the analysis of the research data</th>
<th>ESD Graduate attributes adapted by QAA and Advance HE (UK) based on UNESCO’s recommended competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal abilities/ professionalism</td>
<td>Self-awareness competency</td>
</tr>
<tr>
<td>Social abilities</td>
<td>Normative competency</td>
</tr>
<tr>
<td>Employability skills/ personal abilities</td>
<td>Collaboration competency</td>
</tr>
<tr>
<td></td>
<td>Integrated problem-solving competency</td>
</tr>
<tr>
<td>Leadership and entrepreneurship skill</td>
<td>Anticipatory competency</td>
</tr>
<tr>
<td></td>
<td>Systems thinking competency</td>
</tr>
<tr>
<td>Professionalism/ Personal abilities</td>
<td>Strategic competency</td>
</tr>
<tr>
<td></td>
<td>Critical thinking competency</td>
</tr>
<tr>
<td>Sustainability literacy and practice</td>
<td></td>
</tr>
<tr>
<td>General knowledge and life skill</td>
<td>Holistic (HHH)</td>
</tr>
</tbody>
</table>

‘General knowledge and life-skills’ and ‘sustainability literacy and practice’ were separately grouped in the research data, and they can be considered as holistic because they can enfold all three types of qualities: Head, Heart, and Hand. The UNESCO’s ESD competencies are apparently oriented towards the development of cognitive skills which are likely relevant to employability or professionalism. Amongst the seven attributes of this research, ‘personal abilities’ were covered by many coded references (101 out of total 266) and were related to UNESCO’s critical thinking, strategic, and problem-solving competencies. From the research participants’ view on Myanmar ESD attributes, they expected graduates to be knowledgeable and ethically sound professionals and could lead or contribute to the betterment of society. In addition, they desired sustainability literacy and habitual practices which are mostly related to environmental and social aspects. There were no specific attributes explicitly highlighting the environmental or sustainability related knowledge and skills (or practices) in the UNESCO’s key competencies framework but does have a cross-cutting element that all 8 competencies should relate to knowledge of the SDG (UNESCO, 2017). However, sustainability
literacy and practice has come out as a separate attribute from this research data analysis. Likewise, general knowledge and life skills appeared as another separate attribute. Both these attributes are considered as cross-cutting or holistic themes which in one sense matches the UNESCO’s framework. As a result, five attributes from this research match the eight specific attributes from the UNESCO and two cross-cutting/holistic themes from this research match that UNESCO’ cross-cutting element which embrace all the eight competencies being guided by the knowledge of SDGs. Nevertheless, it should be noted that this is not just how attributes are defined but how they are arranged in a framework.

Based on the research data, the seven graduate attributes (thematic categories) are discussed in the following sub-sections and compared with other lists of attributes from the literature or the websites of professional bodies or agencies.

7.3.1 Personal abilities

Personal abilities refer to a set of foundational skills, awareness and attitudes which could be regarded as an individual’s inner power or abilities, which can potentially foster the development of other attributes. P7 from FGD-1 stressed the importance of physical fitness and wellbeing by recommending graduates be able to take care of their health. The ability to work in a stressful situation and have self-management skills in the job environment were claimed by P2. In FGD-2, P15 claimed for the graduates’ knowledge of and attitude towards human rights and respecting others’ while P17 highlighted the importance of resilience regardless of their disciplines. Both P14 and P17 recommended lifelong learning as an important graduate competency. Regarding learning ability and mindset, KII-1 said:

“They need to nurture an open mindset and continue to learn especially in professional context. They need to learn from co-workers, from their seniors and they need social skills to succeed.” (KII-1, Education Development Manager)

Moreover, KII-5 added required skills as follow.

“Universities should nurture students’ abilities in analytical skill and problem-solving skill. Universities should create learning environments where students can exercise solving complex problems in the real world.” (KII-5, Professor)
KII-5, 6, and 7 affirmed the empathy and spirit of learning to work for the betterment of the society as important attributes for desired sustainability. It was also noted that fifty references from the open responses of online survey contributed to this affective domain. A few examples are:

“Altruism, sympathy and love, appreciating others’ achievement” (A respondent, Online Survey)

“Activism and love justice: having the ability to apply gained knowledge and skills to advocate for social causes, for the greater good of the community and the society.” (A respondent, Online Survey)

“Analytical skills, critical and logical thinking skills are highly recommended.” (A respondent, Online Survey)

“Having positive attitude or intention to make the better environment” (A respondent, Online Survey)

“Life-long learning - capacity and opportunity to learn through career” (A respondent, Online Survey)

“Maturity and Self-determination” (A respondent, Online Survey)

7.3.2 Employability skills

Some of the qualities from all other ESD graduate attributes in this set are apparently related to employability skills. Social skills, problem solving skills, management skills, and negotiation skills were discussed as desirable attributes that HEIs should develop in their graduates. For example, P2 claimed:

“And I think that many of graduates need management skill greatly. I am not saying that they should be able to manage others and larger scale of administrative works. They need management skills to handle some of their emotional issues amongst co-workers or their stress at works.” (P2, FGD-1)

Reflecting the current digital age, P15 in FGD-2 mentioned the importance of digital literacy. P14 supported this idea by sharing his personal experience:
“We did not know how to use a computer and we were only interested to play games on computer. So, I had great problems when I started to work, so the university graduates should know Microsoft office at least.” (P14, FGD-2)

KII-1 has similar view, and he used the term IT (Information Technology)63.

“. . . they need to have at least basic skill in using social media well. This is also important for both employability and self-learning. Having skill in IT is also important.” (KII-1, Educational development manager)

These digital skills and language skills were grouped in the general knowledge and life skills in the thematic attribute, but they can also be considered as employability skills as acknowledged above. In another aspect of relevant employment skills, KII-7 highlighted the importance of responsibility and accountability for one’s own work and its potential consequences. Moreover, he expected negotiation and teamwork skills to be developed in graduates, partly in response to the country’s challenging context.

“When we say “teamwork,” it includes the ability to negotiate, and to compromise. These are skills needed to build an environment conducive for politics and to address the peace issues, the ability to solve the problems without any physical violence.” (KII-7, PhD student)

There were some comments from the online survey related to employability. Some recommended that university students should have had some practical/work experience before graduation. Some comments suggested the ability to apply what they have learned at HEIs in their jobs.

“Applying his/her knowledge in the field because most learn the theories but do not apply those and it is just a waste of time.” (A respondent, Online survey)

Another employability related skill from the research data is teaching, which means one should be able to train or teach co-workers and to share or transfer knowledge and skills

63 People widely use the term IT in Myanmar but sometimes they refer to basic knowledge and skills of using some Microsoft office software, emails, social media, and exploring information via websites. In this research, I use ‘digital literacy’ for it following the verification process with the participants.
in the workplace. It was used as ‘teaching’ in the fourteen sets of specific graduate attributes.

“Ability to transfer the knowledge and skills, practice good teaching” (A respondent, Online survey)

Communication skill, associated to teaching as well, was mentioned by another respondent.

“... to help others to understand or to be able to apply something via text, speech, or technologies.” (A respondent, Online survey)

While KII-5 encouraged the research knowledge and basic research skills, KII-7 elaborated the ability of the graduates to make use of their knowledge and skills:

“I want to use my discipline practically and we were in the similar situation. We are pursuing PhD because we want to apply. I think, application is also essential.” (KII-7, PhD student)

All the employability skills identified in this research can be summarised and compared against some employability skills which are widely discussed and claimed by three other institutions: US Department of Education, Australian Government, and Indeed (UK Private) employment agency (see PCRN: Employability Skills, no date; What are employability skills? | Job Jumpstart, no date; Indeed, 2023) (see Table 7.4).

Some missing boxes in the research data column can be covered by other categories of graduate attributes for instance personal abilities and social abilities which covered a wider range of knowledge, attitude, and skills. It should be noted and acknowledged that these skills were matched based on the similarity of the nature of their qualities, however it is hard to claim that they are equally related.

In fact, there were confusions of the terms such as skills, attributes, and competencies in the literature, for instance the UNESCO’s list of competencies aims to encompass all qualities of physical, mental, and social abilities, although it explicitly uses knowledge, thinking skills, and ability to work or address problems. Moreover, it should be noted that there could be similarity and differences between employability skills and ESD skills because the former could be viewed as a part of the latter according to this research and the reviewed literature. Therefore, descriptors were used for each specific element in another set of fourteen graduate attributes (see Table 7.5) to ensure the clarity in the online survey whilst they were not used for these other frameworks.
Table 7.4 Comparison of employability skills: research data and three institutions

<table>
<thead>
<tr>
<th>Employability skills from this research</th>
<th>US Department of Education</th>
<th>Australian Government</th>
<th>Indeed (UK Private)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical skills</td>
<td>systems thinking</td>
<td></td>
<td>analytical skills</td>
</tr>
<tr>
<td>Critical thinking</td>
<td>critical thinking skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication skill/Teamwork</td>
<td>Interpersonal skills and communication skills</td>
<td>good communication/teamwork/patient</td>
<td>communication/teamwork</td>
</tr>
<tr>
<td></td>
<td>personal qualities</td>
<td>motivation and initiative</td>
<td>motivation</td>
</tr>
<tr>
<td>Digital skills</td>
<td>technologies use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management skill</td>
<td>information use/resources management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job related working experience, knowledge, and skills</td>
<td></td>
<td></td>
<td>administrative skills</td>
</tr>
<tr>
<td>Problem solving, negotiation and conflict resolution skill</td>
<td></td>
<td></td>
<td>leadership</td>
</tr>
<tr>
<td>Accountability and reliability</td>
<td>reliability/dependability</td>
<td></td>
<td>reliability</td>
</tr>
<tr>
<td>Ability to apply knowledge/skills to address practical issues</td>
<td>following instructions</td>
<td></td>
<td>ability to learn and follow the instructions</td>
</tr>
<tr>
<td>Discipline related experiences, knowledge, and skills</td>
<td>applied academic skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research knowledge and skill</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to transfer knowledge (teaching)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7.3.3 Social abilities

Participants P11, P14, P15, P17, and P19 mentioned the importance of social skills. According to them, graduates were expected to be flexible and able to work with people from different cultural or professional backgrounds, in other words it could be interpreted as communication, collaboration, cooperation, and teamwork related skills.

“I think we can achieve our envisioned sustainable future if we have a culture that we can respect to different values both in social lives and in politics.” (P17, FGD-2)

As discussed in Chapter 2, several factors such as prolonged ethnic tension, traumatic experience in civil wars, various oppressions and violence exerted by military dictators, and the dominance of the majority ethnic group (bamar) in terms of political power and resource use, have led Myanmar citizens yearning for long-lasting peace and stable political reform. The research participants expected HEIs to prepare smart citizens with such attributes because they believe things will be smoother in addressing ongoing issues if non-violence and mutual respect of the diverse values/cultures are widely practiced:

“HEIs are places for diverse people across the country to come and study together, so there would be different traditions and cultures so that they could improve their social skills and share knowledge. I think a graduate should be proficient in his/her specialization after learning it for 4 or 5 years because the graduates would find employment opportunities and contribute towards the society by collaborating with people from diverse backgrounds. It is very important for graduates to gain social knowledge from HEIs.” (P19, FGD-2)

This idea might be considered for the campus approach of the ESD integration model – HEIs as learning centres or hubs. The campus operation and HEI’s management could apply this approach suggested by P15 and P19 as it could lead to learning for mutual respect, celebrating inclusion and diversity, and contribute to the development of relevant social skills. KII-1 used the word ‘Emotional Quotient (EQ)’ to refer to emotional intelligence in which he covered communication, engagement, networking, and team building. This is supported by KII-5.

“Graduates are also expected to be good in negotiation skill and interpersonal communication skills.” (KII-5, Professor)
Regarding the socio-cultural view for the sustainable future of Myanmar, HEIs were expected to be learning hubs to help cultivate solidarity and mutual respect amongst the diverse identities based on KII-7’s personal experience.

“But when an ethnic person goes to study in Mandalay, he can eliminate his bias of having hatred towards Bamar because he can have a very good Bamar friend. That’s what I mean by environment.” (KII-7, PhD student)

Some supporting ideas from the online survey’s open comments can also be noted.

“Communication skills, respect, teamwork, collaboration, leadership skill” (A respondent, Online Survey)

“Ability to work with or communicate with people from different ideologies or perspectives” (A respondent, Online Survey)

This category of ‘social abilities’ in the broader view will be categorised as ‘social abilities’ and ‘cultural sensitivities’ in the list of fourteen graduate attributes for the quantitative online survey. It was manifested as communication skill and teamwork in the employability table (see Table 7.4).

7.3.4 General knowledge and life skills

Participant P15 is the only one who discussed gender equality issue and gender awareness as a part of graduate attributes. She discussed:

“We often hear the words called ‘lady first’ at our workplaces. It sounds good but sometimes I wonder if people allow ladies to go first because they think we are weak. Or why would they give us chances? So, I think understanding gender equality matters. It can help a person to have strong attitude and can accept diversity if the person has these knowledge and skills.” (P15, FGD-2)

KII-1 discussed why graduates should have a good command of Myanmar language proficiency and claimed it as an attribute. Proficiency in Myanmar language may seem so obvious to ordinary burman citizens or outsiders (non-Myanmar), it might raise the question about why it would need to be an explicit attribute. However, using Myanmar language as an official one is still a debated issue in Myanmar society due to deeply rooted ethnic conflicts as discussed in Chapter 2. On the other side, what KII-1 claimed
was consistent with the general situation if effective communication and comprehension were considered as necessities for sustainable development in this society. He said:

“I want our graduates to be proficient in Myanmar literature and write the language well. Nowadays, we can see many children and youth trying to learn English very hard, but their ability to communicate in Myanmar language is getting worsened. We all need to speak in Myanmar in our society, especially with people from villages. We need to speak in Myanmar language well to explain and communicate to people from such local communities.” (KII-1, Educational development manager)

Regarding foreign languages, a respondent in the online survey claimed that students should learn at least one foreign language at their undergraduate level whilst another respondent argued that learning languages should not be considered as a graduate attribute because students can decide to specialise in it to master it based on personal choice.

In brief, diverse aspects of social and political awareness were grouped in this attribute as follows:

- gender awareness (P15) and sex education (online survey response)
- language proficiency, particularly English and Myanmar (KII-1)
- civic education and political awareness such as citizenship, justices, rule of law, human right, and democratic practices (KII-7 and some responses in the online survey)
- history and geopolitical knowledge (some online survey responses)

Although there were fewer references compared to other attributes, they were grouped and named as a separate one because of the similarities when they were referred to.

### 7.3.5 Leadership and entrepreneurship skills

While slightly overlapping with the references in the employability skills, leadership and entrepreneurship skills can be interpreted as graduates’ abilities to take leading roles in the workplace and creating new businesses opportunities. This attribute was built on the references from 2 sources: three participants from FGD-2 and open comments from the online survey. P4 from teachers’ group claimed that graduates should have leadership and entrepreneurship skills.
"As graduates are expected to have leadership skill, they should have ambitions to start their own businesses one day, to become entrepreneurs. I want them to have these thoughts.

… Besides, the teachers should foster the students' mindset that they can start their own business, and they could be business leaders and generate employment opportunities for others one day." (P4, FGD-1)

Nevertheless, P8 and P10 had different perspective on it. They argued that it might not be easy to train all students to become entrepreneurs. Finally, their discussion came to a consensus agreement that universities should facilitate students’ development of entrepreneurship related skills and mindset, but it does not mean to train all the graduates to become entrepreneurs. This idea was also aligned with a few responses in the online survey, and one said:

"Graduates should apply what they have learned from the universities and create some employment opportunities like entrepreneurship." (A respondent, Online survey)

7.3.6 Professionalism

In this attribute, P3 and P11 highlighted professional ethics and good practice of respecting ones' professional jobs as well as others'. Their claims could be interpreted that HEIs should nurture the students' attitudes and their practice of valuing one’s own discipline, showing respect to others, and contributing to the ethical betterment of the society. There were 15 references which were briefly interpreted as integrity, honesty, professional ethic, and respect. P3 claimed that HEIs need to teach ethical issues related to the students’ disciplinary fields.

"For students, they should have understandings not only on their subjects but also on the ethics regarding their disciplines." (P3, FGD-1)

It was supported by P11.

"So, I think, professional ethic is highly important, and it is something that university graduates should have." (P11, FGD-2)

She also added that one should have a strong level of knowledge and competency in his/her respective discipline.
There were some responses in the online survey which were related to professionalism covering:

- Integrity and honesty,
- Good manners and ethics,
- Ability to make unbiased decisions,
- Hardworking and no corruption, and
- Respecting other professions.

### 7.3.7 Sustainability literacy and practices

KII-3 and KII-5 discussed the sustainability literacy and practices, i.e., graduates are expected to apply sustainability concepts, value, and practices wherever they are working. Therefore, they should have experienced this during their degree programmes before their employment, as claimed by KII-3 and KII-5, so that they can apply sustainability concepts and principles in addressing any issues in their job environment. KII-5 claimed that:

“If we want to add “sustainable development,” we must also ensure that our students have knowledge and understanding the importance of environmental well-being and the society.” (KII-5, Professor)

KII-3 had a hope that:

“University graduates would one day work for public service, or they would work in private sectors. As they would become adults one day, we need to help them nurture this mindset, sustainability concepts and values for them to implement sustainable development wherever they are.” (KII-3, NGO staff)

Additionally, KII-3 emphasised application of this attribute in the private sectors:

“A graduate from the university would bring the basic principles, concepts, and issues to consider which are required for sustainable development because these graduates can end up in legislative positions, or some other different professions. Even if they work in a private sector as a staff of a company in extractive industry, they will at least have understandings on fundamental principles and basic concepts. In this way, we can already instil a level of awareness, values, and principles for an adult through HEIs.” (KII-3, NGO staff)
A few references in the online survey supported the importance of environmental or sustainable development related attitudes, knowledge, and skills. In brief, HEIs are expected to train the students to care and respect for the natural environment through understanding the importance of interdependence of healthy ecosystems and the wellbeing of society. Although sustainability literacy and practices were discussed mainly in the context of environmental aspect, peace and diversity related skills from the social abilities could be considered as sustainability literacy given the Myanmar context.

Overall, the broader view of seven desirable graduate attributes which emerged from the thematic analysis had a certain degree of similarity with some attributes recommended by the UNESCO and other institutions. However, Myanmar participants’ view on ESD attributes extended far more than the employability skills and embraced a holistic view of three Hs. Two attributes from this research: ‘Sustainability literacy and practice’ and ‘general knowledge and life skills’ are holistic themes which match a cross-cutting element of the UK’s QAA and UNESCO’s ESD competency framework.

7.4 Quantitative study of the graduate attributes via online survey

This section discusses the observations from investigating the set of fourteen graduate attributes for their priority ranking, with the data collected through the online survey. As described in Chapter 5 (Research methodology), a Jisc online survey was employed to study how these selected attributes might be rated by a wider community of targeted stakeholders in Myanmar. In-country citizens and those who were living abroad were targeted as potential respondents for this survey. This quantitative investigation was equally important to build up information and understanding to answer the second research question, particularly to RQ2.2:

What are the most important ESD related graduate attributes that Myanmar HEIs need to consider?

As mentioned earlier, a set of fourteen graduate attributes were generated from an initial systematic and in-depth analysis through coding the qualitative data from KIIs and FGDs, and a verification and iterated consultation process. This included developing descriptors for each attribute that explained in more depth what they covered, with an attempt to minimise the potential overlaps and variation in understanding of terms by survey respondents. This list included environmental literacy as a specific attribute. It should be noted that these attributes were not grouped by the 3Hs at this stage because the main purpose at this stage was just to present them as a list for the respondents to rank without being set in any form of framework. The confirmed list together with
descriptors was prepared in both Myanmar and English Languages (see English version in Table 7.5) and set out as an online survey (Appendix 3).

<table>
<thead>
<tr>
<th><strong>Graduate Attributes</strong></th>
<th><strong>Descriptors</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Social abilities</td>
<td>Being reflexive and open-minded for feedback; Social dealing skills e.g., interpersonal communication, negotiation, conflict resolution, and being able to build social network; Having teamwork skill e.g., being collaborative, adaptable, flexible, and confident to discuss, question or debate</td>
</tr>
<tr>
<td>Cultural sensitivity</td>
<td>Being knowledgeable about human rights, equality, social conflicts, different cultures/ values/ beliefs/ traditions, psychology, and country’s context; Having basic awareness on peace, respect rights/ freedom of minority/ marginalised identities (e.g., LGBT, minority ethnic/religious/disable groups); Ability to think of being inclusive, work in multi-cultural context, and adapt to new cultural context</td>
</tr>
<tr>
<td>Management skill</td>
<td>Being reliable (Accountability and responsibility; Having problem solving skill and facilitation skill to address the issues; Being able to organise activities or projects and being competent in time management, resource management, project, or business management</td>
</tr>
<tr>
<td>Environmental literacy</td>
<td>Having basic environmental knowledge (e.g., ecology, biodiversity, symbiotic relationships, climate change, deforestation, etc.) and sustainability concepts; Understanding basic principles of sustainability in environmental and resources management, and the interdependence of human beings and ecosystems; Having value, respect, and love on the natural environment, and Ability to think for future impact and act environmentally sound management in their activities</td>
</tr>
<tr>
<td>Thinking proficiency</td>
<td>Being good in reasoning, logical thinking, analytical and critical thinking, and creative thinking leading to wisdom</td>
</tr>
<tr>
<td>Language proficiency</td>
<td>Proficiency in English language skill (at least communicable), Myanmar language; Ability to use any ethnic or foreign languages depending on the situation and individuals’ preferences.</td>
</tr>
<tr>
<td>Work experience</td>
<td>Having work experience in the job environment, or research field or communities (such as internship or volunteer) during study programme</td>
</tr>
<tr>
<td>Digital literacy</td>
<td>Ability to use computer and commonly used software such as Office software (Microsoft Office: word, excel, PowerPoint, etc.); Ability to use internet, search data and apply communication software such as Skype/ Zoom etc., including social media</td>
</tr>
<tr>
<td>Personal abilities</td>
<td>Having self-awareness, moral conduct, contentment, self-esteem, altruism, compassion, and sympathy; Being curious and open-minded to learn, being motivated to learn from work/ experience, and able to learn independently; Being able to read and write well (e.g., proposals/ reports/ research papers)</td>
</tr>
<tr>
<td>Researching</td>
<td>Having fundamental research knowledge and skills</td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td>Having skills and enthusiasm to create/ initiate innovative projects/business</td>
</tr>
<tr>
<td>Teaching</td>
<td>Ability to teach or to transfer the knowledge to others</td>
</tr>
<tr>
<td>Professionalism</td>
<td>Being professionally ethical, having respect to one’s own profession and others; Being punctual and honest; Knowing one’s own rights as well as being responsible</td>
</tr>
<tr>
<td>Resilience</td>
<td>Having perseverance, grit, adaptability, and commitment; Having good focus/ attention what one is studying or working on; Ability to overcome the problems and hardship</td>
</tr>
</tbody>
</table>
The survey used a ‘numerical scale rating’ in which each attribute was to be rated based on a scale of minimum ‘0’ (Zero as ‘not at all important’) to maximum ‘9’ (Nine as the most important) as discussed in Chapter 5. In other words, the respondents were invited to rate the given graduate attributes based on their perceived priority values of being important in contributing towards sustainable development in Myanmar. The survey was launched and rolled out through Facebook social media and emails after being revised based on the volunteers’ feedbacks in the testing stage. It was answered by 417 respondents in total within 39 days.

### 7.4.1 Ensuring reliable and valid data

As explained earlier, the online survey also collected some qualitative data which have been covered in the thematic analysis. This section will only cover the quantitative data, which was:

1) demographic information for the respondents such as age, gender, education levels and their residing countries, and

2) their perceived priority values of the fourteen graduate attributes using a ten-point numerical rating scale (from 0 to 9).

The data were quantitatively examined using Statistical Package for Social Science (IBM Statistics SPSS-27) software and the following section presents the analyses.

This survey research followed good practice in term of ensuring reliability and validity. They are related because reliability determines validity (Bryman, 2016). Reliability is described by stability, internal reliability, and inter-rater reliability according to Bryman (2016). As well as ensuring reliability into the survey design and invitation process, Cronbach’s alpha (α) value and correlation were applied to check the reliability statistics for internal consistency of perceived priority scores on the selected graduate attributes. Cronbach’s α value of 0.97 (see Appendix 6) showed a high level of internal consistency because 0.80 can be claimed to be a typical acceptance level of internal reliability (Bryman, 2016).

The survey aimed to observe the distribution pattern of the respondents’ priority ranking using a ten-point scale (from 0 to 9). According to Harpe (2015), it is called a ‘numerical rating scale’, it is not a Likert scale because there was no specific definition for each scale number apart from the two ends with explanations. This research did not intend to use such Likert items to avoid potential problems with attributing responses to the meaning of each scale point, for instance 1 as ‘least important’ and 2 as ‘moderately
important’. Whilst the suitability of parametric tests for the Likert’s ordinal scales has been differently viewed and argued (Harpe, 2015), this survey employed a ten-point scale rating system to see the ranking profile of each attribute through the valid perception of the respondents.

The survey aimed at stakeholders with experience/knowledge of higher education in Myanmar. Non-probability-based (or convenience) sampling was employed due to a large group of populations and difficulty in identifying individuals in the population (Fricker, 2016) and because it was the most accessible approach for the researcher. Prospective respondents were widely invited by spreading the information and web-link to the online survey through social media networks and emails (Bryman, 2016). There was no intention to make statistical inferences about a population from this convenience sampling method. Rather the intention was to understand stakeholders’ perspectives on the importance of graduate attributes as one element of ESD conceptualisation in Myanmar. Indeed, further extended investigation with probability-based sampling will be needed to deeply understand a particular context such as a geographic region or a particular institution for more reliable representation.

7.4.2 Respondents’ demographic characteristics

The limited demographic data was collected to check whether this sample was likely to be representative of the population of graduates who were the targeted stakeholders and there was not a priori assumption to look for demographic differences. The demographic patterns of the respondents (e.g., gender, age, education level, region of the respondents) were checked through descriptive analysis and frequency distributions as displayed in the following tables.

Of the 417 respondents, slightly more women (55%) participated than men (43%) (see Table 7.6). There were 5 respondents who described themselves as ‘non-binary’ and 2 as ‘prefer not to say’. The numbers of men and women respondents are large enough to be studied for comparing their perceptions, however the other two groups were excluded in the gender comparison due to small numbers.
Table 7.6 Frequency distribution of respondents' gender groups

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man</td>
<td>180</td>
<td>43.2</td>
</tr>
<tr>
<td>Woman</td>
<td>230</td>
<td>55.2</td>
</tr>
<tr>
<td>Non-binary</td>
<td>5</td>
<td>1.2</td>
</tr>
<tr>
<td>Prefer not to say</td>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>417</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

As for the age bands, the youngest group, 18-27 years old, were the largest number of respondents (almost 50% of total respondents) and the age group of 28-37 was the second largest (almost 30%) (see Table 7.7). The next two age groups, 38-47 and 48 and above, have lower proportion of responses (16% and 5% respectively). Although the original survey format included both ’48-57” and ‘58 and above’, they were combined into one group as ’48 and above’ due to the low numbers of respondents in ‘58 and above’. The age distribution was reasonable because a larger number of younger populations might have completed higher education compared to older ones. Besides, the older groups in Myanmar were not comparatively active in using social media, therefore it is less likely for them to get access to the survey invitation through the social media and emails, whilst the younger groups are more likely to have access to internet, social media, and digital applications.

Table 7.7 Frequency distribution of respondents’ age band

<table>
<thead>
<tr>
<th>Age band</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 - 27</td>
<td>207</td>
<td>50</td>
</tr>
<tr>
<td>28 - 37</td>
<td>122</td>
<td>29</td>
</tr>
<tr>
<td>38 - 47</td>
<td>67</td>
<td>16</td>
</tr>
<tr>
<td>48 and above</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>I prefer not to say.</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>417</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Regarding education levels, bachelor’s degree holders were the largest group of respondents (47%) which was followed by the undergraduate students as the second largest proportion (19%) and the master’s degree holders as the third one (14.6%) (see Table 7.8). The remaining groups, PhD students and doctoral degree holders, contributed a smaller percentage, yet the numbers were large enough to be used for non-parametric tests.
Moreover, the survey aimed to understand if there were any differences in the respondents’ perceptions on the priority of the graduate attributes with their current locations that would hinder using the full sample as being representative of all graduates. The number of respondents in different foreign countries were too small to be counted as individual countries. Therefore, they were combined into two main regions: Asian countries and Western or English-speaking countries. Most of the respondents were residing in Myanmar (88% of the total), and those from Asian countries contributed 9.6% and the Western or English-speaking countries for just 2.4% (see Table 7.9).

Table 7.9 Frequency distribution of respondents’ locations

<table>
<thead>
<tr>
<th>Participants’ locations</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myanmar</td>
<td>367</td>
<td>88</td>
</tr>
<tr>
<td>Other Asian countries</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>Western and English-speaking countries</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>417</td>
<td>100</td>
</tr>
</tbody>
</table>

7.4.3 Perceived priority values of graduate attributes

As mentioned earlier, the priority of the selected fourteen graduate attributes were rated by the respondents on a ten-point numerical scale. There was no missing data because every question required a response before moving to the next question. It is not ‘a yes/no/don’t know question’ but asking about their perceptions. After the data had been transferred into the SPSS software, the responses were recoded into 1 to 10 (1 = least
important and 10 most important). In the survey question, ‘0’ (zero) was purposively used as the minimum value instead of 1 to ensure the participants’ understanding of the meanings for different scales and to avoid any potential misunderstandings because ‘1’ might be seen as the highest level according to the school ranking or students’ academic achievement in education for example. This point was learnt through a volunteer’s experience in the preliminary checking. However, they were recoded as 1 to 10 instead of using ‘0’ to ‘9’ for the analysis because these scores were to be treated as ordinal scale in SPSS. Thus, there were 14 (dependent) variables with values ranking from the lowest to the highest level of priority based on their relevancy or importance for the sustainable development or future of Myanmar.

7.4.4 Normality test and outliers

Testing the priority values of the fourteen graduate attributes rated by the 417 respondents for their distributions, normality showed that all the bar graphs were found to be left-skewed (negative skewness), which suggested non-parametric tests should be applied (Fox, 2018). A few outliers were not removed as it was assumed that there was no influence upon the analysis in the test.

Also, the variance checks showed that there were 25 cases having monotones, each with same responses to thirteen or all fourteen graduate attributes. 20 out of 25 cases rated every attribute only ‘9’ or ‘10’ and 5 cases rated 2, 3 or 5 (in ten-point scale in SPSS). Generally, these monotones might be removed in the parametric tests because there is no affect in the analysing of variance considering mainly for the means. The researcher holds the two main assumptions regarding the monotones: 1) it could be the respondents’ carelessness for unknown reasons by giving the same number to all the questions or 2) their serious belief that all the attributes are equally important or relevant to the sustainable future of Myanmar.

7.4.5 Priority ranking of Graduate Attributes

The main purpose of the online survey was to consider which of the fourteen graduate attributes were most important and to investigate whether there was any significant variance amongst the priority values. As the data were not normally distributed, measuring medians was appropriate (Fox, 2018). A Friedman test is usually suggested if the following underlying assumptions are met.

- Only one group of respondents are tested for more than three or more different occasions/ treatments (417 respondents rating 14 graduate attributes).
• Respondents are a random sample from the population.
• Dependent variables (priority on graduate attributes) are measured in ordinal scale (1 to 10)
• Samples do not need to be normally distributed.

Although the survey employed convenience rather than random sampling, it was still possible to apply the Friedman test although second assumption did not hold and the result will be cautiously taken with noted claim (SAGE, 2017). According to an underlying assumption of the Friedman test, the test matched this type of data according to Conover (1999) cited in Pereira, Afonso and Medeiros (2015) - the results in each row, i.e., individual respondent’s rating for different graduate attributes, were mutually independent from each other as well as ‘the observation in each row can be ranked separately according to some criterion of interest’ (p. 2638).

The Friedman test result showed that there was a statistically significant difference in the perceived priority values for the different graduate attributes while running Chi-square value = 612.253, df = 13, p < 0.01. This means that there are differences between attributes but does not indicate which ones precisely. As the data were not normally distributed, median and mode were considered in the rank-based non-parametric tests and the priority of graduate attributes were arranged in the order of mean ranks\(^\text{64}\) generated by the Friedman test (see Table 7.10). This ranking gives some indication of where the statistical differences might lie.

Generally, all the median values of fourteen graduate attributes fall between 7 and 9 showing that most respondents highly prioritised the given fourteen graduate attributes. However, a few respondents did rate some of the attributes as ‘not at all important’ – 2 respondents to ‘social abilities’ and ‘personal abilities’, 9 for ‘environmental literacy’ and 22 respondents for ‘entrepreneurship’.

\(^{64}\) Mean rank is the average value of the ranks of all observations within each sample.
Table 7.10 Perceived priority values of graduate attributes by mean ranks and medians

<table>
<thead>
<tr>
<th>Graduate Attributes</th>
<th>N</th>
<th>25th</th>
<th>50th (Median)</th>
<th>75th</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professionalism</td>
<td>417</td>
<td>7</td>
<td>9</td>
<td>10</td>
<td>9.45</td>
</tr>
<tr>
<td>Thinking proficiency</td>
<td>417</td>
<td>6</td>
<td>9</td>
<td>10</td>
<td>8.66</td>
</tr>
<tr>
<td>Personal abilities</td>
<td>417</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>8.61</td>
</tr>
<tr>
<td>Social Abilities</td>
<td>417</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>8.56</td>
</tr>
<tr>
<td>Management</td>
<td>417</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>8.35</td>
</tr>
<tr>
<td>Digital literacy</td>
<td>417</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>8.09</td>
</tr>
<tr>
<td>Cultural sensitivity</td>
<td>417</td>
<td>6</td>
<td>8</td>
<td>9</td>
<td>7.86</td>
</tr>
<tr>
<td>Resilience</td>
<td>417</td>
<td>6</td>
<td>8</td>
<td>9</td>
<td>7.74</td>
</tr>
<tr>
<td>Environmental literacy</td>
<td>417</td>
<td>6</td>
<td>8</td>
<td>9</td>
<td>7.13</td>
</tr>
<tr>
<td>Teaching</td>
<td>417</td>
<td>6</td>
<td>8</td>
<td>9</td>
<td>6.93</td>
</tr>
<tr>
<td>Work experience</td>
<td>417</td>
<td>5</td>
<td>8</td>
<td>9</td>
<td>6.50</td>
</tr>
<tr>
<td>Researching</td>
<td>417</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>6.05</td>
</tr>
<tr>
<td>Language proficiency</td>
<td>417</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>5.93</td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td>417</td>
<td>5</td>
<td>7</td>
<td>8</td>
<td>5.13</td>
</tr>
</tbody>
</table>

A Friedman multiple pairwise test was undertaken to observe which attributes were statistically different. Firstly, the post hoc Friedman test result consistently showed the significant values (p < 0.001) suggesting that the distribution of perceived priority values amongst the 14 graduate attributes were not the same (see Table 7.11).

Secondly, the Two-way analysis of variance by mean rank also showed significant p values recognising that the respondents in the survey have different perceptions of their priority of the graduate attributes (see Table 7.12). Significant p values meant that there were one or more graduate attributes which were statistically different in their distribution patterns of priority values from one or more other attributes. In other words, it indicated that the priority values of all graduate attributes were not the same and they could be observed in a ranked order.

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65 The colour grading shows the differences in level of priority: the lighter colour represents less priority and the darker means the higher priority.
Table 7.11 Friedman’s post hoc test showing to reject null hypothesis

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Test</th>
<th>Sig. a,b</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>The distributions of Social Abilities, Cultural sensitivity, Management, Environmental literacy, Thinking proficiency, Language proficiency, Work experience, Digital literacy, Personal abilities, Researching, Entrepreneurship, Teaching, Professionalism and Resilience are the same.</td>
<td>Related-Samples Friedman’s Two-Way Analysis of Variance by Ranks</td>
<td>0</td>
<td>Reject the null hypothesis.</td>
</tr>
</tbody>
</table>

a. The significance level is .050.
b. Asymptotic significance is displayed.

Table 7.12 Comparison of mean ranks amongst 14 graduate attributes

<table>
<thead>
<tr>
<th>Related-Samples Friedman’s Two-Way Analysis of Variance by Ranks Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total N</td>
</tr>
<tr>
<td>Test Statistic</td>
</tr>
<tr>
<td>Degree Of Freedom</td>
</tr>
<tr>
<td>Asymptotic Sig. (2-sided test)</td>
</tr>
</tbody>
</table>

Thirdly, a pairwise comparison was performed with Bonferroni correction for multiple comparisons (adjusted p values). The result showed that there were multiple pairs having significant differences in the distribution profiles of the priority values of the graduate attributes (see Appendix 7). It is complicated to show the differences amongst the priority values of the graduate attributes due to there being many pairs, therefore the similarity between attributes is shown instead in Table 7.13.

The pairwise test was applied to investigate the similarities and differences of the priority values for the graduate attributes. Generally, all the attributes were not equally rated. However, the median values were 5 and 7 showing that all the attributes are important. The pairwise test shows that some attributes have similarly rated, as shown in the Table 7.13, except entrepreneurship which is different from all other attributes. Significant differences between the graduate attributes can be seen in the diagram in the Appendix 7. In brief, majority of the respondents in the survey agreed that all the graduate attributes as important and they can be ordered in their priority values.
Table 7.13 The graduate attributes and its paired attributes with similar mean ranks in the pairwise comparison

<table>
<thead>
<tr>
<th>Mean Rank</th>
<th>Tested Graduate Attributes</th>
<th>Paired attributes with no significant differences (Based on adjusted p value*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.13</td>
<td>Entrepreneurship</td>
<td>-</td>
</tr>
<tr>
<td>5.93</td>
<td>Language proficiency</td>
<td>Researching, work experience, teaching</td>
</tr>
<tr>
<td>6.05</td>
<td>Researching</td>
<td>Work experience, teaching</td>
</tr>
<tr>
<td>6.50</td>
<td>Work experience</td>
<td>Teaching, environmental literacy</td>
</tr>
<tr>
<td>6.93</td>
<td>Teaching</td>
<td>Environmental literacy, resilience, cultural sensitivity</td>
</tr>
<tr>
<td>7.13</td>
<td>Environmental literacy</td>
<td>Resilience, cultural sensitivity, digital literacy</td>
</tr>
<tr>
<td>7.74</td>
<td>Resilience</td>
<td>Cultural sensitivity, digital literacy, Management, Social abilities, Personal abilities, Thinking proficiency</td>
</tr>
<tr>
<td>7.86</td>
<td>Cultural sensitivity</td>
<td>Digital literacy, Management, Social abilities, personal abilities, thinking proficiency</td>
</tr>
<tr>
<td>8.09</td>
<td>Digital literacy</td>
<td>Management, Social abilities, personal abilities, thinking proficiency</td>
</tr>
<tr>
<td>8.35</td>
<td>Management</td>
<td>Social abilities, personal abilities, thinking proficiency</td>
</tr>
<tr>
<td>8.56</td>
<td>Social abilities</td>
<td>Personal abilities, thinking proficiency, professionalism</td>
</tr>
<tr>
<td>8.61</td>
<td>Personal abilities</td>
<td>Thinking proficiency, professionalism</td>
</tr>
<tr>
<td>8.66</td>
<td>Thinking proficiency</td>
<td>Professionalism</td>
</tr>
<tr>
<td>9.45</td>
<td>Professionalism</td>
<td>Thinking proficiency</td>
</tr>
</tbody>
</table>

*Significance values have been adjusted by the Bonferroni correction for multiple tests.
Demographic parameters and priority values of graduate attributes

Another analysis was made to investigate if there were any associations between the demographic parameters of the respondents and their priority values on the graduate attributes in order to confirm that the sample is reasonably representative of graduates from Myanmar. There were four main demographic data in the survey as mentioned above: gender, age group, education level and the respondents' countries of residence. It should be noted again that non-parametric tests were used due to the non-normal data distribution.

Gender and Perceived priority values on the graduate attributes

A Mann Whitney U test was applied to check if there were any associations of the two gender groups (men and women) and their priority values on the attributes as

- Data distribution does not follow normality,
- Participants are mutually exclusive (independence of observation), and
- The variable to be measured is ordinal (perceived values are coded as ordinal scale as mentioned earlier).

The Mann Whitney U test result suggested there were no significant association of two gender groups (180 men and 230 women) and their priority of the twelve graduate attributes except 'social abilities' and 'thinking proficiency' (see Table 7.14). Asymptotic p-values were used as the sample size was large enough (>30).

Table 7.14 Mann Whitney U test showing significant association of two gender groups and their perceived priority on 'Social abilities' and 'Thinking proficiency'

<table>
<thead>
<tr>
<th>Test Statisticsa</th>
<th>Social Abilities</th>
<th>Thinking proficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mann-Whitney U</td>
<td>17151</td>
<td>18291.5</td>
</tr>
<tr>
<td>Wilcoxon W</td>
<td>43716</td>
<td>44856.5</td>
</tr>
<tr>
<td>Z</td>
<td>-3.05</td>
<td>-2.068</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)b</td>
<td>0.002</td>
<td>0.039</td>
</tr>
</tbody>
</table>

a. Grouping Variable: Gender
b. Asymptotic Significance p-value was used for large sample size.
In brief, Mann Whitney U test was used to check the relationship between gender and their priority on the given attributes. The result shows that two different gender groups (man and woman) might have different perceptions of priority ranking for ‘Social abilities’ and ‘Thinking proficiency’. Apart from these two attributes, there is no association between gender and the priority of graduate attributes. Further studies with probabilistic samples of population should be made to confirm such gender related associations.

**Age groups and perceived priority values on graduate attributes**

In the age band, there were 416 cases to be tested in four different age groups after excluding 1 case of ‘prefer not to say’. A Kruskal-Wallis test is a rank-based non-parametric test which is useful if there are statistically significant differences between two or more groups of independent variables which are measured in ordinal or continuous scales (Meyer and Seaman, 2013). It was used to test the age groups’ perceptions of priority values on the graduate attributes because the following four assumptions were met.

- The dependent variables (priority values) were measured in ordinal scale.
- There were more than two independent variables of age groups (18-27; 28-37; 38-47; 48 and above).
- There was an independence of observations (no relationship between the observations in each age group or between the groups, i.e., different respondents in each group).
- Distributions of independent variable (priority values) in each age group were in similar shape (meaning similar variability).

A Kruskal-Wallis H test, like other rank-based non-parametric tests, has a limitation of critical p-values in the existing tables or difficulty to calculate exact p value for larger sample sizes. Meyer and Seaman (2013) have provided critical values for H with sample sizes of up to N=105. Thus, asymptotic p-values are useful for larger sample sizes using approximation to the true distribution in this condition. The Kruskal-Wallis H test showed no significant differences amongst the different age groups in their priority values on the graduate attributes (see Appendix 8). In other words, there were no associations between age bands and their perception of priority on the attributes.

**Education level and the perceived priority values on graduate attributes**

A Kruskal-Wallis test was again applied to compare the six groups of education levels of the respondents upon their prioritisation. The result shows that there was a
significant difference only for ‘Personal Abilities’ (see Appendix 9) but there were no significant differences for other graduate attributes.

A pairwise Kruskal-Wallis test was applied to see the comparison of respondents’ education levels and their prioritizing patterns on that attribute (see Appendix 10). According to the pairwise test result, there was very little significant difference - only ‘bachelor’s degree holders – master’s degree holders’ pair showed a significant difference. The masters’ degree holders rated higher priority values on the ‘Personal Abilities’ than the bachelor’s degree holders did in the survey.

Respondents’ regions and their priority on graduate attributes

A Kruskal-Wallis Test was again applied to determine if there were any differences in the priority of the given graduate attributes by the respondents’ locations:

- Myanmar – Other Asian countries
- Myanmar – Western/English speaking countries, and
- Other Asian countries – Western/English speaking countries

Similar assumptions were being held as before since the distributions were not normal, respondents were mutually exclusive, the groups to be tested were more than two and they were in categorical lists (regions of the respondents).

According to the test result, there were five graduate attributes having significant association between the respondents’ residing locations (or regions) and their priority ranking: Thinking proficiency, Language proficiency, Digital literacy, Researching, and Entrepreneurship (see Appendix 11). Therefore, a Kruskal-Wallis pairwise test was applied to investigate how respondents in the three different locations/regions prioritised these five graduate attributes differently. Only ‘respondents in Myanmar - respondents in other Asian countries’ pair showed significant differences meaning that the respondents in other Asian countries rated higher priority values than the respondents in Myanmar on these five graduate attributes: Thinking, Digital literacy, Language proficiency, Researching and Entrepreneurship.

In summary, there were very little significant differences in the relationships between the demographic data and the priority of the graduate attributes except in a few parameters and graduate attributes comparison. Generally, all the fourteen attributes were rated important by the respondents and further investigation was conducted, as a follow up, to check the FGD participants’ view on the priority ranking and compare with the findings from the online survey result.
7.5 Prioritising the graduate attributes by FGD participants (Jam-board)

7.5.1 Rating from two dimensions: importance and impact over time

The online survey results appeared as non-normal distributions in the priority values of all tested graduate attributes. These attributes were rated by the respondents considering only one simple question of how a particular attribute was important or potentially relevant in contributing to the sustainable development or future of Myanmar. To further understand and ensure their credibility, another study was followed on to look at these attributes from two dimensions: degree of importance and impact over time using another online platform. For this study, the FGD participants were invited to rate the attributes using the two dimensions.

A google Jam-board (free version) was used and the FGD participants were invited to place the fourteen graduate attributes on a three-by-three matrix considering three priority levels (Low, Medium, and High) from two dimensions – Y axis for the degree of importance and X axis for the degree of impact over time (see Chapter 5). For example, a participant can put an attribute in the box of High (Y) - High (X) if that attribute is considered highly important for and high potential in the long-term impact in the sustainable development of Myanmar. Fifteen FGD participants responded their ratings. This approach was appropriate for participants as they could participate anonymously at their convenient time before a given deadline.

7.5.2 Jamboard survey result

In the first visual check, it was recognised that most graduate attributes fell in the upper right-hand corner and the left-hand side of the matrix. The frequency of the levels rated on both dimensions were added into a Microsoft Excel sheet and each level was coded as a score (Low = 1, Medium = 2, and High = 3). The mean scores of Importance (Y) and Impact (X) were calculated using the following formula: the sum of total scores for three levels were divided by 15 (the total number of respondents).

\[
\text{Mean of } X (\mu_x) = \frac{(3 \times \text{Freq. in High}) + (2 \times \text{Freq. in Medium}) + (1 \times \text{Freq. in Low})}{15} \\
\text{Mean of } Y (\mu_y) = \frac{(3 \times \text{Freq. in High}) + (2 \times \text{Freq. in Medium}) + (1 \times \text{Freq. in Low})}{15}
\]

---

Then, they were multiplied for the priority scores ($\mu_x \times \mu_y$). The graduate attributes were ranked in descending order of their priority scores and compared using a coloured heatwave across the frequency spectrum (See Appendix 12). It is noted that the mean in this type of data distribution is not relevant as the data is not normally distributed. However, it was used to check the ranking order of the graduate attributes and visualise them in the chart of two dimensions (see Figure 7.1). Only work experience and entrepreneurship appeared in the box of High in importance and Medium of impact overtime whilst all other twelve attributes were seen as ‘High-High’ from both dimensions.

Figure 7.1 Graduate attributes in priority ranking chart with two dimensions: importance and potential impact for the sustainable future of Myanmar [0-1 = Low; 2-3 = Medium; 2-3= High]

Overall, from the FGD research participants’ view, all the fourteen graduate attributes are highly important as well as potential for long-term impact in contributing to the
sustainable development of Myanmar. Work experience and entrepreneurship were observed at a medium level regarding the potential impact for sustainable development.

According to the data distribution and the three level of scales, testing median and the mean rank were considered more appropriate for the data. Therefore, the data sets (degree of importance and impact over time) were tested for median percentiles and mean rank using Friedman test. The emerging order of the ranks was slightly different from the former analysis, for example environmental literacy and entrepreneurship were moved up in the higher priority rows in the dimension of potential impact over time (see Appendix 13.2). Thinking proficiency, social abilities, personal abilities, and management were still in the higher priority rows in the dimension of importance (see Appendix 13.1).

As the last step of this quantitative study, a comparison of priority rankings from the online survey (N=417) and those of the follow up Jam-board survey with FGD participants (N=15) was made (See Appendix 14). The highest priority attributes in the Jisc online survey result were somewhat like those in the Jam-board one, a follow up survey with FGD participants, although there were a few differences. Interestingly, professionalism was ranked number 1 in the Jisc online survey whilst it was ranked 6 in the follow-up survey when means were used for priority scoring. However, it was ranked in 7 and 13 in the degree of importance and impact over time in the mean rank and median test. Overall, Social abilities, thinking proficiency, and management were ranked in the highest rows in all the tests. Moreover, environmental literacy was more highly ranked when it was seen from the future impact dimension.

Apart from subtle differences in ranking orders, all the rankings of graduate attributes are found to be fairly stable in both two main tests - both Jisc online survey and the follow-up survey with FGD participants (Jamboard). Therefore, all these graduate attributes can be considered as important and potential ones in order to contribute to the desirable sustainable development of the country. To be more contextualised, Myanmar HEIs should take further detailed studies for their institutional context and do more research to understand how to develop such attributes by ESD integration process.

7.6 Fourteen graduate attributes in the three Hs model

As discussed in the literature review (Chapter 3), the graduate attributes in this thesis cover competences and attitudes that should be expected from learning at HEIs (Edwards, 1996) and can be beyond their specialised disciplinary related knowledge or skills. So, they can be named as generic graduate attributes which include, but not
limited to, desirable sets of skills and values regardless of their specialised degrees (Spronken-Smith et al., 2015). The attributes emerged from the research data have a certain degree of similarities to what have been discussed in the literature (like Sipos, Battisti and Grimm, 2008; Sandri, 2014; QAA and Advance HE, 2021), but ‘research knowledge and skills’ and ‘ability to teach others’ are additional ones in comparison with those employability skills from some organisations like Indeed, Australian Government, and US Department of Education (see Table 7.4). Based on the quantitative analysis results, all the fourteen graduate attributes can be claimed as important to desirable Myanmar’s sustainable development or future as expected in Chapter 6, and they are contextually relevant to the context of Myanmar HEIs.

Moreover, the fourteen graduate attributes can be presented in the three Hs model (see Figure 7.2). In fact, each graduate attribute can have a composition of different abilities therefore labelling was done based on its significant orientation, for instance, social abilities might have some knowledge, concepts, and thinking, but it is more oriented towards hand (practical skills) and heart (emotional and attitudinal outlooks). In doing so, some attributes are fallen in the intersectional area of three Hs, i.e., they can be seen as holistic attributes: resilience, environmental literacy, cultural sensitivity, personal abilities, and professionalism. Some other attributes are fallen in the intersectional areas of two domains, such as social abilities and researching, while some are only under a particular domain, for instance, thinking (Head).

Figure 7.2 The fourteen graduate attributes in the three Hs model.
7.7 Chapter summary

This chapter has tried to answer the second research question – what the graduate attributes are to be expected from integrating the conception of ESD in Myanmar HEIs. The chapter has examined two sets of graduate attributes: seven thematic attributes (qualitatively) as a higher level of groupings and the fourteen specific attributes (quantitatively) being nested in the former groups.

Seven categories of graduate attributes emerged from the thematic analysis were compared with other attributes adopted by UNESCO and some other institutions. In general, the graduate attributes expected by Myanmar nationals were similar to those in the literature, but it can be claimed that the pattern and coverage of the attributes that emerged from this research are more diverse and holistic – covering many aspects of competencies, attitudes, and behaviours.

Another set of fourteen graduate attributes sieved from the initial analytical processes were firstly tested out with an online survey and compared against the perspectives of the FGD participants’ perspectives across two dimensions: importance and potential future impact. The fourteen attributes were perceived as important by the respondents, with a few differences in the level of ranks for some attributes. Although there were statistically significant differences amongst the priority ranking values, it was impossible to cluster separate groups with similar values. However, they could be seen as a ranking order based on their mean ranks. A follow-up study with the FGD participants showed slight differences in comparison with the results from the Jisc online survey. However, the median test and mean rank checks showed a different priority ranking order, particularly in the dimension of ‘impact over time.’ For instance, environmental literacy was moved up to a higher priority. Again, this follow-up test consistently proved that all the graduate attributes were important and relevant for the sustainable development of Myanmar.

In brief, the chapter has discussed rigorous and robust analytical processes to understand the graduate attributes emerged from the KIIs and FGDs for their priority and consistency with the desirable sustainable development of Myanmar, rather than directly taking from the lists in the literature. How ESD integration could be made and what changes might be needed in the Myanmar HEIs in order to contribute to developing such graduate attributes is the third research question which will be discussed in the next chapter.
Chapter 8 Transforming Myanmar HEIs: the Role of ESD Integration and Educational Reconstruction in Developing Graduate Attributes for a Sustainable Future

8.1 Introduction

The previous chapters have discussed how education for sustainable development (ESD) could be conceptualised in the context of higher education institutions (HEIs) in Myanmar (Chapter 6) and what graduate attributes should be expected from ESD integration (Chapter 7). As discussed in Chapter 2, the education system and reform processes have been dysfunctional for almost three years (from 2021 to 2023) due to the political turbulence and civil unrest. Consequently, further development of the second phase of the National Education Strategic Plan (NESP: 2021-2030) is yet unknown or even whether it will be revived (Brown and Hung, 2022) and higher education development projects involving international partners, e.g., the Transformation by Innovation in Distance Education (TIDE) project, were also stopped (The Open University, 2021). In such a period of stasis for educational reform in Myanmar, there is a need, as informed by the country context and the reviewed literature, to develop new ideas, visions, and ways of informing a future transformational process for Myanmar HEIs that will be an essential part of future development, especially in the context of sustainable development. Thus, this chapter responds to the third research question (RQ3):

What transformations in Myanmar HEIs’ educational policy and practices are needed to develop the (expected) graduate attributes?

There are three key terms in this chapter: (ESD) integration, (educational) reconstruction, and (HEIs) transformation. In addition to exploring the conceptualised ESD and relevant graduate attributes for the Myanmar HEIs’ context, this research also aims to explore any potential approaches for ESD integration and required changes to be made in Myanmar HEIs’ principles/policies to develop those desirable ESD attributes based on the research data and the two proposed models: 4Cs+RP model and educational reconstruction model of Arnhold et al. (1998). In this thesis, reconstruction is seen as the actions (inputs/operations, including ESD integration) and transformation is achieved through the process of gradual progress and outcomes (outputs/results) arising from those actions. It has been assumed that some changes in HEIs’ principles and practices might be necessary to enable ESD integration, and a general need to upgrade HEI services and quality. Therefore, in this thesis, the transformation of HEIs is viewed by both thematic lenses of ESD integration and appropriate educational
reconstruction. This chapter aims to identify potential trigger points for changes that would enable Myanmar HEIs’ transformation. However, more work beyond the scope of this thesis will be required before commencing practical implementation.

The chapter includes:

- a brief explanation of the research data and the analytical processes (section 8.2)
- a comparative study of two thematic frameworks: ESD integration and educational reconstruction needs for Myanmar HEIs (section 8.3)
- potential approaches for ESD integration (section 8.4)
- educational reconstruction needs for Myanmar HEIs (section 8.5)
- an overview of two purposes leading to HEIs’ transformation (section 8.6), and
- a chapter summary with key findings and recommendations for further studies and transformation of Myanmar HEIs (section 8.7).

8.2 Research data and analytical process

As previously outlined, ESD is relatively new to Myanmar HEIs. Findings from the in-country scoping study (Chapter 4) identified a need to have a collective understanding and conceptualisation of desirable sustainable development (SD) and ESD in Myanmar before considering how they could be integrated into Myanmar HEIs. Given the in-country context, it seems probable that future ESD integration will need to be a parallel process alongside HEI reconstruction. In doing so, it is also important to understand what needs to be changed for the reconstruction in Myanmar HEIs that might support developing the desirable graduate attributes. The same data set of transcripts, i.e., seven Key Informant Interviews (KII) and two Focus Group Discussions (FGDs), and open comments from the online survey, were used in the thematic analysis to address RQ3. Three sub-questions were used to address RQ3 as set out in the research enquiry framework (see Table 5.1, Chapter 5) which were informed by the models and the reviewed literature and contributed to the analysis methods (see Table 8.1).
Table 8.1 Sub-questions, related models, and analytical methods to address RQ3.

<table>
<thead>
<tr>
<th>Sub-questions</th>
<th>Informing model/ literature</th>
<th>Analytical method</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 What are the key elements in the Myanmar HEIs’ context for developing ESD related graduate attributes?</td>
<td>4Cs+RP model for ESD integration in HEIs</td>
<td>Thematic analysis of the qualitative data</td>
</tr>
<tr>
<td>3.2 What could be the potential changes to be made in the practices and principles of HEIs for their transformation in enabling ESD integration?</td>
<td>Educational reconstruction model (Arnhold et al., 1998)</td>
<td>Thematic analysis of the qualitative data</td>
</tr>
<tr>
<td>3.3 How these elements, policies, and practices are inter-related in contributing to the development of ESD graduate attributes?</td>
<td>Systems diagramming</td>
<td>Matrix coding of the two themes and influence diagram</td>
</tr>
</tbody>
</table>

The first question (RQ3.1) is related to and informed by the proposed model 4Cs+RP for ESD integration oriented to an institutional focus. The second (RQ3.2) is related to the educational reconstruction model of Arnhold et al. (1998) and tends to have a higher education sector focus. The last question (RQ3.3) is related to an overview of the findings for RQ3 using an influence diagram to show the connection between both first (integration) and second sub-questions (reconstruction) - all stakeholders, processes, and activities of HEIs influencing each other, and potentially contributing to the development of desirable ESD graduate attributes.

As explained in Chapter 5, the inductive coding approach was employed in the first and second cycle coding, during which the two main thematic groups emerged: ways to integrate ESD in HEIs and reconstruction needs for HEIs’ transformation. Originally, they were named ‘ways forward to ESD’ and ‘the dark side or changing needs of HEIs’ as part of the initial theming phase. Then, the former theme was named as ‘ways to integrate ESD in HEIs’ and the later became ‘reconstruction needs for HEIs’ through this robust review process. Reviewing and naming the themes were also informed by the research questions, the models of ESD integration and educational reconstruction reviewed in the literature. In setting out the appropriate themes by selecting the supporting or relevant data to a particular theme (Maguire and Delahunt, 2017), there were some data (coded references) supporting sub-themes under the two main themes: ESD integration and educational reconstruction needs for HEIs. One notable difference is the inclusion of an extra sub-theme i.e., administrative and quality assurance systems (see Table 8.2), in addition to the five reconstruction processes of Arnhold et al. (1998). Finally, the thematic framework of the ESD integration approaches and reconstruction
of HEIs could be seen as the composite of the sub-themes identified in nodes 3.1 and 3.2 in Table 8.2. Amongst the sub-themes, it should note that the community approach for ESD integration and the ideological reconstruction process have significantly more coded references than other sub-themes.

Table 8.2 Themes and sub-themes of ESD integration and HEI reconstruction

<table>
<thead>
<tr>
<th>Theme and Sub-themes</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3.1 Ways to integrate ESD in HEIs</strong></td>
<td></td>
</tr>
<tr>
<td>Campus - a learning hub for sustainability practices</td>
<td>21</td>
</tr>
<tr>
<td>Community - Creating a community of learning, supporting, and collaborating</td>
<td>120</td>
</tr>
<tr>
<td>Culture - Cultivating desirable leadership and happy working environment</td>
<td>45</td>
</tr>
<tr>
<td>Curricula - embedded sustainability, locally relevant, flexible, and accessible</td>
<td>38</td>
</tr>
<tr>
<td>Pedagogy - appropriate teaching methods for ESD attributes</td>
<td>44</td>
</tr>
<tr>
<td>Research - research learning and research projects for both students and teachers</td>
<td>40</td>
</tr>
<tr>
<td><strong>3.2 Reconstruction Needs for HEIs</strong></td>
<td></td>
</tr>
<tr>
<td>Administrative and quality assurance systems</td>
<td>48</td>
</tr>
<tr>
<td>Curricula and materials</td>
<td>45</td>
</tr>
<tr>
<td>Human resources development</td>
<td>36</td>
</tr>
<tr>
<td>Ideological reconstruction</td>
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</tr>
<tr>
<td>Physical reconstruction</td>
<td>14</td>
</tr>
<tr>
<td>Psychological reconstruction</td>
<td>29</td>
</tr>
</tbody>
</table>

8.3 Comparative study of two themes: ESD integration and HEI reconstruction

To reiterate, ESD integration can be viewed as practices that individual HEIs should do or follow certain desirable activities, crystallise the activities as norms, and to facilitate the norms as cultural practices amongst the HEIs' communities (or stakeholders). Whereas reconstruction can be viewed as required changes in the principles or policies in the higher education in Myanmar to enable and inform ESD integration. As this chapter aims to discuss how education reconstruction themes could enable the ESD integration approaches, the matrix coding of both themes (see Table 8.3) was conducted to help visualise the overlapping coded references and potential relationships between these the sub-themes.
Table 8.3 Matrix coding of two themes: ESD integration and HEI reconstruction

<table>
<thead>
<tr>
<th>HEI reconstruction</th>
<th>Curricula and materials</th>
<th>Administrative and quality assurance systems</th>
<th>Physical reconstruction</th>
<th>Psychological reconstruction</th>
<th>Ideological reconstruction</th>
<th>Human resources development</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESD integration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curricula</td>
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<td>0</td>
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<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Pedagogy</td>
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<td>3</td>
<td>2</td>
<td>5</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Research</td>
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<td>32</td>
<td>7</td>
<td>11</td>
<td>5</td>
<td>4</td>
</tr>
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<td>Community</td>
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<td>3</td>
<td>3</td>
<td>7</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Culture</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Campus</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>18</td>
<td>10</td>
<td>2</td>
</tr>
</tbody>
</table>

Note: The darker green shades have larger number of overlapping coded references while the lighter colours have smaller number of overlapping references between the two sub-themes.

Nearly all the sub-themes for ESD integration have some overlapping coded references with sub-themes for educational reconstruction but there were three with significant overlaps - with curriculum being an obvious one, also ideological reconstruction with pedagogy, and community with human resources development (HRD). The matrix coding in Table 8.3 shows that thirty-two references out of the total forty-four references for the pedagogical approach and one hundred references for ideological reconstruction shown in Table 8.2 overlapped. Similarly, eight references out of twenty-one in the campus approach and fourteen in physical reconstructions also overlapped. And so on for other categories. The ESD community approach had the largest match of codes to HEI reconstruction overall, but this was spread across the themes, with five coded references as the lowest (psychological reconstruction) and eighteen the highest (HRD).

After the robust process of coding, categorising, and reviewing the categories rigorously in phase 4, the final phase of naming the themes were decided to refer the two proposed models because the sub-themes match and fit them well except for an additional one – administrative and quality assurance systems. Constas (1992) discussed reviewing the categories to name the themes or sub-themes based on six different justification approaches in thematic analysis: ‘external, rational, referential, empirical, technical, participative’ (p. 259). Amongst these, referential approach was used to test the data against these models discussed in the reviewed literature.
8.4 Potential approaches for ESD integration

This section discusses the potential approaches for ESD integration amongst Myanmar HEIs related to the RQ3.1:

What are the key elements in the Myanmar HEIs' context for developing ESD related graduate attributes?

While this research accepts the conceptualised ESD in the higher education sector of Myanmar in which ESD has broader thematic components and is more than the preparation of students' competencies or graduate attributes (see Chapter 6, section 6.3). However, this section focuses more on integrating ESD in the HEIs' activities in order to contribute towards developing the desirable graduate attributes. As discussed in the reviewed literature (Chapter 3) and the research methodology (Chapter 5), the later stages in the thematic analysis were informed by the proposed ESD integration model (4Cs+RP), which was adapted based on the models of Jones, Selby and Sterling (2010a) and Anand et al. (2015), because the research data match the elements in the proposed model. Each element in the emerged thematic framework will be discussed in the following sections and they are mostly consistent with what has been discussed in the literature and more contextualised with the Myanmar HEIs' situations. Pedagogy, an additional element proposed in the modified ESD integration model, also matches what has developed in the theme in this analysis.

8.4.1 Curriculum

Curriculum is the most obvious element with the largest number of overlapping references from both themes, although the educational reconstruction theme has an extra component i.e., material supply. In total, twenty-two coded references from thirty-eight references in ESD integration and forty-five in reconstruction overlap. Regarding the higher education curricula, the key findings can be summarised as follow.

- Sustainability should be integrated into the existing curricula as well as special programmes or modules related to environmental study and sustainable development should be offered (KII-1, KII-3, and KII-5).
- Sustainability and relevant modules should be incorporated within different and existing degree pathways including specialist universities (KII-1 and KII-5).
- An introduction to philosophy, anthropology, ecology, geography, environmental study, and sustainable development should be delivered for undergraduate
students in their foundational years (first or second year) as part of a stand-alone module (KII-3 and KII-4).

- Interdisciplinary studies and extra-curricular opportunities should be encouraged (KII-1 and P15).
- Locally relevant curriculum (courses/modules) should be developed and delivered (KII-3 and KII-6).

These participants’ recommendations were consistent with what has been discussed in the literature review. The first one is to integrate SD into the existing modules and develop a new diploma or degree programme related to SD (Hadgraft, Xie and Angeles, 2004) while the second one was to incorporate suitable modules into the existing degree pathways (Holgaard et al., 2016). The third one was to teach relevant multi-disciplinary content as an introduction to the undergraduate students as it was seen as supportive of SD awareness (Hegarty et al., 2011). The fourth one was to encourage an interdisciplinary approach (Sterling, 2004). The hidden curricula67 approach can be seen in the community and cultural approaches although it was not explicitly mentioned as a curriculum (Winter and Cotton, 2012; Anand et al., 2015).

Some quotes related to ESD integration via curricula approach and why it is needed can be noted:

“...we don't have any sustainability study programme except the nine-month long post-graduate diploma called development study” (KII-1, Education development manager)

“If we can integrate such courses as compulsory component by providing 2-3 credits, these graduates would understand sustainable development no matter which walks of life they end up at.” (KII-3, NGO staff)

“Every student must learn ecology, beauty, philosophy and geography in their first two years (freshman and sophomore).” (KII-4, writer)

In brief, the curricula approach could potentially help students to become well-rounded graduates with both specialised knowledge and skills, and ESD graduate attributes as

67 Some knowledge, skills, or practices could be learned through experiencing in the formal and non-formal learning settings in HEIs without a need to be taught explicitly for instance attitude (respect and care for nature), responsibility (green practices and ethics), etc. (Perera, 2023).
discussed in Chapter 7, for instance environmental literacy, social abilities, thinking abilities, personal abilities, etc. As discussed above, the participants’ view (research data) is consistent with the literature and the curricular approach in the proposed model.

8.4.2 Cultural Approach

There were forty-five coded references for the cultural approach, overlapping references with all sub-themes under reconstruction. The most obvious themes were ten references to human resources development (HRD), nine references to psychology, and seven to administrative and quality assurance systems. Moreover, the cultural approach is very much related to community by nature as it focuses on the attitude and behaviours of stakeholders when they do activities. In other words, culture is more aligned with values and norms. It should be noted that the cultural approach in this thesis does not merely refer to the certain ethnic groups’ cultural or traditional practices but rather broadly views attitudes, values, and norms adopted and practiced by the HEI stakeholders. In fact, Community, Campus, and Culture appeared to be interdependent because ideas from participants cut across these different sub-themes.

To summarise diverse considerations in the cultural approach, the participants want Myanmar HEIs to

- Adopt a good balance of theory and practice (P2 and P6) meaning a balance of learning and practice - sustainability should be incorporated into actions within HEIs as cultural practices or norms,
- Promote multiculturalism (P15, KII-6, and KII-7),
- Create supportive working environment through making appropriate attitude changes in the seniors-juniors’ relations, promoting mutual respect and collaborative learning, and removing favouritism and over-domination of supervisors (P2, P6, P9, P10, KII-1, KII-7, KII-9, and KII-10),
- Encourage the use of feedback and negotiation as cultural practices in the learning process, addressing the issues, or resolving the conflicts (KII-5 and an online survey respondent) and
- Nurture lifelong learning as a cultural practice at all levels (an online survey respondent)

The first point is somewhat related to the pedagogic and curricular approach. However, a good balance of both theory and practical learning recommended by P2 and P6 was considered an organisational culture to be practiced in HEIs. This idea is also echoed by the holistic development (head, heart, and hand) of learners and is needed in
Myanmar HEIs, as discussed in the literature review (Sivaraksa, 2005, 2011; Mahathera, 2007; Sterling, 2017; Sri Dhammananda, 2023). The second point cuts across campus and community approaches in promoting multiculturalism in HEI communities. As discussed before, the need to respect minorities’ identities and cultures was highlighted for Myanmar society, for which KII-7 claimed:

“… we can recruit teachers from different backgrounds for diversity, there would be LGBT teachers, female teachers, Muslim teachers, we can do that intentionally. Then, selecting minority students is also a positive reinforcement, we should select people with disability, and people from different religious backgrounds." (KII-7, PhD student)

Moreover, KII-7 wanted to see democratic culture as a practice:

“I want to see the decentralization in the education system, the dynamic between ‘teachers’ and students’ interactions, the collaboration between them in developing a curriculum and democratization of the education system.” (KII-7, PhD student)

According to P9 and P10, students and staff should be encouraged to be confident and able to make necessary changes (i.e., flexibility, adaptability in the graduate attributes) and these skills should be developed through all activities like teaching or learning and management or leadership.

“We need to have an attitude to correct something if we believe something is wrong.” (P10, FGD-1)

P2, P6, P9, and P10 shared a similar perspective about the attitudes and behaviours of senior academics or heads of departments in terms of practicing mutual respect in working with their juniors who often tend to be obedient and submissive in Myanmar culture. These claims were similarly reflected in the summary note of the pre-FGD responses as agreed with participants at the start of FGD-1:

- to promote collaborative learning and actions,
- to encourage sharing knowledge,
- not monopolize or unduly influence the students’ studies/research,
- to encourage staff/students to be courageous to trial or change if required,
- to work in line with agreed policies but not to bend due to favouritism, and
- to promote mutual respect, openness, and honesty as cultural norms.
KII-5 and a respondent in the online survey proposed a feedback mechanism as a good practice in HEIs’ social system to address the issues, provide the necessary support, or provoke a collaborative learning culture. In Myanmar HEIs, especially in many government departments in general, there is no good channel for the staff to provide their feedback or suggestions to their seniors, fellow staff members, the procedures, or the systems. This is the main reason KII-5 and some participants in FGD-1 critiqued about such top-down leadership in many aspects of administration. According to KII-6, such attitude and behaviour changes amongst staff members of HEIs can lead by example in influencing students’ attitudes and behaviours to develop the expected graduate attributes through experiential learning.

Generally, the discussions from the research data are consistent with the literature – there is a need in HEIs to make some cultural changes and desirable practices to nurture as a norm in the HEIs’ communities (Moore, 2005; Anand et al., 2015), for instance, considering inclusivity and respecting the diverse cultures (Moore, 2005), and such behavioural or attitudinal changes could be promoted through experiences and practices (Burford et al., 2013; Tummons, 2018). However, the research data has more significant highlights on empowering the staff and students, to cultivate a norm of mutual respect and feedback systems, a balanced learning approach of theory and practices. This approach is relevant to contribute the desirable sustainable future of Myanmar, particularly the socio-cultural view.

8.4.3 Community Approach
This sub-theme has the largest number of coded references amongst all other sub-themes under ESD integration, with notable overlaps with all the reconstruction sub-themes. Generally, communities in HEIs can be viewed in three groups: students and staff (internal), proximity communities (external), and the distance communities that can include both national and international stakeholders (external). Students and teachers will be focused for the internal communities of HEIs in this section. This approach needs to consider activities and behaviours of the stakeholders in those three groups, which could potentially support the students in developing their desirable ESD attributes. However, the research participants did not extensively discuss the wider (external) communities. The main points raised related to reaching the remote/distance communities to extend their (HEIs’) educational services, facilitating their (communities’) engagement for students’ learning process, and collaborating with relevant stakeholders (in both proximity and distant communities) to help students’ awareness, motivation, and
preparedness for employability. As discussed earlier, some aspects of community approach are also related to cultural and campus approaches.

The key features of supportive community practices discussed by the participants can be summarised as follow.

- Supporting students’ wellbeing/fitness should be encouraged as one of the personal developments (P7).
- HEIs should allow and encourage students’ unions (clubs or associations) for their experiences and learning from these social experiences (KII-2).
- Enhancing students’ digital literacy and employability should be carried out by HEIs through various means (P2, P4, P6, P10, P18, KII1, KII-5, KII-3, and KII-6).
- Teachers should be appreciated, recognised, and supported for professional development (P3, P6, P9, P10, P13, P15, KII-1, KII-4, KII-5, and KII-7).
- A culture of peace should be nurtured and practiced by embracing diversity of cultural identities and valuing/caring natural environment amongst the staff in HEI’s community (P15, KII-3, KII-4, KII-6, KII-7).
- Empowering the young/juniors and democratic practices should be encouraged amongst the communities of HEI (P2, P10, and KII-7).
- Attention to and community of practices for thinking, professionalism, ethics, honesty, and respect should be cultivated (P3, P9, P13, P18, KII-4, KII-5, KII-6, and KII-7).
- HEIs should cooperate/collaborate with relevant stakeholders in both proximity and distant (external) communities on research, students’ internships, job-fairs, and life-long learning (P3, P14, KII-1, KII-2).

**Students and teachers (internal community)**

Only P7 from FGD1 explicitly mentioned the importance of students’ wellbeing and fitness as a fundamental requisite for other personal development, which can be reflected by the Five Strengths in Myanmar’s traditional teaching for sustainable development (Physical, Intellectual, Moral, Social, Economic) as discussed in the literature review (see Chapter 3, section 3.5). In Myanmar society, health or fitness is considered as a fundamental need in one’s life to be able to build up the rest of the strengths.

“HEIs should prepare the students to develop healthy lifestyle habits” (P7, FGD-1)
In this case, it is also related to the physical reconstruction for sport facilities, and encouraging extra-curricular activities but this sub-theme can also claim to nurture the students’ communities to have some physical sport activities for both physical fitness and social skills. Moreover, KII-2 claimed that students could learn from the communities like clubs and unions for some competencies relevant to desirable graduate attributes.

HEIs were also expected to engage with wider communities and extend their educational service to more students in remote or difficult areas by promoting digital technology. In consequence, it could not only lead to promote students’ accessibility but also upgrade their digital literacy and employability through this community approach.

Supporting teachers can be considered as another community approach based on the research data. As KII-7 suggested in the cultural approach, university teachers should be respectfully and fairly treated by recognising and appreciating their qualifications. P13 critiqued that educated citizens were not appreciated and accommodated with appropriate salary and benefits in Myanmar, including HEIs. Therefore, maintaining qualified teachers through respecting and recognising their qualifications, i.e., creating a happy working environment in the cultural approach, would likely improve their performance.

Additionally, KII-5 claimed that human resources development is more important than the infrastructure or material development. P3, P6, P9, P10, KII-1, KII-4, and KII-5 suggested that more trainings should be provided for Myanmar HEIs’ staff, including teachers, for better quality performance, research competency, ethics, and life-long learning habit. Supporting teachers’ professional development should be promoted to foster the ESD implication as claimed by P10:

“… I agree that only B.Ed. graduates get a chance of learning about systematic teaching methods and all the university lecturers from other universities have never been trained on it. University lecturers might not have received trainings on how to teach before they join as teaching staffs.”
(P10, university teacher)

According to the participants, these practices should be encouraged across the HEIs’ activities. ESD integration through a community of practice, expressing environmental concerns, ethics, collaboration, and responsibilities, could potentially support peer learning and experiential learning for developing graduate attributes.
HEIs’ fostering community engagement (proximate and distance communities)

From another perspective, some participants wanted HEIs to invite and facilitate communities’ engagement (both proximity and distance) so that students can learn in and from the communities. P3 gave an example of student-teachers\(^\text{68}\) in Myanmar, who had to practice teaching\(^\text{69}\) at schools to improve their teaching skills and learn from the real experience in the community. Similarly, such learning opportunities in/from the communities could be facilitated for the students, regardless of disciplines, to learn from the communities’ sustainable practices, as discussed by KII-3.

“… we have diverse inhabitants and tribes in each region and geographic location. We will also need to learn about their unique philosophy on how their ancestors took care of their natural environment, and what their indigenous practices are . . . . . . So, our universities should teach about cross cutting issues to achieve sustainable development.” (KII-3, NGO staff)

In addition, HEIs should collaborate with potential employers such as the private sector, business groups, NGOs, different organisations, or networks to enhance the employment opportunities of the prospective graduates as suggested by P6. She claimed that having research and/or internship experience could potentially help upgrade students’ employability skills. P2 discussed the gradual development process of employability starting from a student, through intern, and finally stepping into a professional working environment. Likewise, P4 suggested that HEIs should facilitate appropriate employment opportunities by organising job-fairs or industry fairs, which could potentially help students’ understanding of what skills and knowledge might be needed in advance of graduation. P10 agreed that sharing good practice from their alumni’s community could help inspire and motivate students and develop their awareness of transferable skills for the workplace. These practices would likely support their general knowledge and professionalism as well. Moreover, KII-1 also suggested

\[^{68}\text{Students who are taking undergraduate degree in education to become teachers.}\]
\[^{69}\text{Student-teachers or pre-service teachers of Yangon and Sagaing University of Education in Myanmar need to experience a scheduled practice for their teaching-skill development as a part of their required credits during their degree programmes and it is commonly referred to ‘Block Teaching’ although it does not apply the same as discussed in the literature.}\]
HEIs learn from Vocational Institutes and engage with them for creating learning platforms for the students at both institutes.

In brief, the participants suggested collaborations with local and international partners/stakeholders in either proximate or distance communities. Networking and partnership, one of the Sustainable Development Goals (SDGs), with different partners or other HEIs (Dlouha et al., 2017), including their alumni (Egizii, 2015), could be employed for ESD integration. Based on the data, HEIs should promote a culture of thinking, caring for nature, caring for one’s health and wellbeing, being honest or truthful, learning and collaboration as community of practices within and across the HEIs’ communities. These attributes could be developed through some campus activities like extra-curricular ones (Stuart et al., 2011; Soe, 2014). It should also be acknowledged that the values and policies of distant stakeholders may influence the HEIs’ internal communities and practices, too.

**8.4.4 Campus Approach**

The campus approach, which views HEIs as a learning hub/space for ESD graduate attributes, has the least number of coded references (21 out of total 312 in the whole theme). It has eight overlapping references from physical reconstruction and four from ideological reconstruction as obvious ones. There were four main categories as a summary of this approach.

- HEIs should be a learning ground for students preparing peace building through celebrating diversity (P15, KII-6, and KII-7).
- HEIs should promote good environmental (green) practices so that students can learn through experiences (KII-3),
- Digital technology should be installed and promoted by HEIs (P18), and
- HEIs should provide suitable facilities to students and teachers for their better learning and performance e.g., libraries, laboratories (P12, P19, KII-3, and KII-7).

According to P15, KII-6, and KII-7, HEIs should be a space for celebrating diverse ethnic cultures and values. KII-6 insisted HEIs should be foundational learning grounds based on her experience.
"This is the reason why I can make friends with Bamar, Shan, etc. because I have many friends. As I lived very closely with them, I have friends in Mon, in Rakhine etc. So, for the sake of rebuilding our national unity, we need this foundation in education." (KII-6, NGO founder)

KII-3 claimed that universities should normalise good practice in their campus operations and waste management as a model of community of learning and practising for students to develop their environmental awareness and habitual practices. But she used the term ‘across the whole university’ which could alternatively be interpreted as a ‘whole-institution approach’ (Buckler and Creech, 2014, p. 127) or holistic approach, i.e., encompassing all possible approaches.

"It is also important that the concept of sustainable development is not only taught in the classrooms, but it should also be integrated and practised across the whole university." (KII-3, NGO staff)

From another perspective, university teaching now goes far beyond the physical campus due to the advancement in online technology and P18 suggested upgrading online technology to facilitate distance education in Myanmar. This is also acknowledged in the physical reconstruction process in the model of Arnhold et al. (1998) and HEIs should have appropriate infrastructures and technological facilities to promote students’ digital literacy as expected in the ESD graduate attributes.

In summary, ESD can be integrated through suitable physical infrastructure and facilities of the campus so that students can learn through experiencing in sustainable waste management like green campus approach (Lozano, Huisingh and Delgado, 2006; Holgaard et al., 2016) and accessing to suitable libraries/laboratories, which was also a critical need recommended in British Council (2013a) and IIE (2013). Students’ experiences and practices of learning can contribute to developing ESD graduate attributes through using or access to these facilities.

8.4.5 Research Approach

The research approach has forty coded references, and it has relatively few coded references across the five reconstruction sub-themes, ranging from zero for physical reconstruction to seven for ideological reconstruction. Ideological reconstruction is the most apparent sub-theme that overlaps with this approach. As discussed in Chapter 7, research knowledge and skills are taken account of in employability related competencies, and HEIs are seen as playing a crucial role in training university students
in research knowledge and skills. A summary of the participants' discussion for the research approach was:

- HEIs should encourage research learning for the students to improve their employability related competencies (P6).
- Policy informing or locally relevant research projects should be encouraged to let the students understand the local context through research (P10, KII-1, and KII-3).
- Supervisors should empower their students without unduly dominating students' learning throughout their research work (P2, P6, and P10).
- HEIs should extend their engagement with different stakeholders and communities for their students’ research learning opportunities (P2 and P6).
- Quality of post-graduate students’ research should be upgraded. (KII-1 and KII-3)

As acknowledged in cultural approach, P2, P6, and P10 argued that supervisors should not unnecessarily influence students’ research works. According to P2 and P6, HEIs should support collaborative and applied research through engaging with communities and private sectors, which was also acknowledged in the community approach. HEIs are expected to encourage and support relevant research projects and teach students research skills as discussed by KII-3.

“I also think that there should be some research which are applicable for bachelors’ degree level. These small-scale research at bachelors’ degree level can enhance students’ interests to conduct regional and policy level research when they pursue their masters’ degrees.” (KII-3, NGO staff)

The research approach was also supported by open comments in the online survey - HEIs should promote research knowledge and skills as well as multi-disciplinary research projects which contribute to sustainable development.

In summary, participants want HEIs to collaborate with communities and employers for locally relevant research projects as claimed by Dlouha et al. (2017), to help develop research knowledge and skills for their undergraduate students, and to help the students understand the local context through research-based learning (Sterling, 2013). More significant emphasis in the research data can be noted that HEIs are expected to provide applied, policy relevant, and informing research, while preparing their students with ethical research knowledge and skills as part of ESD attributes. Indeed, the research approach, as proposed by Anand et al. (2015) following the recommendation of Chase
(2009) (cited in Anand et al., 2015), is consistent with the theme of ESD integration emerged in this analysis.

8.4.6 Pedagogic Approach

In addition to curricula content, the data also shows how teaching should be conducted to develop expected graduate attributes. Pedagogy was also linked to all other educational reconstructions except physical reconstruction. Significantly, it is heavily related to ideological reconstruction showing thirty-two references out of forty-four in pedagogy are overlapping with ideology. Based on the data, participants stressed the need for changes in teaching approaches and methods amongst Myanmar HEIs.

Although some methods and practices were covered in the ‘C’ approaches, this relates to existing practices, and some participants were also vocal about the need for alternative teaching methods and practices. The summary of the pedagogic approach can be listed as:

- Teaching methods or approaches that develop students’ social and problem-solving skills (KII-5)
- Theory and practice should be balanced in teaching approaches, and extra-curricular activities could be considered (P6, P15, and KII-5).
- Learning through practice and experiences should be promoted in Myanmar HEIs (P11, P12, P19, KII-3, KII-7, online survey responses).
- Creating or facilitating opportunities for peer learning and learning from alumni’s experiences (P4, P9, P10, KII-5, KII-6, and KII-7).
- A certain degree of freedom, learning spaces, and access to experts should be provided (KII-5)
- Teachers’ qualifications (particularly for teaching skills) should be upgraded (P10 and P19).

Some quotes related to supporting pedagogic approach can be noted as:

“The role of universities can be expanded by integrating activities to improve students’ interpersonal skill, team working skills, negotiating skill, communication and leadership skills, time and resource management skill, project and business management skills through both in-class and extra-curricular activities.” (KII-5, Professor)
“I think peer to peer communication and contacting seniors can increase the current students’ interests about their learnings indirectly.” (P9, FGD-1)

“As the students are adults, there must be less restrictions and control to avoid treating them like young children. Universities must create environments for students to have freedom of learning, and to have access to real working environments and other extra-curricular activities.” (KII-5, Professor)

Apart from integrating alternative teaching methods for developing ESD graduate attributes and providing opportunities and freedom for students, the pedagogic approach is also related to the available facilities, as discussed in the campus approach. To encourage more practical learning was highlighted by five participants (both KIIs and FGDs) and a respondent from the online survey because they see practical learning provision as weak in current Myanmar HEIs’ teaching practices. Having more practical learning would lead to a better balance between theory and practice, which was suggested. Moreover, P10 said there is no appropriate training to develop pedagogic skills for university teachers, and P19 suggested:

“I think that HEIs should ensure to nurture qualified teachers rather than so many teachers with low qualifications.” (P19, FGD-2)

In summary, participants want a variety of alternative methods and approaches to complement traditional lecturing to facilitate students’ learning and that is consistent with what was claimed by some authors (like Howlett, Ferreira and Blomfield, 2016; Rieckmann, 2018) for transformative learning. However, the feasibility of employing different/alternative teaching approaches is likely to depend on the HEIs’ autonomy and academic freedom of the teachers in Myanmar HEIs. Obvious view in the research data was to have more freedom for the students and to promote teachers’ qualification. Moreover, the data in this research agrees to Hegarty et al.’s (2011) logic, i.e., the better the teaching methods, the higher the likelihood of developing students’ competencies. Therefore, pedagogy, an additional element proposed in the modified model in the literature review, is reasonable in the ESD integration approaches based on the research data.

8.4.7 Overview of ESD integration model and themes

This section has discussed observations from the sub-themes of six potential ESD integration approaches grounded in the qualitative data, as well as notably informed by
the 4Cs+RP model from the literature review. Each integration approach is somewhat related to and possibly influenced by other approaches because many coded references overlap across the sub-themes. On the other hand, the six thematic components in the model overlap when considering some practices. Therefore, it is impossible to distinguish a particular set of practices of HEIs to be named as a sub-theme - it is difficult to say, ‘this is curriculum and that is pedagogy’, or ‘this is culture and that is community’. For instance, ‘collaborating with stakeholders’ can be viewed or interpreted in many ways as it is:

- HEI’s fostering community engagement (community)
- Students’ learning opportunity through internship or research (pedagogy)
- A balance of theory and practice in the teaching contents to opportunities for students to relate their knowledge to the real world or related jobs (curriculum)
- Extra-curricular activities that can provide different learning in or from the community (pedagogy/community)
- Collaboration and learning should be practiced as a culture (culture)

Therefore, the thematic framework based on the research data can be viewed as a star-shape diagram (Figure 3.5 in Chapter 3) in which the elements (or the sub-themes) could overlap and thus encompass similar practices. Despite these limitations, the proposed model (4Cs+RP) could be potentially suitable if ESD integration is to be adopted as a holistic approach. However, it should be noted that individual HEIs in Myanmar might need their own contextualised study before applying these approaches. The next section will discuss what reconstructions in HEIs might be needed to support such ESD integration.

8.5 HEI reconstruction

As this research also attempts to explore required changes in policy and practices of HEIs to support ESD integration, this section aims to discuss the RQ3.2:

*What could be the potential changes to be made in the practices and principles of HEIs for their transformation in enabling ESD integration?*

Arnhold et al. (1998) argue that educational reconstruction should not be limited to the physical or rebuilding of infrastructure. Their Education for Reconstruction model (discussed in Chapter 3) proposes five processes of reconstruction, where physical reconstruction is one process along with ideological, psychological, and material and curricular reconstruction, and human resources development. Chapter 2 has shown a
need for higher education reform in Myanmar, as an initial reform process was stopped in its early stage in 2021. Reconstruction of Myanmar HEIs has been necessary to upgrade the quality of education and have better systems regardless of considering ESD integration. As discussed earlier, this research considers ESD integration a parallel process with HEI reconstruction. Thus, this section observes the educational reconstruction needs of Myanmar HEIs that can enable the ESD integration while it is being undertaken for overall higher education development. As noted earlier, there are some overlapping references with some of the ESD integration sub-themes, but this section will focus on the reconstruction needs in HEIs.

The sub-themes that emerged from the qualitative research data are aligned with the educational reconstruction model proposed by Arnhold et al. (1998) except an additional sub-theme: Administration and quality assurance (the last item in the following list). The participants expressed dissatisfaction with the quality of HEIs’ systems and practices, particularly raising their concerns about the administrative and quality assurance systems. Therefore, the reconstruction needs to be considered for Myanmar HEIs emerged as:

- Ideological
- Psychological
- Curricula and materials
- Human resource development
- Physical, and
- Administrative and quality assurance.

8.5.1 Ideological reconstruction process

Ideological reconstruction has the largest number of coded references amongst the sub-themes under HEI reconstruction and it cut across all the sub-themes of ESD integration. Participants’ views on the ideological reconstruction needs in Myanmar HEIs can be summarised as follow:

- ESD concept should be embedded in the universities’ vision, mission, and policies (as core values) to guide all the programmes, administrations, and university operations (P15, KII-1, KII-3, KII-5, KII-7).
- All stakeholders of HEIs should be well informed all these concepts and guiding principles (KII-3 and KII-5).
- HEIs should learn from outside (international) but need to make it locally relevant (P15 and KII-5).
• Leadership and decisions should be personally unbiased, and critical reflection and discussions from diverse views and perspective should be encouraged. Open spaces should be encouraged to discuss or accept new idea, knowledge, or concepts in exploring sustainable practices or development (P9, P10, and P15).

• The teachers should use variety of alternative teaching methods for the overall (holistic) development of students’ desirable ESD graduate attributes (P2, P6, P4, P9, P10, P15, KII-5, KII-6, and KII-7).

• HEIs should have a philosophical concept and values of collaboration and collaborative learning with and from different stakeholders/communities (P2, P3, P14, KII-1, KII-2 P2, and P10).

• Democratic culture or practices should be adopted and practiced in the whole campus operation as a cultural norm so that students could learn through experiences (P15 and KII-7).

• Academic freedom and autonomy should be adopted to guide all the principles mentioned earlier (P15, KII-5, KII-6, and KII-7).

• Value for diverse ethnic identities and equality should be adopted in the HEIs' human resource management principles (KII-5 and online survey response).

From this summary, key terms can be noted as ‘core values’, ‘vision/mission/policies’, ‘guiding principles’, ‘locally relevant’, ‘leadership for empowering and learning’, ‘alternative teaching methods’, ‘philosophical values’, ‘democratic culture’, ‘academic freedom’, and ‘respect diversity/minority’. These terms can be viewed as philosophical values and guidance showing or leading a pathway to support ESD integration in HEIs. These can also be reflected in the desirable sustainable future for Myanmar as discussed in Chapter 6. There were also some discussions related to general higher education development:

• Myanmar public HEIs should be providing services to the citizens in general but not for the elitism (KII-7).

• University admission policies and procedures should be opened and flexible to maximize the equal access for students who are in difficulty or have missed the opportunities for some reasons (P15, KII-1, KII-6)

• Informing the government policies should be the HEIs’ roles and purpose (KII-1 and KII-7).

Some quotes that participants highlighted for the ideological reconstruction needs in Myanmar HEIs are:
“These components should be integrated in university’s mission, and vision and these missions should be often reminded . . .” (KII-5, Professor)

“. . . the administrative system of a university must adopt sustainable development concept.” (KII-3, NGO staff)

“I want to see the decentralization in the education system, the dynamic between ‘teachers’ and students’ interactions, the collaboration between them in developing a curriculum and democratization of the education system.” (KII-7, PhD student)

These institutionalisations, i.e., embracing the concept and values of sustainable development, can be a foundational step of HEI’s ideological reconstruction. Then, this institutional guidance could support different ESD integration approaches. Curricular reconstruction should be undertaken in parallel with ideological reconstruction, as locally relevant as well as sustainability informed curriculum should be reconstructed. In addition, the participants wanted to change the philosophical stands and concepts in teaching methods to encourage holistic development of graduate attributes. Enabling teachers to apply such methods requires conceptual changes and general knowledge about sustainable development. In this case, HEI’s pedagogical principles should be informed or guided by the those mentioned in philosophical ideologies. For example, teaching or supervising students in the HEIs should lead to empowering the students as discussed in the cultural and pedagogical approaches. If HEIs can adopt the concept of collaboration and learning, they can support many ESD integration approaches such as community, pedagogical, cultural, and curriculum. HEIs need to have these values and concepts ideologically embedded in their organisational principles. Universities’ autonomy and federal education system were also desired to facilitate the students’ learning to value justice and to respect diversity, according to P15, KII-5, KII-6, and KII-7. Such ideological reconstruction could help many of the discussed approaches for ESD integration.

Also, HRD should be undertaken alongside the ideological reconstruction. KII-5 opposed the penalty system - transferring the under-performing staff to the universities in the remote areas, mainly ethnic minority areas. It was also mentioned by a respondent in the online survey and has been rooted in a Myanmar government system related to burmanisation (as discussed in Chapter 2). Hence, such ideological related issues should be carefully handled. HEIs should re-establish their social systems to embrace respecting minority, inclusivity, equality, and justice in the educational reconstruction process.
The last point concerns the purpose, standing or role of HEIs, i.e., to influence or inform sector wide or national policy. According to KII-1 and KII-7, the HEIs should contribute recommendations to policy makers through contextually relevant research and innovation. Nevertheless, KII-1 pointed out the power dynamic situation in Myanmar. HEIs should generally extend their services to the students with some barriers to accessing higher education by making the admission policies and systems more flexible, as suggested by KII-1 and KII-6. In this case, inclusive-thinking and the concept of ‘education for all’ should be considered as suggested by P15. These are the ideological reconstruction needs that Myanmar HEIs should undertake to contribute to ESD implementation in general, although they might not be directly contributing to developing ESD graduate attributes.

In summary, the participants wanted Myanmar HEIs to consider these concepts and values to be embedded in the ideological reconstructions. Based on the observations in the sub-theme, ideological reconstruction is likely to be supportive in guiding, shaping, accommodating, and enabling the different ESD integration approaches discussed in the former section.

**8.5.2 Psychological reconstruction**

A category of twenty-nine coded references related to attitude and mindset of the HEIs’ staff was named psychological reconstruction. The need for attitude changes amongst the staff in HEIs was observed particularly for democratic culture and decentralised administrative system, reflecting the country’s historical context as discussed in Chapter 2. Some data in the psychological reconstruction overlap with some of the ideological reconstruction and HRD sub themes. Key findings can be summarised as:

- Staff in HEIs, including leaders and senior staff should have adopted respectful attitudes and mindsets in senior-junior communications - particularly to empower their juniors and students with mutual respect (P2, P9, P10, P19, KII-1, KII-5).
- Staff in HEIs should have appropriate attitude and values to practice and promote sustainability and they should apply them in their decisions and actions so these attitudes could be passed on to the students through experiences and practices (P15, KII-3, and KII-6).
- HEIs should prepare the students to have attitudes related to desirable sustainable development such as social skill, abilities for collaboration and
teamwork, and caring about the natural environment (P1, P2, P9, P10, P17, and KII-7).

There can be three layers for psychological reconstruction: leadership, staff, and students. HEIs need to do appropriate activities to ensure this attitudinal transformation amongst the leaders and staffs to empower and respect the juniors, to value and practice sustainability. Then, HEIs’ standing and main educational purpose should be reconstructed with the purpose of helping the students for their expected graduate attributes from an ESD perspective. The data does not show how to do this, but explicitly highlights the need for it under psychological reconstruction.

Teachers should generally respect their job and be attentive to their professional ethics, practices, and competency development, so HEIs need to have an appropriate supportive mechanism for it (KII-1). Moreover, HEIs should encourage their staff to have courage to trial or make mistakes as well as facilitate their learning based on the experiences rather than being obedient to their seniors/supervisors as suggested by P10. These reconstruction needs are related to higher education development in general and not specifically contributing to ESD integration approaches, although they could do so in indirect ways.

Some quotes highlighting the psychological reconstruction needs are:

“… and we must change our attitude as needed, abandon some old systems, seniors should accept their juniors’ advice if it’s required.” (P9, FGD-1)

“. . . we need to help them nurture this mindset, sustainability concepts and values for them to implement sustainable development wherever they are.” (KII-3, NGO staff)

“Attitude change, such as mutual respect, is needed in transforming the current system.” (A respondent, online survey)

In brief, all the attitudes and ethical mindsets such as honesty, integrity, ethics, and sympathy could be considered as part of psychological reconstruction if they were to be integrated into the HEI’s systems, which could potentially support developing desirable graduate attitudes required for ESD. Indeed, psychological reconstruction in HEIs is reflected in the desirable sustainable future of Myanmar and ESD graduate attributes and interwoven with some concepts from ideological reconstruction. This reconstruction can support ESD integration approaches particularly the community and culture.
Moreover, psychological reconstruction could indirectly contribute to some other ESD integration approaches.

8.5.3 Curricula and materials

This sub-theme shared most coded references with the curriculum approach of ESD integration (as mentioned in 8.4.1) due to its similarity, except there is an extra element of ‘material’ as informed by the model of Arnhold et al. (1998). This section views what reconstruction might be needed as follows:

- More autonomy in HEIs should enable more viable conditions to develop or make necessary changes in the curricular structure and content to make it more appropriate and relevant to the local context (P15).
- Locally relevant curricula contributing to the regional requirement should be reconsidered (P15, KII-3, and KII-6).
- Inter-disciplinary learning approach should be considered in re-developing programmes (KII-1). In addition, curricula should be developed based on the expected graduate attributes (KII-6).
- Upgrading the quality of learning materials, equipment, and facilities like laboratories or libraries is required (P12, P19, survey respondents) and was reflected in the ESD campus approach. These were also consistent with what has been reported by Brown and Hung (2022).

“Universities should have facilities such as academic journals, papers, and internet access.” (KII-5, Professor)

Based on the data, granting a certain degree of autonomy to HEIs is the most fundamental reconstruction for better ESD integration in the curricular approach. HEIs’ curricula should be reviewed and redesigned to ensure they are relevant to the geographical and socio-cultural context. Allowing these curriculum reconstruction process can accommodate a space to consider ESD in different curriculum settings. Moreover, redesigning or reconstructing the curricula might help embrace an inter-disciplinary approach and should be based on the desirable ESD graduate attributes. The curricula content should be reconstructed using a good balance of theory and practice and should cover various competencies relevant to employability skills as expected in the ESD attributes. Finally, suitable learning materials/facilities should be considered alongside the curricular reconstruction process.
In brief, this reconstruction theme is very important as a centralised government for Myanmar HEIs has controlled curricula for many decades. Once the opportunity is given to HEIs for their own curricular reconstruction, ESD integration in curricula approach can potentially be undertaken without difficulties. Whilst the ideas from curricula and materials (reconstruction) and curriculum (ESD integration) are similar, the key take-aways in this section are - HEI’s need to have autonomy and reconstruction of curricula should be based on the local context and expected ESD graduate attributes. Moreover, this can be supportive - to inform the pedagogical implications, to guide the leadership and supervision roles in research, to encourage some community of practices and cultural norms, and to identify the required facility and learning supports as it cut across all these integration approaches.

8.5.4 Human resources development

Human resource development (HRD) in this HEI reconstruction theme has thirty-six references and cuts across the sub-themes of ESD integration approaches but most significantly with community (18 references) and culture (10 references). It is reflected in the ideological reconstruction too. A summary of the main points for human resource development based on the data are:

- HEIs need a well-designed professional development programme for their teachers, updated regular assessments, and continual learning support for sustainability literacy and other relevant qualifications to ensure effective teaching (P9, P11, and KII-6).
- Teaching skills should be considered as a key professional skill and should be promoted to ensure development of desirable ESD graduate attributes (P9 and P10).
- Some practices and skills should be nurtured and trained if needed in work related environment such as teamwork, conflict resolution using non-violent ways, mutual respect, supervisory and leadership skills that can empower the staff and students for their better learning and improvement (KII-7).
- HEIs need to raise ESD awareness amongst all the teachers and senior leaders to foster their practices (KII-5).
- HEIs need to use available resources like their alumni (community) to help inspire students and to develop their motivation and preparedness for employability (P10).
Policies and procedures for teachers' professional development and their teaching skills are the key areas that need to be reconstructed (or constructed if it is not yet there). Sustainability related awareness and practices amongst staff are to be encouraged and guided by the principles. Using available human resources, e.g., alumni, can be employed to support different ESD integration approaches, especially community and culture.

There were also some points discussed from a general purpose:

- Staff recruitment should be carefully considered and based on motivation and interests in addition to academic qualifications, and diversity and inclusion should be adopted as key principles (P19 and KII-7).
- HEIs need a better HR policy and mechanism to ensure a happy working environment, as discussed in the cultural approach, and to maintain qualified teachers, and to motivate for improved performance (P13, KII-5, and KII-7).

A few quotes supporting this sub-theme of human resources development are:

“It is important to upgrade the university teachers' skills for their teaching skills and their teaching-learning process should be matched with Myanmar students. Teachers' trainings are needed for a better model.” (A respondent, online survey)

“Most of us have expertise in our own specific subjects. So, teachers can only apply according to their talents without any supervisions, guidance, and trainings: teachers only get to do self-study to improve their teaching methodologies. I think there’s no capacity building for us.” (P10, FGD-1)

“We need to support more on human resources rather than the infrastructure. We need to train our teachers and staff to possess qualities and attitudes which we want to see in our students.” (KII-5, Professor)

Although there were a few numbers of coded reference in this sub-theme, the data explicitly show the need for reconstruction in HRD for Myanmar HEIs and is consistent with Arnhold et al.’s (1998) reconstruction model. Most of the references supported the ESD integration to develop desirable graduate attributes, whilst those for a more general purpose might lead to favourable conditions for ESD integration.
8.5.5 Physical reconstruction

This theme had the least coded references (14 out of 272) amongst the six sub-themes of educational reconstruction for Myanmar HEIs. Unlike other sub-themes, it cut across only three ESD integration approaches: community, culture, and campus. Physical reconstruction has been reviewed as a need in the literature and there were also in this sub-theme. Participants’ view on physical reconstruction needs for ESD integration can be summarised as follow.

- HEIs need to provide suitable facilities and spaces to promote wellbeing and fitness for their students (P7).
- HEIs need to extend their services to reach the students who have some barriers and make admission procedures flexible (P18, KII-1, KII-5, and KII-6)
- Some physical properties and facilities like libraries and laboratories need to be reconstructed properly to enhance students’ access and utilisation (P12, P19, KII-6).
- HEIs need to upgrade the digital technology particularly for online teaching and learning service for distance education (P18 and KII-1).
- Some facilities and operation systems like waste management and green practices should be installed and operated (KII-3).

Physical reconstruction can support the campus approach such as supporting health and fitness, learning facilities, accessibility, and green practices. In addition, it can be reflected in the community approach particularly to extend their educational services to a wider community of students. Although accessibility in education is often framed in terms of access for students with disabilities, a broader meaning has been taken in this thesis to refer to students who may face a range of barriers to higher education. To overcome physical, social, and economic barriers, colleges and universities should be established in different geographical locations, particularly for students in remote areas as suggested by KII-3 and KII-6. In addition, P18 wanted quality improvements in the Universities of Distance Education (UDE) in Myanmar:

"The distance education especially in our remote area is terrible. We attend only one or two months as intensive training before taking the exams. So, two weeks of classes is the maximum for us, it's an intensive training." (P18, FGD-2)

Moreover, KII-1, KII-5, and KII-6 shared a common idea of flexible admission procedures to help students’ accessibility by integrating merit-based considerations rather than
relying on the current score-based competition only. KII-1 wanted the universities to consider a bridging programme for the students from vocational institutes if needed. Likewise, KII-6 made a plea for a second-chance education system for students who had to give up their education due to the political crisis or socio-economic barriers. She wanted the international communities to consider it:

“But what can we do to help them with their education? Can we offer them online education? How can we count credits for them? International Universities should pay attention to this.” (KII-6, NGO founder)

Regarding students’ accessibility, it can be interpreted that HEIs should facilitate, expand, extend, or upgrade their educational service or activities to reach the communities in need. This is consistent with what has been discussed in the country context. Therefore, HEIs might need to seek communities’ engagement, particularly in proximity. However, regarding ESD graduate attributes, this can be considered as an overall support for students’ accessibility and higher education development because poor accessibility would potentially reduce the likelihood of students’ learning or even preventing them registering at university in the first place.

General higher education development was also observed within the physical reconstruction:

- More budget should be used for the reconstruction of HEIs for both staff benefits and facilities (KII-2 and KII-7).
- More HEIs should be established in different geographical locations or upgraded and extended online-based distance education should be promoted to ensure students in remote areas can access higher education (P18 and KII-7) as discussed in the community approach.

“Due to the change in social network and social media, we could access to globally critical issues on social media.” (KII-1, Education development manager)

“... we should not limit our infrastructure to buildings, but we need to address the issues such as asset, facility, and other material growth for our faculty members.” (KII-7, PhD student)

The physical reconstruction will likely enable the campus approach for ESD integration and a pedagogic approach. The data are consistent with the literature and the reconstruction model of Arnhold et al. (1998).
8.5.6 Administration and quality assurance systems

This sub-theme, contributed by forty-eight coded references, is an additional element that emerged from the research data and that is not presented within the education for reconstruction model of Arnhold et al. (1998). It mainly discusses decentralised administration and quality assurance systems of Myanmar HEIs while cutting across the sub-themes of ESD integration. There are only two main points being supportive of ESD integration:

- Appropriate teaching-learning model should be tested and decided for wider application amongst Myanmar HEIs (P9).
- There should have spaces and freedom for the students’ unions and clubs to act as a check and balance of the HEIs’ administration and activities (KII-2).

However, there were more references related to general purposes:

- A federal education system and autonomous HEIs should be established to enable the HEIs to have more decision-making power in their governance and management, in developing and delivering the locally relevant curriculums and courses, and in fostering academic freedom (P15, KII-1, KII-2, KII-3, KII-5, KII-6, and KII-7).
- A good feedback mechanism and better human resource management system should be restructured in the administrative system to help promote social justice and respect for the diversity of ethnic minorities (KII-5 and respondent of online survey).
- Better quality teaching as well as reliable quality assurance systems are needed in Myanmar HEIs (P2, P15, KII-1, and KII-6).
- HEIs should collaborate with an agency for quality accreditation for the degree they are awarding (P15 and P16).

Some quotes supporting the administrative and quality assurance systems are:

“So, apart from providing the fundamental costs to the HEIs for salaries, maintenance costs, all the other aspects should be self-governed. There should be charters for each HEI.” (KII-2, Former MP)

“We might also need to have university autonomy which allows universities to have self-determination.” (KII-5, Professor)
HEIs should have autonomy and academic freedom to administer the locally relevant curricula and instruction based on the cultural context.” (A respondent, online survey)

In summary, this sub-theme is more relevant to overall ESD integration rather than ESD to develop graduate attributes. However, these administrative systems could be supportive of other reconstruction as well as ESD integration processes. The data covered all principles: administration, autonomy, academic freedom, and management systems. These reconstructions might be necessary to support other reconstructions and ESD integration. Quality assurance and accreditation systems still need to be put in place for Myanmar, and thus this is also an important need in HEI reconstruction.

8.5.7 Overview of educational reconstruction for HEIs

In general, the data have identified the needs for reconstruction of Myanmar HEIs in different aspects for their overall development and better-quality higher education, and many of these needs could potentially support and inform ESD integration. Although there are some overlapping references and similar ideas when looking at the same data pool through two different thematic lenses, some key areas can be listed for the required educational reconstruction. In brief, Myanmar HEIs need:

- to have autonomy to make their own decisions, develop locally relevant curricula, and adopt ESD related values, policies, and practices,
- to have well-designed administrative principles and policies - to upgrade the quality of teaching and learning, whilst providing a decent working environment and supporting ESD practices,
- to develop suitable HR policies and procedures, embracing the diversity and minority groups, as well as ensuring improved staff performance to contribute to community and cultural approaches for sustainability awareness and practices,
- to re-construct and impose their ideological drive into the policy and missions that should embrace ESD in shaping all HEIs’ practices, particularly the curricula content and pedagogical methods, and academic freedom,
- to provide relevant supports to all staff for their psychological wellbeing and appropriate attitude required for the ESD integration approaches,
- to re-design the curricula by embedding ESD perspective, locally relevant contents, and a balance of learning process to ensure the holistic development of graduate attributes, and
• to reconstruct and rebuild, as required, to provide teaching and learning facilities as well as staff and students’ wellbeing for happy and supportive teaching-learning environment.

As noted earlier, the data reflect the literature review and the model of education for reconstruction by Arnhold et al. (1998). However, the model could be improved in the context of Myanmar HEIs by incorporating administrative and quality assurance systems.

8.6 Overview of two purposes leading to HEIs’ transformation

This thematic analysis reveals that these two purposes of ESD integration and HEI reconstruction can be viewed in parallel, the former as practices and the latter as changes to be made in principles/policies/procedures. As discussed above, HEIs’ transformation is seen through two thematic lenses: reconstruction of HEIs’ principles or policies that will enable or inform the ESD integration practices to produce a desirable transformation which is attributes for a sustainable future of Myanmar. In other words, these required changes in principles (reconstructions) would potentially inform and accommodate the HEIs’ practices (ESD integration).

Simply put, the principles for HEI reconstruction should inform and accommodate the ESD integration approaches in HEIs, which in turn will support the development of ESD graduate attributes, which are likely to contribute to the desired sustainable future for Myanmar.

8.6.1 Inner transformation Versus External influence

After having discussed both views, a question appeared of how to start them in practice - external influence matters when starting internal change or internal change should be initiated regardless of the external influences. KII-5 claimed that HEIs can start reforming from within for ESD integration. According to him, inner transformation is important. However, KII-2 has a contradictory perspective of systems change. He argued that the change does not start internally from within the HEIs, but rather it could be influenced by the communities and other external factors like the government’s policies and strategies. KII-6 also sees the role of civil society to actively engage in advocating the government for such required changes to be made. According to the data, the HEIs’ reconstruction processes in this discussion are predominantly oriented to internal changes, although it is acknowledged that external changes might come first in the given historical background.
Thus, the question remains to be answered whether any small-scale changes in different elements (ESD practices) could be initiated in the beginning stage or not, without much requirement of external influence, for the institutional transformation. While this research was being conducted, Myanmar HEIs have come across an unprecedented situation because of the 2021 coup. Some academics and activist students, who joined Civil Disobedience Movement (CDM), together with like-minded stakeholders, took a courageous step of establishing parallel HEIs against the ones under the military coup as a part of the Spring Revolution and CDM. Although it is hard to be critiqued as good or bad, it can be acknowledged that inner transformation has been started from many HEIs in a revolutionary process.

8.6.2 Recommended changes for policy, principles, and practices

Based on the analyses, the scoping study, and the reviewed literature, the following recommendations, changes to be made in both principles (or policy) and encouraged ESD practices, are made for the transformation of Myanmar HEIs which will potentially contribute to the development of desirable ESD graduate attributes for the conceptualised sustainable future for Myanmar (see Table 8.4). The first column is the summarised recommendations for the changes needed and the second column is potential ESD integration practices that should be informed and supported by the principles and policies changes.

Table 8.4 Recommended changes in principles or policies enabling ESD practices for transformation of Myanmar HEIs

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<tr>
<th>Policy or principles</th>
<th>ESD Practices</th>
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<td><strong>Ideology</strong></td>
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<tr>
<td>• HEIs need to have a certain degree of autonomy in leading and deciding to develop contextually relevant academic Programmes or activities for ESD.</td>
<td>• HEIs should conduct potential activities to ensure their stakeholders are well informed about their vision, missions, values as well as sustainable development knowledge.</td>
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<tr>
<td>• Sustainability should be embedded in the HEIs’ vision, missions, and policies.</td>
<td>• All academic programmes, operations (curriculum and pedagogical practices), and decisions should be guided or informed by the conceptualised ESD.</td>
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<td>• Curriculum development should be based on the desirable graduate attributes.</td>
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<td><strong>Policy or principles</strong></td>
<td><strong>ESD Practices</strong></td>
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| • A certain degree of academic freedom needs to be granted to HEI teachers.  
  • HEIs should be leading as a learning hub for promoting/  
    cultivating peace and sustainable environmental practices.  
  • Collaborative culture should be valued and embedded in HEIs’ policies. | • Relevant alternative teaching methods or approaches should be encouraged.  
  • HEIs should collaborate with different stakeholders from both national and international communities (including alumni) to create extensive learning and employment opportunities for their students.  
  • Collaboration or teamwork should be encouraged in teaching-learning-assessment, and in developing the curriculums if possible.  
  • HEIs should provide learning spaces for cultural exchange and lead the practice of non-violence, respecting diversity, caring natural environment, and sustainability practices within HEI community as an exemplar campus or community. |

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<tr>
<th><strong>Administrative principles and systems</strong></th>
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| • HEIs need to develop their own charters considering (federal) democratic Myanmar.  
  • Reliable and feasible quality assurance and accreditation system need to be appropriately developed.  
  • (Federal) democratic values should be reflected in the administrative policies and procedures. | • HEIs should facilitate an active learning community in which mutual respect, friendly feedbacks, collaboration, and openness in exploring new ideas and exchanging knowledge are encouraged.  
  • Students should be provided a certain degree of freedom in selecting their modules in degree pathway.  
  • HEIs should monitor their services, progress, and learn from the experiences, to ensure the learning process leading to ESD graduate attributes.  
  • Students’ clubs and associations should be encouraged for their extra-curricular experiences to develop some skills contributing to ESD attributes. |
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<tr>
<th><strong>Policy or principles</strong></th>
<th><strong>ESD Practices</strong></th>
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| **Human resources development** | **HEIs need to develop their own Human Resource and Administrative policies and related systems.**  
**HR policies should be guided by the values and concepts of ESD (such as respect and recognitions, and academic freedom, diversity, and inclusion).**  
**Teachers’ professional development and qualification framework should be developed and documented as a comprehensive guiding principle.** | **HEIs should create supportive or nurturing working environment through providing sufficient facility and benefits as well as cultivating some desirable practices to become as norms or culture.**  
**Staff recruitment, students’ selection, and all decisions or management related to social affair should be carefully handled to ensure promotion of multicultures, respecting and inclusion of ethnic identities and minorities.**  
**Assessment and management for teachers’ professional development should be intensively prioritized to ensure their performance in fostering the development of desirable graduate attributes.** |
| **Psychology** | **Democratic practices, empowerment, mutual respect, and collaborative learning should be encouraged and practiced in all types of leadership including research supervision, and teachings in the HEIs.**  
**HEIs’ operations and decisions should inform and contribute to the development of attitude and mindset for the students regarding the sustainability concerns and responses through formal and informal learning processes.** |
| **Curricular reconstruction** | **ESD should be integrated into the curriculums.** |
| **HEIs need to re-design and revise their curricula in** |
### Policy or principles

- Relevancy of local context and ESD perspective.
  - HEIs should develop locally relevant degree programmes and the curriculums should support various teaching methods.

### ESD Practices

- A special module should be offered as Institute-wide course (credit/audit).
- Hidden curricula can be considered through teachers’ ESD awareness and attitude.
- ESD degree/diploma programme on sustainable development should be developed and delivered.
- Research-based teaching and learning should be encouraged.

### Physical infrastructure and facilities

- HEIs need sufficient budget/fund for the required assets and facilities.
- HEIs need to build some infrastructures to support the stakeholders’ wellbeing, supportive learning, and sustainable practices.

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<th>Policy or principles</th>
<th>ESD Practices</th>
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<td>• HEIs should provide sufficient quantities and qualities of facilities and services (e.g., library, laboratory, sports), to ensure the effective learning process and wellbeing of the students.</td>
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<td>• Internet service and online technology should be used to enhance the teaching/learning/assessment as well as to extend their services to the students in the remote/needy areas.</td>
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<td></td>
<td>• HEIs should provide their teachers suitable infrastructure and facilities.</td>
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<td>• HEIs should have suitable facilities for sustainable practices (for green campus).</td>
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The analysis is also visualised through an influence diagram showing all the key thematic components and links influencing/supporting each other (see Figure 8.1). Although ideological reconstruction influences all to some extent, it is not explicitly mentioned in the diagram. It should also be noted that many activities and processes in the system of HEI differently play important roles. They all need to function well to have the best outcome, and it is not just to rely on a single factor, e.g., reformed curriculum. However, the activities or changes in some blobs might have relatively stronger
influence than other relations, and they are shaded with thicker arrows based on the data and interpretation of the analysis.

In Figure 8.1, HEIs’ autonomy likely influences their vision and policies, their administration systems, and freedom to collaborate with relevant stakeholders in different communities. Amongst these three (first order) elements influenced by HEIs’ autonomy, there might have relatively stronger influence over the vision/mission and collaboration with stakeholders. Likewise, HEIs’ vision and policy might strongly influence curriculum, academic freedom, psychological reconstruction, HRD, and administrative and quality assurance systems. Psychological reconstruction and HRD can have reciprocal influencing patterns – the former informed the later and the later support the former. Development of ESD graduate attributes can also influence the overall ESD of HEIs because graduate attributes are a part of it from the conceptualised ESD as discussed in Chapter 6 and the literature review although target 4.7 in Sustainable Development Goal has been widely discussed and viewed as ESD. In short, ideological changes play a role in many parts of the system and HEIs’ autonomy is considered a fundamental enabler, as in the diagram. Alongside these changes at institutional level or higher level, teachers’ professional development and creating supportive working environment for them would play important role in developing ESD graduate attributes.
8.7 Chapter summary

This chapter has discussed the key findings of the thematic analysis which respond to the third research question – to explore the potential changes to be made in the policy and practices in the reconstructions of Myanmar HEIs enabling potential approaches for ESD integration. The sub-themes of ESD integration matched with the elements in the adapted 4Cs+RP model proposed in the literature review whilst those of educational reconstruction partly matched with the model of Arnhold et al. (1998) except for an additional theme in the research data: administrative and quality assurance systems.

The observations have shown that sub-themes in each main theme have some overlapping references showing inter-relatedness while the two main themes have some relations as well. Amongst the potential ESD integration approaches, the largest references were contributed to the community and the least to the campus. Based on the data, all these approaches were considered as potentially supporting the development of desirable ESD graduate attributes. In HEI reconstruction, the largest
coded references were notedly found in ideological reconstruction and the participants significantly stressed it in almost every aspect of HEIs and ESD integration. Like campus, physical reconstruction was the least number of supporting references for ESD integration whilst it was claimed as critical area to be undertaken. Reconstruction can be considered as cross-cutting theme as well as supportive of ESD integration in general, but they could also support other reconstruction sub-themes simultaneously; for instance, ideological reconstruction might play a key role in all other reconstructions.

Based on the thematic analysis, it could be hypothesised that HEI reconstruction processes will likely accommodate or inform the ESD integration approaches (as discussed in the model and emerged thematic framework) which could support developing the expected ESD graduate attributes (in Chapter 7) that would contribute to the desirable sustainable future for Myanmar (as conceptualised in Chapter 6).

This chapter has responded to the third research question with key findings grounded in the data, reflected in the reviewed models, and provided a potential conceptual map of ESD integration and educational reconstruction for Myanmar HEIs. And, such a conceptual map/framework, which covers desirable sustainable development, relevant graduate attributes, potential ESD integration, and required changes in educational reconstruction leading to Myanmar HEIs' transformations, presented by this research has been deeply contextualised based on the data provided by Myanmar participants, the relevant stakeholders. The following chapter will help to summarise the whole thesis, contribution to knowledge of ESD integration in higher education, the researcher's personal reflective learning, and further recommended studies.
Chapter 9 Conclusion

9.1 Introduction

Integrating education for sustainable development (ESD) in higher education institutions (HEIs) in the context of Southeast Asian countries is not widely documented in the literature. Although there are plenty of published papers on the role of HEIs in ESD implementation by scholars from different continents, there is no explicit mention for the higher education sector in the UNESCO’s roadmap ‘ESD for 2030’ (UNESCO, 2020). This doctoral research contributes to the knowledge body of conceptualisation of ESD and explores the potential concepts and models of ESD integration in, and the reconstruction process of, HEIs in Myanmar, a Southeast Asian country with poor environmental record and political and socio-economic crisis. Generally, the two models proposed in the literature review are found to be relevant for future application for Myanmar and could have wider applicability to countries with similar contexts and backgrounds, as discussed in this chapter.

This research has shown when conceptualising ESD for Myanmar, there is a greater emphasis on cultural and philosophical aspects than is evidenced in Myanmar’s Sustainable Development Plan (MSDP) or the UN’s Sustainable Development Goals (SDGs). Cultural sensitivity as well as environmental literacy and personal relationship skills featured more strongly in the desirable graduate attributes identified through this grounded and more contextualised research approach compared to more non-grounded sets of attributes such as UNESCO’s ESD competencies framework. The research has also shown how two existing models based on ESD integration (Jones, Selby and Sterling, 2010a; Anand et al., 2015) and educational reconstruction (Arnhold et al., 1998) can be adapted/developed to make them more applicable to Myanmar.

This chapter summarises the main research findings, offers concluding remarks including wider applicability and contribution to knowledge as well as suggestions for future research. The former chapters have explained and discussed why this research was important, how it was designed and conducted, and what the key findings are. This chapter

- provides a summary of this thesis (section 9.2),
- discusses key learnings and findings arising from the study (section 9.3),
- recommends for policy and practices (section 9.4),
- displays knowledge contributions (section 9.5),
- describes research limitations (section 9.6),
• outlines recommendations for further research (section 9.7),
• notes the researcher’s personal reflections on his PhD experiences and concludes with final remarks (section 9.8).

9.2 A summary of this thesis

This thesis has nine chapters. Chapter 1 introduced the origin of ESD as a concept, how the ESD movement has evolved, why ESD has been an important agenda for HEIs, the background of this doctoral research, and the purpose of this study. Chapter 2 described the socio-political and environmental context of Myanmar and the situation of HEIs and their engagement in sustainable development or sustainability issues. Chapter 3 reviewed and discussed the literature on ESD implementation and conceptualisation in the global context, the arguments about graduate attributes from an ESD perspective, and highlighted models for understanding ESD integration and higher education reconstruction. Due to the paucity of publications on Myanmar’s higher education, including the grey literature, an in-country scoping study was conducted and reported in Chapter 4. This scoping study showed that there was limited understanding of and implementation of ESD in HEIs in Myanmar but did provide background information on how ESD could be conceptualised, what relevant attributes graduates might have and how HEIs might promote ESD.

Based on these chapters, the research has looked at three research questions:

1) How might ESD be conceptualised in the Myanmar HEIs context?
2) What graduate attributes are expected from integrating this conception of ESD in Myanmar HEIs?
3) What transformations in Myanmar HEIs’ educational policy and practices are needed to develop these graduate attributes?

An initial research design involving case studies of two Myanmar universities through in-country investigations was replaced by online interviews, focus groups and surveys following Covid-19 in 2020 and the 2021 military coup in Myanmar. The mixed research methods used, the detailed research data collection, and the analytical procedures employed have been explained in Chapter 5. After that, Chapters 6, 7, and 8 discussed the three main research questions based on the findings and observations arising from the analyses. This chapter, Chapter 9, reviews these research questions and other elements of the research.
9.3 Key findings for the research questions

Research Question (1) How might ESD be conceptualised in the Myanmar HEIs context?

There are two elements to this question: how sustainable development is conceptualised in Myanmar itself and how ESD is conceptualised in its HEIs in the Myanmar’s political, socio-economic, and environmental context. The way the research participants viewed sustainable development (SD) and ESD, how they are viewed from Myanmar and Asian cultural context will be discussed in comparison with the literature and the recent government’s frameworks like Myanmar Sustainable Development Plan (MSDP) and National Education Strategic Plan (NESP).

As discussed in the literature review (in Chapter 3), sustainable development can be viewed as a desirable condition (Gray, 2010) or ‘a concept, a goal, and a strategy’ (Moore, 2005, p. 32). The earliest definition of sustainable development (SD) appeared in ‘Our Common Future’ report (Brundtland et al., 1987) set a balance of wellbeing and prosperity for both present and future generations. Sustainable development mostly emerged from environmental concerns due to the impacts of human activities (Du Pisani, 2006; Glavič and Lukman, 2007), and many of the UN’s 17 SDGs attempt to address environmental issues. For example, SDG 6 (Clean water and sanitation), SDG 7 (Affordable and clean energy), SDG11 (Sustainable cities and communities), SDG12 (Responsible consumption and production), SDG13 (Climate action), SDG14 (Life below water), and SDG15 (Life on land). At the same time other SDGs address peace, health, and prosperity related issues and it is the interactions and influences between the different SDGs that are meant to provide the balance required by the Brundtland definition. The three pillars in the MSDP: ‘Peace and Stability, Prosperity and Partnership, People and Planet’ (Ministry of Planning and Finance, 2018) encompass five goals covering national reconciliation and peace, economic development, employment and private sector business development, human resources development, and natural resources management. These goals in the MSDP appear more oriented to political reform and economic development because both human resource development and natural resources management are viewed from an economic development perspective with more private sector involvement. However, there were some strategies related to healthy ecosystems and biodiversity conservation.

The findings arising from the participants in this research (see 6.2 in Chapter 6) shows that a desirable sustainable future or development for Myanmar can be seen through five thematic lenses: political, socio-cultural, economic, environmental, and
philosophical views, lenses that seemingly equate to the three pillars of the MSDP. These five thematic lenses are also interlinked. For instance, economic development is desirable, but environmentally friendly business development should be considered, and strong environmental policy and management plans must be established, according to the data. Environmental conservation activities and programmes should include local communities’ livelihood and economy. Social justice, respect for nature, ecosystems, traditional beliefs and practices, gender, diversity of ethnicity and faiths, fair distribution of resources and national development were intensively discussed and prioritised in shaping the desirable sustainable future for Myanmar. Sustainability in this research reflects the literature (i.e., environment, economy, and society), but with a greater emphasis on culture and philosophy that does not come through in the SDGs and MSDP. Although the MSDP is a well-structured plan, it is lacking a grounded conceptualisation of the desirable sustainable development for Myanmar. However, this research does provide pointers as to how ESD might be conceptualised in Myanmar through the adoption of its findings as well as the process used to elicit the views of a group of key stakeholders - graduates.

A fundamental finding in this research is consistent with what has been discussed in the literature – the universities should extend their engagement in social transformation and policy advocacy as an additional mission to their teaching and research (Fadeeva and Mochizuki, 2010). Indeed, HEIs should consider the whole-institution approach to integrate ESD whereby HEIs need to think about how ESD features in all they do. The principles of guiding concepts are the SDGs and interpretations of ESD as most, but not wholly, exemplified by the eight competencies of the UNESCO’s ESD learning outcomes. Although there were many HEIs’ engagements in the ESD movement around the world, it was rarely discussed about the required graduate attributes for their specific country’s context. This doctoral research highlighted the importance of conceptualising ESD for a particular country’s context so that locally relevant graduate attributes considered for the desirable sustainable development can be investigated and set out.

ESD for the context of Myanmar’s HEIs, according to the findings in this research, can be viewed by five different thematic lenses: preparing ESD graduate attributes for the students, serving as exemplar learning hubs for the communities, research and innovation, engaging in influencing policy, and investing in the higher education (see 6.3 in Chapter 6). It showed that ESD is more than preparation for graduates’ appropriate competencies for sustainable development as reflected in the literature. More importantly, ESD is not a single project related to sustainable development, but it is rather spotlighting ‘socially engaged HEIs’ doing more than their traditional activities of
teaching and research. Thus, ESD can be considered in many different activities that HEIs could do as a holistic approach which can directly contribute to developing the ESD graduate attributes as well as the envisioned sustainable development of the country.

**Research Question (2) What graduate attributes are to be expected from integrating this conception of ESD in Myanmar HEIs?**

Although research findings in this thesis revealed that ESD is more than graduate attributes, a prime focus of this research was to explore what graduate attributes are to be expected and prioritised in the context of higher education in Myanmar. Preparing graduates with appropriate competencies or attributes was discussed from different perspectives, for instance graduates should be prepared for their critical thinking and problem solving skills (Shephard *et al.*, 2015), for their employability (Hill, Walkington and France, 2016; Khan, Malik and Janjua, 2019; Wong *et al.*, 2022), and for their attitude and competencies to contribute to the wellbeing and prosperity of their societies (Sterling, 2004; Paten *et al.*, 2005; Tilbury, 2011; Shephard *et al.*, 2015; Tierney, 2016; Dlouha *et al.*, 2017; Filho *et al.*, 2018; Gul *et al.*, 2019; Vargas *et al.*, 2019).

The UNESCO’s ESD competencies framework, which is broadly framed for all levels of education, was adopted by the UK HE and QAA with subtle adaptations for higher education (QAA and Advance HE, 2021). This research argues that contextualised graduate attributes should be considered, rather than adopting the top-down list of recommendations influenced by western scholars’ views, which seems to be the case for the UNESCO competencies. As discussed in the first research question, sustainability is a contested term and can be viewed from different perspectives, so SD and ESD can be viewed differently in Asian or Southeast Asian contexts like some authors reminded (Sivaraksa, 1994; Landorf, Doscher and Rocco, 2008; Van Zeijl-Rozema *et al.*, 2008; Nomura and Abe, 2011; Jackson, 2017; Merrill, 2018). Thus, the relevant graduate attributes for a country with its own unique historical and cultural backgrounds must be explored through rigorous research and continuous conversations with multi-stakeholders. Moreover, it is important to ensure that the graduate attributes are aligned with the envisioned desirable future for that country rather than taking a set of global, non-grounded attributes.

There is general agreement in the literature with the claim by Rieckmann (2012) that knowledge and skills alone are not sufficient to address the complex socio-economic, political, and climate and environmental issues. However, different terminology is used to classify attributes with, e.g., UNESCO using Cognitive domain, Socio-emotional domain, and Behavioural domain, and QAA using ways of knowing, being and doing.
These two classifications are aligned with the three Hs model (for example, Sipos, Battisti and Grimm, 2008; UNESCO, 2017; QAA and Advance HE, 2021) which is familiar to an Asian cultural context including Myanmar (for example Sivaraksa (2005) claimed that threefold training – ‘Sila, Samadhi, and Pannya’ are the fundamental model of education from Buddhist perspective). The graduate attributes that emerged from this research also cover all three pillars of Hs: HEAD, HEART, and HAND, but also emphasise the interrelationships between them such that they collectively contribute to a holistic development of the learner. While the UNESCO guidelines talk about this holism, they do not explicitly show the contextualised connections between attributes that this research has been able to do.

Comparison of the graduate attributes from the research findings and those in the literature revealed certain degree of similarities in terms of thinking abilities, social abilities, personal abilities, and employability related skills. Interestingly, the comparison with UNESCO’s ESD competency framework shows that there is no explicit mention of sustainability literacy or environmental literacy in the key competencies themselves, instead the eight competencies are set in the broader framework of the 17 SDGs. In contrast, the seven thematic components of graduate attributes (unprompted/qualitative set) from this research (see 7.3 in Chapter 7) include ‘general knowledge and life skills’ and ‘sustainability literacy and practice’ as holistic (HHH) attributes not tied to either Head, Heart, or Hand. This is not to say that a general or specific approach to holism is better or worse but to note that the outcomes in the UNESCO framework are apparently ambitious without any specification for which levels they were aimed at, for instance secondary or higher education level, nor as to how they might be interpreted. For example, in table 1.2.1 for SDG 1 (End poverty in all its forms everywhere), the following learning outcome was stated:

‘The learner is able to propose solutions to address systemic problems related to poverty’ (UNESCO, 2017, p. 12).

This outcome is complicated and challenging even for global leaders and scholars to address and might be too broad and ambitious for the learners in Myanmar when it is even difficult for them to understand their country’s context and address the ongoing political and socio-economic crisis.

The second set of fourteen graduate attributes, generated from the qualitative data through systematic processes and in-depth consultations (see 7.4 in Chapter 7), were assessed for their priority ranking through an online survey. All fourteen attributes are important based on the 417 survey respondents’ views. These attributes emerged from
Myanmar participants (KII and FGDs) and have been robustly checked and observed with wider communities’ perspectives (online survey). They can be considered contextually relevant to Myanmar HEIs for future ESD integration. Different statistical tests were run to check the rankings. The future use of the list of attributes might benefit from fine-tuning by combining similar attributes and reducing the overall number.

Overall, these attributes (prompted/quantitative ones) can be observed as important and relevant to be considered for ESD integration. These 14 attributes are also aligned with the three Hs model but as with the seven attributes noted above it has also been possible to map out the interrelationships between the attributes that can more readily indicate the holistic nature of them. Except for teaching, language proficiency, research knowledge and skills, working experiences, and entrepreneurship, the respondents in online survey rated as highly important all other nine graduate attributes: thinking proficiency, social abilities, personal abilities, management skills, resilience, professionalism, cultural sensitivity, digital literacy, and environmental literacy. The fact that environmental literacy features prominently once again perhaps indicates that the research participants believed this to be essential for a sustainable future but could also be because they were unaware of the SDGs as a guiding framework.

On the other hand, the other attributes indicate that they do see the personal and collective development of graduates to be focussed on relationships more than outcomes, which may be consequence of the socio-cultural history of Myanmar. Moreover, the findings beg the question as to what sustainable literacy actually covers in the participants’ views. As explained in the methodology (Chapter 5) and discussion about the results for research question 2 (Chapter 7), these graduate attributes were derived from the grounded research data, and so they can be used as a preliminary set of attributes for Myanmar HEIs although it is acknowledged that they are not definitive and may not be representative to all the HEIs in Myanmar.

While many HEIs in developed countries claim for digital skills, teamwork skills, problem solving, and critical think skills, the attributes from this research importantly highlighted cultural sensitivity, environmental literacy, and some personal abilities related to HEART. These graduate attributes are also aligned with the desirable sustainable development for Myanmar discussed in the Research Question 1 therefore this research claims that they are relevant with contextualised ESD. Moreover, this kind of bottom-up approach to identify locally relevant graduate attributes could be further extended by individual HEIs and respective governments with similar concerns.
Research Question (3) What transformations in Myanmar HEIs’ educational policy and practices are needed to develop these graduate attributes?

As highlighted in Chapter 2 (country context), HEIs in Myanmar need reconstruction as the nation-wide education reform process was disrupted by the coup in 2021 before ESD integration was properly initiated. The two models discussed in the literature review – a proposed ESD integration model (4Cs+RP) adapted from the models of (Jones, Selby and Sterling, 2010a; Anand et al., 2015) and the educational reconstruction model of Arnhold et al. (1998) - were consistent with the results of qualitative analyses except an additional theme (Administration and quality assurance) emerged from the research data in the educational reconstruction.

Although the 4C model and 4Cs+R model are published in the literature as being whole institution approaches, many HEIs across the world predominantly employ a curricular and green campus approach. That is why pedagogy, how SD is taught rather than what is taught about ESD, is proposed as an explicit element in the ESD integration model and as based on some literature (Walker, 2002; Brundiers, Wiek and Redman, 2010; Lozano et al., 2017). The analyses from this research were consistent with this proposed addition to the model as many research participants emphasised the required changes in teaching, learning, and assessment methods being practiced in many HEIs in Myanmar.

Arnhold et al.’s (1998) model was also found to be relevant to the context of Myanmar based on both reviewed literature work and the outcomes from thematic analysis. However, ‘administration and quality assurance’ is an additional element identified in the research data, which is consistent with what has been discussed in Chapter 2 – that all HEIs in Myanmar need to change their authoritative leadership styles and rigidly centralised administrative systems (British Council, 2013a; Oo, 2013; Esson and Wang, 2018). Although NESP (2015-2020) had a mandate to establish a National Institute for Higher Education Development (NIHED) and an independent institution for Higher Education Quality Assurance Agency (HEQAA), these lacked any link to ESD integration. With these mandates uncertain in the current situation, new proposals may be needed in future. If so, these two models have been found to be relevant to HE reform and ESD integration in Myanmar. They may also be useful to some HEIs in the member states of ASEAN if ESD integration and educational reconstruction is needed.
9.4 Recommendations for policy and practices

9.4.1 Recommendations for Myanmar’s higher education stakeholders

Considering both proposed models (ESD integration and educational reconstruction) this research provided recommended changes in the policy and practices for Myanmar HEIs (see Table 8.4). Ideological reconstruction was a key area to be considered in the HE sector of Myanmar, as it can inform individual HEIs in terms of their standings, missions, and policies to integrate ESD in all different activities such as curricula, teaching and assessment methods, collaborating with different stakeholders, campus management, and learning with and from communities. Moreover, this ideological reconstruction at a national level might need to be informed by federal democratic values. Decentralised systems should be prioritised for the HE sector to grant reasonable autonomy to individual HEIs.

At a more local level, HEIs could accommodate students’ freedom, facilitate active learning communities, and nurture good practices of mutual-respect and celebrate diversity and inclusion to develop expected graduate attributes amongst their students. Policy related to human resources development should be developed by each HEI under their own charters. HE sector could provide additional support for professional development of HEIs’ leaders and staffs. Individual HEIs should implement their human resources recruitment and development as expected in desirable SD and ESD, because it can lead to the development of some attributes amongst the students, particularly cultural sensitivity, social abilities, and personal abilities. Mutual respect amongst individuals regardless of their backgrounds, and respect and care for the natural environment, should be key policy guidelines suggested by this research. This can shape psychological reconstruction process and HEIs could integrate these into their decisions and actions to promote sustainability related awareness and mindsets.

At national level the HE sector could provide policy guidelines to consider locally relevant curricula content but individual HEIs should have their freedom to design and deliver relevant learning contents being informed by the conceptualised ESD. The HE sector should have an appropriate budget to support HEIs for their infrastructure and campus facilities so that green campus activities and students’ health care could be managed well. In addition, opportunities for students’ digital skills, research-based learning and work experiences could be developed.
9.4.2 Potential application of this research

HEIs in Myanmar at the time of writing this thesis are still difficult and complicated. Since the coup in February 2021, many university teachers and students have been protesting the military coup through a civil disobedient movement (CDM). It is estimated that between 35% and 50% of all basic and higher education teachers joined the CDM, according to Proserpio and Fiori (2022). Still, the exact number or ratio of HEIs’ teachers is unknown. The military coup, self-named the State Administration Council (SAC), is trying to operate the universities with some students who enrolled and some teachers who did not join the CDM. In parallel, CDM teachers and other students have formed interim university councils and established their online universities, for instance, Spring Normal University\(^70\), Spring University Myanmar\(^71\), and Kachin State Comprehensive University. More studies should be made to understand how these newly established (interim) HEIs have been initiated and developed and how they might move on and evolve in such a hostile political context in Myanmar. From an activist or revolutionary perspective, it might be differently iterated that Myanmar HEIs do need ‘deconstruction’ rather than ‘reconstruction’ because the research participants made strong criticisms on the current policies, systems, and practices. This aspect should be further investigated to see changes in these emerging HEIs and their future impacts.

This research commenced in 2019 to contribute to higher education reform considering the country’s sustainable development. However, some of these findings and learnings might be potentially applicable to those interim universities acknowledging the ongoing conflicts. It might also be considered for implementation once a favourable condition is given for nationwide education reforms. The conceptual models grounded in the data could be used when setting the vision or developing the strategies for the future model of higher education by the National Unity Government (NUG), the contemporary/exile government formed shortly after the coup.

9.4.3 Recommendations for HEIs in the Southeast Asia region

At a broader level, the research context shares a story of similarity with those HEIs in the Southeast Asia region, particularly in conflict zones or under the control of

\(^70\) [https://www.springnormaluniversity.org/](https://www.springnormaluniversity.org/)

\(^71\) [https://www.springuniversitymm.com/](https://www.springuniversitymm.com/)
dictatorship governments, or ESD is still embryonic to them. Those HEIs in the region could apply some of these concepts and approaches in the thematic analyses by reconsidering, revising, and re-integrating ESD with appropriate adaptation and modification. The conceptualisation of ESD in a particular country context is under published with no existing publications in the higher education context of Myanmar. This study makes a critical contribution to ESD implementation research within higher education communities, particularly in Asia and Southeast Asia.

In conclusion, this research has primarily contributed some insights and recommendations to higher education stakeholders in the region regarding ESD implementation as follow:

- ESD should be conceptualised in a particular country’s context rather than following the broader perspective of internationalised version so that locally relevant outcomes and implementations could be designed.
- Required changes in policies and principles should be made to accommodate ESD integration in different activities of HEIs. That can enhance developing the students’ expected graduate attributes considered for desirable sustainable future or development of a country.
- UNESCO’s recommended ESD competencies and learning outcomes may be too ambitious and unrealistic for some contexts. So, developing and identifying locally relevant graduate attributes to be used within a contextualised ESD should be carried out through conversations with different stakeholders, including understanding the scope of and definitions for the attributes. This approach is also an important contribution to the literature because developing ESD graduate attributes through a bottom-up approach has been rarely published.
- Whilst many authors are suggesting ‘a whole-institution approach’ and interdisciplinary approach to ESD (McMillin and Dyball, 2009; Jones, Selby and Sterling, 2010b; Kohl et al., 2022), existing models of ESD integration for HEIs have not captured all the necessary components. Thus, this research recommends the revised ‘4Cs+RP’ model for ESD integration amongst HEIs.
- The adapted model of educational reconstruction can be recommended for HEIs’ transformation process in countries with similar backgrounds. There were many recommendations in the published literature, including the UNESCO’s roadmap for 2030, regarding the strategies and approaches to make transformative learning and embedding sustainability knowledge and skills into the curriculum, but this type of comprehensive model, which is adapted from Arnhold et al.’s
(1998) model, was not found in the ESD literature. In fact, reconstruction of HEIs was rarely discussed in Western or developed countries although some policy advancement and governments’ supports were encouraged by the UNESCO. However, reconstruction in ideology, psychology, and human resources are essential themes that most Western HEIs might overlook and reconstruction processes in those areas need more emphasis.

9.5 Knowledge contribution

Defining Sustainable Development for a particular country can be informed by the global agreements, such as the SDGs, but also needs to reflect the historical backgrounds and cultural roots of its citizens. This thesis has used consultative processes, albeit with three groups of citizens, that could be used with other groups and in other countries. Through the findings of the consultative and co-creative approach, the following key contributions to knowledge have been made:

Knowledge contribution 1: Adding ‘P’ to the ‘4Cs+R model’

Regarding ESD integration, a whole-institution approach has been widely discussed amongst the scholars and HEIs. However, the existing literature has left a few questions to be answered - what elements are foregrounded in the institutions and what activities that HEIs should focus on. Although teaching, learning, and assessments were extensively discussed as important matter in the HE sector, it is not explicitly included in the models in the reviewed literature. The findings of this research have shown that pedagogy should be considered in the existing models proposed by Jones, Selby and Sterling (2010a) and Anand et al. (2015) rather than being implicitly included in curriculum in order to contribute to developing the expected ESD graduate attributes amongst the students. Thus, this research made this adapted (4Cs+RP) model to be considered in ESD integration at institutional level of HEIs in different countries.

Knowledge contribution 2: Co-creating ESD graduate attributes

Amongst the discussed ESD graduate attributes in the published literature, a set of eight competencies recommended by the UNESCO is the most prominent. SDGs were developed through bottom-up approach as many people from many countries involved in it and it took time to develop it. However, ESD competencies were developed based on a few experts’ views and only a few people involved in the process. Moreover, it has been broadly defined and recommended for all different types and levels of education.
The ESD graduate attributes in this research are grounded in the Myanmar context and have been developed through consultative process with graduates rather than those considered to be experienced experts in their field (how to develop the graduate attributes). Moreover, the interrelationships between the attributes are as important as the attributes themselves – some of them feature in more than one of the three Hs. So, these attributes are very much tied together with all being important in contributing to a holistic set that brings the 3Hs together (what the ESD graduate attributes are and how they look like).

For the UNESCO’s attributes, this research does not agree that having those eight competencies alone is sufficient to provide motivation towards sustainable development or sustainability although they are important competencies that graduates should have developed from learning at HEIs. The approach in this research brought out environmental literacy as a specific competency whereas it is implicit in the UNESCO’s set via the SDGs (which only last to 2030) and this research findings put more emphasis on ‘sustainable’ in sustainable development. This set of contextualised graduate attributes can be a foundational consideration for Myanmar HEIs before reforming higher education and implementing ESD. Furthermore, this doctoral research also claims that locally relevant graduate attributes should be developed in a co-creative process for a particular country rather than simply adopting internationalised ones.

**Knowledge contribution 3: A framework for implementing ESD in Higher Education in countries needing or undergoing major reforms**

This research showed that the analyses are consistent with the elements in the educational reconstruction model proposed by Arnhold et al. (1998) except the Administration and Quality Assurance which emerged from the data. Reforming or reconstructing higher education will need certain degree of changes in policies, principles, and administrative systems, especially for those countries with prolonged civil wars or under the authoritative dictatorships. However, Arnhold et al.'s (1998) reconstruction process did not consider the required changes to be made in the administration and quality assurance, so this research also recommends an adapted model of educational reconstruction for the countries with prolonged political crisis or major needs in national reform. This is different from the 4Cs+RP model in which P was proposed based on the reviewed literature that informed the analytical process and confirmed the consistency of the data. In contrast, the additional element in the educational reconstruction model emerged from the data.
These two models are complementary to each other and can be useful in the ESD implementation. Based on this research learning, a framework for ESD implementation has been developed and proposed for those countries needing major reforms (see Figure 9.1). The reconstruction processes enable the specific conceptualisation of what ESD is at the higher education sector level that can enhance the integration of ESD in individual institutions which then contributes to how sustainable development is envisioned. Indeed, the envisioned sustainable development concept can guide the way how to reconstruct the higher education sector in the given context.

![Figure 9.1 A framework of ESD implementation for countries with major reform needs](image)

The data in this research, which is grounded in the context of Myanmar, can be different from other developed countries with stability and freedom like the United Kingdom. It should be noted that educational reconstruction and ESD integration can go in parallel in the countries with prolonged history of political crisis and instability context whilst other HEIs in the stable countries may not emphasise on the reconstruction. Recommendations and models proposed and practiced by the HEIs in the developed countries with higher degree of stability and freedom might be useful to HEIs in some developing countries to some extent. However, this study has provided these learnings especially for those countries with reconstruction needs, limited freedom, and instability.
9.6 Research limitations

There were some limitations in addition to some challenges and constraints to conducting this research in such a difficult context of pandemic lockdown and political crisis in the country to be studied. Limitations are mainly related to the targeted research participants and methodological aspects.

1) The ESD conceptualisation studied in this research was developed from a certain group of research participants, which is not necessarily representative of the larger society of Myanmar nationals. As most of the key informants in this research have experience in the development or non-governmental organisation (NGO) sector, the data might be oriented to a particular view with high similarities in concepts or values. However, justification for inviting these participants was explained due to the nature of this research enquiry and the feasibility of the given context.

2) While acknowledging both the strengths and limitations of online (virtual) interviews and focus group discussions, it would be instructive to explore the same questions using a different mode of data collection. Face-to-face interviews or focus groups might generate a degree of energy dynamic, stimulating the facilitation or interviewing process and potentially producing slightly varied discussions and outcomes. To ensure collecting enough data to answer the research questions and securely collect the data in the politically sensitive period, the researcher used alternative methods like self-recorded audio files or self-responded written files for answering the specified research questions. Although these methods cannot support interactive discussion between the researcher and participants or amongst participants, they could be applied for extensive data collection for wider coverage or where the research participants have limited internet access to participate in synchronous online interviews or discussions.

3) For the online survey of priority ranking of the specific graduate attributes, a respondent made a good suggestion regarding language proficiency which was too broad for them to rate. It should rather be separated into specific languages: Myanmar, English, another foreign language any ethnic language. So, it could be too broad and ambiguous for many respondents to rate ‘language proficiency’, although the survey intended to check if the graduates should be able to use one to three languages, mainly Myanmar and English.

4) The online survey could not employ probabilistic sampling; therefore, the quantitative enquiry in this research could not support well-representative
inferences with hypothetical tests to understand relationships between the priority of attributes and some demographic factors such as ethnic groups, specific geographic location (e.g., states or regions), and disciplines or professional fields. It has been able to check the priority rankings of the given attributes as an overview.

5) If time had allowed a second round of FGDs with the same participants would have been conducted to deepen discussions and to explore more ideas of potential triggers for policy and practices to be changed that will support ESD integration and university transformation. Similarly, systems diagramming should be further expanded through rigorous discussions with wider communities or stakeholders to visualise the models and mappings in a participatory approach.

6) Finally, it should be noted that the researcher’s professional background, personal identity, and personal interests in the role of higher education and sustainable development might have brought a certain degree of bias in the research scope, questions, choosing available data subjects, and even in the analytical process and interpretation.

9.7 Recommendations for further research

Recommendations for further research are made through reflection on the limitations and experiences of this research.

1) While acknowledging the difficulty in developing a nationally accepted conceptualised ESD model, further studies with wider communities and multiple stakeholders should be conducted to deepen understanding and to tune what has been found in this study. For example, this research did not include farmers, other labourers and professionals from different industries and religious sectors. However, a wider inclusion of participants from divergent backgrounds should be further investigated to check and compare with this result.

2) An extensive online survey should reach a wider set of communities and stakeholders through various social agents and networks to justify and assure better representation.

3) Using probabilistic sampling, hypothetical testing should be made to study the association, priority ranking, and opinions on this set of graduate attributes from diverse demographic data of the respondents, for instance, geographic backgrounds (states/regions or townships), ethnic backgrounds, disciplines or professions, and specific roles (e.g., teachers, students, employees, or employers).
4) An in-depth study on a particular university should be undertaken to develop more specific graduate attributes from their disciplinary perspective or based on the geographical, socioeconomic, and environmental context.

5) The current knowledge could be expanded if a group of researchers with diverse backgrounds conducted similar research, particularly for the first and third research questions to understand the conceptualisation of ESD in the context of Myanmar HEIs and potential integration and HEI reconstructions.

6) A more thorough study should be conducted to understand different competencies in the three H model and to see if they are complementary or contradictory to each other.

7) A comparative study of ESD integration or implementation and related graduate attributes amongst HEIs in the Mekong River basin or Association for South-East Asia Nations (ASEAN) member states would support knowledge exchange and expand regional understanding.

9.8 Personal reflections as a researcher

9.8.1 Motivation and personal improvement

As introduced in Chapter 1, I took up this opportunity to conduct doctoral research based on my positives and 12 years of professional experiences in development-related fields in Myanmar (e.g., environmental conservation, natural resources management, and peacebuilding) with stakeholders such as youth, university students, community leaders, teachers, and student-teachers through non-formal education activities and collaboration with formal HEIs). I had an interest to understand the relationship between HEIs and sustainable development which was rarely studied and under-reported. Moreover, there was a lack of proper understanding of the roles of Myanmar HEI for ESD in terms of both concept and approaches for implementation.

The announcement for this doctoral studentship, which was associated with the Transformation by Innovation in Distance Education (TIDE) project and supported by the Global Challenge Research Fund (GCRF) (as noted in Chapter 1), resonated with my sense that I wanted to deepen my understanding of these two elements in the Myanmar context. In addition, this research was not only contextually relevant but also timely and critical for Myanmar because the national education reform was on track during the former civilian government of Myanmar at that time. This was an external motivator for me to take this doctoral research on.
As an internal motive, I had three main expected outcomes for my personal development before I picked this path. These expectations were:

- to improve my ways of thinking,
- to upgrade my research knowledge and skills, and
- to expand my knowledge through extensive reading.

Indeed, I have improved my thinking through reading, discussions with my supervisors and their feedback and comments, personal reflection, and reasoning. In addition, sharing my learning, thoughts, and ideas with different stakeholders in both formal webinars/conferences and informal conversations. Getting their feedbacks, comments, and questions were supportive in widening my worldview. Moreover, meditation practice could help my thinking improve in such a tough time.

My research has focused on studying concepts and applied interpretive approaches needed to observe how people use, define, or interpret some conceptual terms. In addition, learning about systems thinking and diagramming has been an add-on. Qualitative enquiry is relatively new to me, particularly in the academic approach, although I have limited knowledge and experience in my previous social work. This doctoral research experience greatly supported my way of thinking and expanded the horizon of my understanding of the research.

I have been familiar with quantitative research using statistical analysis. Still, the mixed methods approach of this research, particularly qualitative analysis, has significantly contributed to upgrading my research knowledge and skills. On top of that, the online survey data in this research allowed me to learn and apply non-parametric tests. Preparing the research data collection and data management plan through the assessment and approval of Human Research Ethics Committee (HREC) was a valuable experience to ensure quality, safety, and ethical conducts in the research. The researcher development framework/skills development audit was useful to see if my strengths and needs to be improved. Writing a PhD thesis, different from my previous experience of an M.Sc. thesis, was an invaluable academic training ground for me as I had to draft, redraft, and write many final versions. In contrast, I had to read, observe, and reason based on the supervisors’ feedback and comments. Keeping logbooks and checklists reminders to ensure everything is right and at the right place were good practices in skill development. Flexibility was crucial for my personal experience as a researcher as I have gone through unexpected and unprecedented challenges throughout the journey.
As mentioned above, I had to read several research articles and some books, and I enjoyed it. Key learnings for me as a takeaway are to search for what is needed and important, read them with critical and analytical views, and use only the most important and supportive arguments or claims in discussion (in writing). For the last one, I have moderately improved in it.

9.8.2 Surviving and thriving in the context of Covid-19 and the Coup

Personal motivation and interest play a critical role in most doctoral research studies (Tarvid, 2014; Wiegerová, 2016) and support my resilience when facing unexpected challenges. As mentioned earlier, the original plans developed over four months had to be abandoned and a new enquiry approach had to be redesigned and planned again. A new project to project, face-to-face focus groups for Myanmar university teachers and students in Thailand and neighbouring countries, were cancelled because Thailand became the list for the UK’s Covid-19 alert. Finally, an alternative data collection plan had to be chosen - all the interviews, focus groups, and surveys were surveys conducted. Consequently, more time was needed to apply an online data collection method which was only considered.

These unexpected conditions have brought me considerable additional work for the data collection plan and ethical approval process and put me into a deep depression due to the horrific and devastating war crimes in my home country, making me worried about my family and friends' safety. Nevertheless, my belief that education plays a critical role in our society and our desirable future has not changed. Meditating, walking, reading, drawing, photographing flowers, watching movies, and supporting Myanmar students via online coaching and mentoring were the main therapeutic actions I used to self-heal in those challenging times. I also received a few counselling sessions from National Health Service (UK) for my wellbeing. Learning from the Covid-19 experiences and the revolution against the coup gave me some energy to move forward and overcome challenges. Ultimately, all the data collection processes were smoothly completed through the internet and digital technology and extensive support from my friends and social networks.

Further, there were challenges in transitioning from a practitioner to a researcher. The key challenges for me were:

- There was a time gap of 12 years between my master’s degree and this PhD study as I have immersed myself in development work for a decade. It was challenging for me to return to an academic way of thinking, reading, and
writing. However, as mentioned earlier, these skills have developed through continuous practice and feedback/comments from my supervisors.

- Although my first two degrees (agricultural science and natural resources management) and professional work experiences supported doing this inter-disciplinary research, there was a certain degree of limitation in understanding the higher education context, as I did not work in that sector.

Despite considerable challenges and constraints, my motivation and commitment to what I believe is a critical area for my country’s development has enabled me to continue through this research process.

9.8.3 Final remark

Based on my professional experience as a sustainable development practitioner, I have immersed myself in this research for four years to deepen my understanding of these research questions for the transformations of Myanmar HEIs. Listening to these relevant stakeholders through whom such a clear picture was constructed to deliver a conceptual model of potential ESD integration approaches and required changes for Myanmar HEIs. My remark, which has been demonstrated as a significant part of this thesis and in the given title, is that recommended changes in the reconstruction process for the HEIs’ transformation should be taken on to accommodate the integration of ESD, which has been conceptualised in the context of Myanmar.

With strong interest and commitment, my endeavour to investigate this important research went far beyond the purpose of getting a PhD degree. Still, rather I have put myself into the study, and this research has, in turn, become a part of my life and my world. Learning from the voices of university teachers and students, from the key informants with different professional backgrounds, and the wider community’s ranking on the given attributes and their open comments in the online survey has given me a deeper understanding of the real context. As a citizen of Myanmar, I hope that my work can be drawn upon in future whenever there can be proper reform of Myanmar’s HEIs.


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Appendices

Appendix 1 HREC approval letter for scoping study

Dear Bo

This message confirms that the research protocol for the following research project, as submitted for ethics review, has been given a favourable opinion on behalf of The Open University Human Research Ethics Committee.

Project title: Scoping the context of Education for Sustainable Development (ESD) in Myanmar

HREC approval date: 19/11/2019

As part of your favourable opinion, it is essential that you are aware of and comply with the following:

You are responsible for notifying the HREC immediately of any information received by you, or of which you become aware which would cast doubt on, or alter, information in your original application, in order to ensure your continued safety and the good conduct of the research.

It is essential that you contact the HREC with any proposed amendments to your research, for example - a change in location or participants. HREC agreement needs to be in place before any changes are implemented, except only in cases of emergency when the welfare of the participant or researcher is or may be affected.

Your HREC reference number has to be included in any publicity or correspondence related to your research, e.g., when seeking participants or advertising your research, so it has been agreed by the HREC and adheres to OU ethics review processes.

Researchers should have discussed any project-related risks with their Line Manager and/or Supervisor, to ensure that all the relevant checks have been made and permissions are in place, prior to a project commencing, for example compliance with IT security and Data protection regulations.

Researchers need to have read and adhere to relevant OU policies and guidance, in particular the Ethics Principles for Research with Human Participants and the Code of Practice for Research - http://www.open.ac.uk/research/governance/policies
The Open University's research ethics review procedures are fully compliant with most research council, professional organisations, and grant awarding bodies research ethics guidelines. Where required, this message is evidence of OU HREC support and can be included in an external research ethics review application. The HREC should be sent a copy of any external applications, and their outcome, so we have a full ethics review record.

At the end of your project, you are required to assess your research for ethics related issues and/or any major changes. Where these have occurred you will need to provide the Committee with a HREC final report to reflect how these were dealt with using the template on the research ethics website - [http://www.open.ac.uk/research/governance/ethics/human/review-process/final-report](http://www.open.ac.uk/research/governance/ethics/human/review-process/final-report) (HREC Final Report form)

**Sent on behalf of the Human Research Ethics Committee**

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<th>Dr Duncan Banks</th>
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Human Research Ethics Committee - Research, Enterprise, and Scholarship (RES)

The Open University, Walton Hall, Milton Keynes, MK7 6AA

Email: research-rec-review@open.ac.uk  Tel: 01908 654849

[http://www.open.ac.uk/research/governance/ethics/human](http://www.open.ac.uk/research/governance/ethics/human)
Appendix 2 Semi-structured questionnaires used in the scoping study

Semi-structured Questionnaires (Scoping Study)

Research Title: Scoping the context for Education for Sustainable Development (ESD) in Myanmar

Researcher: Bo Lwin (Post Graduate Research Student, STEM, The Open University)

Semi-structured Interview Questions (for University Teachers/ Faculty)

It is aimed to meet and interview some university teachers/faculty members from TIDE project partners and Yangon University of Education and Sagging University of Education. (Approximately 8-10 people).

1) Do you know about Sustainable Development Goal (SDG) and Education for Sustainable Development (ESD)?
2) What do you think the role of Higher Education (HE) in supporting Sustainable Development in Myanmar?
3) What factors might enable the academic staff in HE to integrate or implement sustainability in the courses and programmes that they teach?
4) What factors might act as barriers or constraints for the academic staff integrate or implement sustainability in the courses and programmes that they teach?
5) What aspect of research into ESD in HE would you be most interested in learning about?

Guided Questions for Focus Group Discussion (for university students)

It is intended to have 2-4 FGDs with university students (Yangon, Mandalay, Yezin and Loikaw). Approximately about 10 to 15 students per FGD. Group facilitation tools such as small group discussion and presentation on flipcharts shall be mainly used. No video or audio recording shall be applied.

1) Do you know about Sustainable Development Goal (SDG)?
2) What knowledge and skills do you expect to get from your university? (In addition to your majored disciplinary related knowledge and skills)
3) What do you dislike most about your university education that you think it is very important to change or to improve?

4) What the key factors that may bring about the successful achievement by the students on sustainable learning outcomes or graduate attributes (except your own working-hard)?

5) How do you think the role of university education and SDGs?

6) What would you want to see your university do about ESD?

7) What aspect of research into ESD in HE would you be most interested in learning about?

Researcher:

Mr Bo Lwin (Post Graduate Research Student)
Department of Engineering and Innovation
Faculty of Science, Technology, Engineering and Mathematics (STEM)
The Open University
Room No s0004, Venables Building (B), Walton Hall,
Milton Keynes MK7 6AA, England, UK
Ph: +44 (0)1908659264 or +44(0)7916962019
Email: bo.lwin@open.ac.uk or bobolwin@gmail.com
Appendix 3 Jisc Online Survey Form

Recommend Graduate Attributes for Sustainable Future of Myanmar

Page 1: Introduction

Mingalarbar!

Welcome to the online survey of ‘recommending the most relevant graduate attributes for the sustainable development of Myanmar’. If you are studying at a university in Myanmar (and over 18 years old) or if you have studied at any university in Myanmar, you are warmly invited to take part in this survey. It will approximately take 5-8 minutes to complete, and the data will be used for my PhD thesis.

The given list of attributes was generated from the focused discussions and interviews conducted in May-June 2021. You are invited to recommend the most relevant attributes for the sustainable future of Myanmar by scoring (from 0 to 9).

This research has been approved by the Open University's Human Research Ethics Committee (HREC/3767/Lwin). It is totally anonymous and your voluntary consent to participate. I will follow the GDPR and the Open University’s data protection policies. The data will be processed and stored securely, and the results will be used for the next step of research enquiry. It is your voluntary consent once you click 'Yes' to complete the survey and you cannot withdraw your data once you have finished it. You are encouraged to take 5-8 min to complete the survey at one sitting as you cannot save the progress to continue the next time. If you have any questions relating to the survey, please do not hesitate to contact me (bo.lwin@open.ac.uk).

Thank you so much for your time. Your contribution will be very valuable for the reconstruction process of Higher Education in Myanmar.

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I am happy to complete the survey. **Required**

☐ Yes
Page 2: Your information

2. What is your gender? *Required*
   - [ ] Man
   - [ ] Woman
   - [ ] Non-binary
   - [ ] Prefer not to say

3. What is your age band? *Required*
   - [ ] 18 – 27
   - [ ] 28 – 37
   - [ ] 38 – 47
   - [ ] 48 – 57
   - [ ] 58+
   - [ ] I prefer not to say

4. What education level describes you most? *Required*
   - [ ] Under-graduate student
   - [ ] Graduate (bachelor’s degree holder)
   - [ ] Master’s degree student
   - [ ] Master’s degree holder
   - [ ] Doctoral student
   - [ ] PhD degree holder or any Professional Doctorate

5. In which country are you now? *Required*


Page 3: Explanation on scoring

Please have a look at each graduate attribute and its descriptors in both Myanmar and English. Then you need to rate that attribute by giving a score to indicate its relative importance (from minimum 0 to maximum 9) from the perspective of contributing to the sustainable future of Myanmar. For example, if you think a particular attribute is not related to or has no potential value at all in contributing towards the sustainable development of Myanmar, you can score it by giving '0' (zero) and if you think that attribute is very essential or most relevant or it has very high potential value in contributing towards the sustainable future of Myanmar, you can score it by the maximum number '9'. You can rate an attribute by giving any score in the range of 0 to 9 based on its relative importance.

Please note that all these given attributes might be important for a university graduate in general, but the purpose of this survey is to understand the degree of their relevance in contributing to the sustainable future of Myanmar. You can change your answers before you click 'Finish', but you need to answer all the questions. Once you click 'Finish', you cannot change your answer and cannot withdraw your response.
Page 4: Recommending graduate attributes by scoring

6. 1) Social abilities: Being reflexive and open-minded for feedbacks; Social dealing skill such as interpersonal communication skill, negotiation skill, conflict resolution skills, and being able to build social network; Being good in teamwork such as being collaborative, adaptable, flexible, and confident to discuss, question or debate

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Please don't select more than 1 answer(s) per row. Please select exactly 1 answer.

7. 2) Cultural sensitivity: Being knowledgeable about human rights, equality issues, social conflicts, different cultures, values, beliefs, perspectives, faith, tradition, psychology, and country’s context or political situation; Having basic awareness on peace, respecting the rights and freedom of minority or marginalised identities (e.g., LGBT or minority ethnic or religious groups or disable groups); Ability to think of being inclusive, to work in multi-cultural context, and being adaptable to different cultural context

Required

Please don't select more than 1 answer(s) per row. Please select exactly 1 answer.
8. 3) Management: Being reliable (Accountability and responsibility) Having problem solving skill and facilitation skill to address the issues; Being able to organise activities or projects and being competent in time management, resource management and project or business management

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9. 4) Environmental literacy: Having basic environmental knowledge (such as ecology, biodiversity, symbiotic relationships, climate change, deforestation, etc.) and sustainability concepts - understanding basic principles of sustainability in environmental and natural resources management, and the interdependence of human beings and ecosystems; Having value, respect, and love on the natural environment; Ability to think for the future impact and act environmentally sound management in their activities

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Please don't select more than 1 answer(s) per row. Please select exactly 1 answer.
10. 5) Thinking proficiency: Being good in reasoning, logical thinking, analytical and critical thinking, and creative thinking leading to wisdom.

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11. 6) Language proficiency: Proficiency in English language skill (at least communicable); Proficiency in Myanmar language as it is widely used; Ability to use any ethnic languages or foreign languages depending on the situation and individuals’ preferences.

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12. 7) Work experience: Having work experience in the job environment, or research field or communities (such as internship or volunteer) during student life.

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13. 8) Digital literacy: Ability to use computer and commonly used software such as Office software (Microsoft Office: word, excel, PowerPoint etc.,); Ability to use internet, search data and apply communication software such as Skype/ Zoom etc., including social media

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Required

Please don't select more than 1 answer(s) per row. Please select exactly 1 answer.

14. 9) Personal abilities: Having self-awareness, moral conduct, contentment, self-esteem, altruism, compassion, and sympathy; Being curious and open-minded to learn, being motivated to learn from work/ experience, and able to learn independently; Being literate and able to read and write well (such as proposals, reports, or research papers)

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Please don't select more than 1 answer(s) per row. Please select exactly 1 answer.

15. 10) Researching: Having fundamental research knowledge and skills
16. 11) Entrepreneurship: Having skills and enthusiasm to create or initiate innovative projects or business

17. 12) Teaching: Ability to teach or to transfer the knowledge to others

18. 13) Professionalism: Being professionally ethical, having respect to one’s own profession and others; Being punctual and honest; Knowing one’s own rights as well as being responsible
Please don't select more than 1 answer(s) per row. Please select exactly 1 answer.

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19. 14) Resilience: Having perseverance, grit, adaptability, and commitment; Having good focus/attention what one is studying or working on; Ability to overcome the problems and hardship

Please don't select more than 1 answer(s) per row. Please select exactly 1 answer.

20. If you want to add one more attribute that you think it is important in contributing for the sustainable future of Myanmar, and if it is missing in the above 14 items, please mention in the following box.

21. If you have any comments or suggestions regarding with graduate attributes for the sustainable development or future of Myanmar, please mention below.
This is the end of the survey and thank you so much for your contribution.

ရပဖဆ ိုမှုအဆြံိုေးသတ်ြ ြေါပြ ။ မ တ်ရဆ ရ  ြေါေင်အာေးပဖည ်မှုက ို အ ူေးြ ရကျေးဇူေးတင်ရှ ြေါတယ်။
Appendix 4 HREC approval letter for data collection of this research project

Dear Bo Bo,

This message confirms that the research protocol for the following research project, as submitted for ethics review, has been given a favourable opinion on behalf of The Open University Human Research Ethics Committee.

**Project title:** Integrating Education for Sustainable Development (ESD) in the reconstruction of Higher Education Institutes (HEI) in Myanmar

**HREC approval date:** 14/12/2020

As part of your favourable opinion, it is essential that you are aware of and comply with the following:

1. You are responsible for notifying the HREC immediately of any information received by you, or of which you become aware which would cast doubt on, or alter, information in your original application, in order to ensure your continued safety and the good conduct of the research.

2. It is essential that you contact the HREC with any proposed amendments to your research, for example - a change in location or participants. HREC agreement needs to be in place before any changes are implemented, except only in cases of emergency when the welfare of the participant or researcher is or may be affected.

3. Your HREC reference number has to be included in any publicity or correspondence related to your research, e.g., when seeking participants or advertising your research, so it is clear that it has been agreed by the HREC and adheres to OU ethics review processes.

4. Researchers should have discussed any project-related risks with their Line Manager and/or Supervisor, to ensure that all the relevant checks have been made and permissions are in place, prior to a project commencing, for example compliance with IT security and Data protection regulations.

5. Researchers need to have read and adhere to relevant OU policies and guidance, in particular the Ethics Principles for Research with Human Participants and the Code of Practice for Research - [http://www.open.ac.uk/research/governance/policies](http://www.open.ac.uk/research/governance/policies)

6. The Open University's research ethics review procedures are fully compliant with the majority of research council, professional organisations and grant
awarding bodies research ethics guidelines. Where required, this message is evidence of OU HREC support and can be included in an external research ethics review application. The HREC should be sent a copy of any external applications, and their outcome, so we have a full ethics review record.

7. At the end of your project, you are required to submit a final report to HREC. The purpose of the final report is to ensure OU research is being carried out as agreed; assess how any additional ethics-related issues have been dealt with if they have arisen; and to inform the development of the ethics review process to ensure a continued high level of review. The final report template can be found on the Human Research Ethics website.

Sent on behalf of the Human Research Ethics Committee

Dr Claire Hewson Dr Duncan Banks Dr Alison Fox
Chair Deputy Chair Deputy Chair
Appendix 5 Questionnaire guidelines for semi-structured interviews and focus group discussions

(Both data collection will be remotely conducted via internet)

Research Topic: Integrating Education for Sustainable Development (ESD) in the reconstruction of Higher Education Institutes (HEI) in Myanmar

Research Student: Bo Bo Lwin, PhD student (bo.lwin@open.ac.uk), School of Engineering and Innovation, Faculty of Science, Technology, Engineering and Mathematics (STEM)

HREC Reference: HREC/3767/Lwin

A. Key Informant Interviews (KII)

The following questionnaires will be used for the Key Informant Interviews and the brief introducing and trust building will have been done for 10-15 min a few days prior to the interview date. The following key questions will be mainly used as framing the interview.

1) How do selected Myanmar HEIs define ESD in their own context?

- What are the key areas do you think important for Myanmar if sustainable development is aimed at the future prospect of the nation?
- What do you see the key areas of sustainable development that Myanmar should give attention and what are the intersection/overlapping areas that the universities might be able to contribute?
- What do you want to say Higher Education for Sustainable Development in Myanmar context?

2) What could be the role of Myanmar HEIs for supporting the integration of ESD more widely in HE?

- How do you see the role of universities in Myanmar in contributing towards the sustainable development of the country?
- What should universities contribute? How could they contribute?
What are the key challenges and opportunities to integrate ESD in your university (the selected HEI)?

3) How do selected HEIs define graduate attributes (GA), and do they have any ESD related GAs?

- How do you define graduate attributes from your own perspective?
- Does your university have official documents publicly shown as the graduate attributes?
- If yes, what are the generic qualifications (knowledge, skills and behaviour) that your university currently claims for graduate attributes? Are they contributed to the sustainable development of Myanmar?
- If no, what kinds of core attributes do you think it should be considered by your university (the selected HEI) in the dimension of contributing towards the sustainable development of Myanmar?

B. Focus Group Discussion (FGD)

The following questionnaires will be appropriately used in the group discussion with students and teachers. Firstly, discussion will cover the ESD conceptualisation and agreement on the graduate attributes for Myanmar context. Then the discussion will take deep brainstorming and exploring to understand the complex systems of HEIs in Myanmar and the relationships amongst the different elements/entities, process, emergence, functions, factors in different forms of effective flow and circulation feedbacks which is seen as final contribution towards the development of graduate attributes.

1) What are the key elements and processes in HEIs’ context for developing ESD related graduate?

- Research will use probing questions and cross-check questions to make sure the discussion is alive as well as focused.
- Facilitation on listing down the points, confirming with the participants, diagramming all the discussion points shall be applied.
- Systems diagramming will be the output of the first part of the discussion.

2) How important are these identified elements and processes to each other in contributing to the development of ESD graduate attributes?
• What are the key areas of the elements/entities, process, practices, functions, or flow that do you think they are important in contributing towards the development of ESD related graduate attributes?
• Do you see any other points that should be added more to complete the whole diagram of the systems?

3) What could be the potential leverage points in the system for the transformation of HEIs to develop ESD related GA?

• What do you see as alternative in adapting the existing system to ensure the desirable graduate attributes as quality output?
• What additional inputs or support or influence do you think that might be potentially transform the system in order to contribute towards the GA development?
• What are the challenges or barriers to make the required changes?
• How could this transformation be achieved?

This PhD research on Integrating Education for Sustainable Development (ESD) in the reconstruction of Higher Education Institutes (HEI) in Myanmar has been reviewed by, and received a favourable opinion, from the OU Human Research Ethics Committee - HREC reference number: HREC/3767/Lwin. http://www.open.ac.uk/research/ethics/
Appendix 6 Reliability statistics and inter-item correlation amongst the ranked graduate attributes (online survey data)

A6.1 Reliability statistics showing high level of internal consistence amongst the attributes

### Reliability Statistics

<table>
<thead>
<tr>
<th>Cronbach's Alpha Based on Standardized Items</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.974</td>
<td>0.974</td>
</tr>
</tbody>
</table>

A6.2 Inter-item Correlation matrix for the fourteen graduate attributes

### Inter-Item Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>Soc</th>
<th>Cul</th>
<th>Mgt</th>
<th>Env</th>
<th>Think</th>
<th>Lan</th>
<th>exp</th>
<th>Dig</th>
<th>Per</th>
<th>Res</th>
<th>Entr</th>
<th>Teach</th>
<th>Prof</th>
<th>Resil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Abilities</td>
<td>1.00</td>
<td>0.80</td>
<td>0.82</td>
<td>0.71</td>
<td>0.78</td>
<td>0.68</td>
<td>0.62</td>
<td>0.69</td>
<td>0.78</td>
<td>0.69</td>
<td>0.69</td>
<td>0.66</td>
<td>0.74</td>
<td>0.74</td>
</tr>
<tr>
<td>Cultural sensitivity</td>
<td>0.80</td>
<td>1.00</td>
<td>0.77</td>
<td>0.72</td>
<td>0.74</td>
<td>0.64</td>
<td>0.59</td>
<td>0.70</td>
<td>0.72</td>
<td>0.66</td>
<td>0.66</td>
<td>0.63</td>
<td>0.73</td>
<td>0.68</td>
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<tr>
<td>Management</td>
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<td>0.77</td>
<td>1.00</td>
<td>0.75</td>
<td>0.82</td>
<td>0.72</td>
<td>0.66</td>
<td>0.73</td>
<td>0.80</td>
<td>0.74</td>
<td>0.74</td>
<td>0.74</td>
<td>0.80</td>
<td>0.78</td>
</tr>
<tr>
<td>Environmental literacy</td>
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<td>1.00</td>
<td>0.76</td>
<td>0.65</td>
<td>0.57</td>
<td>0.70</td>
<td>0.75</td>
<td>0.70</td>
<td>0.66</td>
<td>0.67</td>
<td>0.73</td>
<td>0.74</td>
</tr>
<tr>
<td>Thinking proficiency</td>
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<td>0.74</td>
<td>0.82</td>
<td>0.76</td>
<td>1.00</td>
<td>0.76</td>
<td>0.64</td>
<td>0.73</td>
<td>0.83</td>
<td>0.73</td>
<td>0.75</td>
<td>0.70</td>
<td>0.81</td>
<td>0.79</td>
</tr>
<tr>
<td>Language proficiency</td>
<td>0.68</td>
<td>0.64</td>
<td>0.72</td>
<td>0.65</td>
<td>0.76</td>
<td>1.00</td>
<td>0.64</td>
<td>0.78</td>
<td>0.75</td>
<td>0.76</td>
<td>0.78</td>
<td>0.67</td>
<td>0.69</td>
<td>0.72</td>
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<tr>
<td>Work experience</td>
<td>0.62</td>
<td>0.59</td>
<td>0.66</td>
<td>0.57</td>
<td>0.64</td>
<td>0.64</td>
<td>1.00</td>
<td>0.70</td>
<td>0.72</td>
<td>0.71</td>
<td>0.66</td>
<td>0.67</td>
<td>0.67</td>
<td>0.64</td>
</tr>
<tr>
<td>Digital literacy</td>
<td>0.69</td>
<td>0.70</td>
<td>0.73</td>
<td>0.70</td>
<td>0.73</td>
<td>0.78</td>
<td>0.70</td>
<td>1.00</td>
<td>0.78</td>
<td>0.76</td>
<td>0.73</td>
<td>0.70</td>
<td>0.74</td>
<td>0.73</td>
</tr>
<tr>
<td>Personal abilities</td>
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<td>0.72</td>
<td>0.80</td>
<td>0.75</td>
<td>0.83</td>
<td>0.75</td>
<td>0.72</td>
<td>0.78</td>
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<td>0.78</td>
<td>0.75</td>
<td>0.82</td>
<td>0.83</td>
</tr>
<tr>
<td>Researching</td>
<td>0.69</td>
<td>0.66</td>
<td>0.74</td>
<td>0.70</td>
<td>0.73</td>
<td>0.76</td>
<td>0.71</td>
<td>0.76</td>
<td>0.78</td>
<td>1.00</td>
<td>0.78</td>
<td>0.72</td>
<td>0.74</td>
<td>0.72</td>
</tr>
<tr>
<td>Entrepreneurship</td>
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<td>0.74</td>
<td>0.66</td>
<td>0.75</td>
<td>0.78</td>
<td>0.66</td>
<td>0.73</td>
<td>0.78</td>
<td>0.78</td>
<td>1.00</td>
<td>0.73</td>
<td>0.74</td>
<td>0.74</td>
</tr>
<tr>
<td>Teaching</td>
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<td>0.74</td>
<td>0.67</td>
<td>0.70</td>
<td>0.67</td>
<td>0.67</td>
<td>0.70</td>
<td>0.75</td>
<td>0.72</td>
<td>0.73</td>
<td>1.00</td>
<td>0.80</td>
<td>0.79</td>
</tr>
<tr>
<td>Professionalism</td>
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<td>0.73</td>
<td>0.80</td>
<td>0.73</td>
<td>0.81</td>
<td>0.69</td>
<td>0.67</td>
<td>0.74</td>
<td>0.82</td>
<td>0.74</td>
<td>0.74</td>
<td>0.80</td>
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<tr>
<td>Resilience</td>
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<td>0.74</td>
<td>0.79</td>
<td>0.72</td>
<td>0.64</td>
<td>0.73</td>
<td>0.83</td>
<td>0.72</td>
<td>0.74</td>
<td>0.79</td>
<td>0.85</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Appendix 7 Pairwise comparison of ranked specific fourteen graduate attributes (Jisc Online Survey)

Pairwise Comparisons

Each node shows the sample number of successes.

Pairwise comparison of the graduate attributes showing their similarity and difference in term of mean rank values before and after Bonferroni correction (red lines showing no significant differences; blue showing significant difference)

Note: There were some attributes sharing similar mean ranks. The blue lines in the figure represent the significant differences between the two graduate attributes in term of mean ranks after Bonferroni correction and the red lines represent significant differences before Bonferroni correction. Those attribute pairs with no connecting lines shows no significant differences with Bonferroni’s corrected p values i.e., they have closer values of the mean ranks. The result shows that these attributes are not equally rated, and they can be ranked in order while all of them were noted as important to contribute to the desirable sustainable development of Myanmar.
Appendix 8 Kruskal-Wallis H test result showing no significant differences amongst different age groups for their priority of all fourteen graduate attributes.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Kruskal-Wallis H*</th>
<th>df</th>
<th>Asymp. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Abilities</td>
<td>3.932</td>
<td>3</td>
<td>0.269</td>
</tr>
<tr>
<td>Cultural sensitivity</td>
<td>3.048</td>
<td>3</td>
<td>0.384</td>
</tr>
<tr>
<td>Management</td>
<td>4.102</td>
<td>3</td>
<td>0.251</td>
</tr>
<tr>
<td>Environmental literacy</td>
<td>2.306</td>
<td>3</td>
<td>0.511</td>
</tr>
<tr>
<td>Thinking proficiency</td>
<td>0.938</td>
<td>3</td>
<td>0.816</td>
</tr>
<tr>
<td>Language proficiency</td>
<td>2.718</td>
<td>3</td>
<td>0.437</td>
</tr>
<tr>
<td>Work experience</td>
<td>3.482</td>
<td>3</td>
<td>0.323</td>
</tr>
<tr>
<td>Digital literacy</td>
<td>1.809</td>
<td>3</td>
<td>0.613</td>
</tr>
<tr>
<td>Personal abilities</td>
<td>0.795</td>
<td>3</td>
<td>0.851</td>
</tr>
<tr>
<td>Researching</td>
<td>1.355</td>
<td>3</td>
<td>0.716</td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td>1.636</td>
<td>3</td>
<td>0.651</td>
</tr>
<tr>
<td>Teaching</td>
<td>6.171</td>
<td>3</td>
<td>0.104</td>
</tr>
<tr>
<td>Professionalism</td>
<td>1.144</td>
<td>3</td>
<td>0.767</td>
</tr>
<tr>
<td>Resilience</td>
<td>1.229</td>
<td>3</td>
<td>0.746</td>
</tr>
</tbody>
</table>

*Grouping variables: Age bands
Appendix 9 Kruskal-Wallis H values for priority ranking of graduate attributes by the respondents' education levels

<table>
<thead>
<tr>
<th></th>
<th>Kruskal-Wallis H*</th>
<th>df</th>
<th>Asymp. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Abilities</td>
<td>5.454</td>
<td>5</td>
<td>0.363</td>
</tr>
<tr>
<td>Cultural sensitivity</td>
<td>3.953</td>
<td>5</td>
<td>0.556</td>
</tr>
<tr>
<td>Management</td>
<td>6.251</td>
<td>5</td>
<td>0.283</td>
</tr>
<tr>
<td>Environmental literacy</td>
<td>7.335</td>
<td>5</td>
<td>0.197</td>
</tr>
<tr>
<td>Thinking proficiency</td>
<td>7.543</td>
<td>5</td>
<td>0.183</td>
</tr>
<tr>
<td>Language proficiency</td>
<td>6.480</td>
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<td>0.262</td>
</tr>
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<td>Work experience</td>
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<td>0.896</td>
</tr>
<tr>
<td>Digital literacy</td>
<td>5.094</td>
<td>5</td>
<td>0.404</td>
</tr>
<tr>
<td><strong>Personal abilities</strong></td>
<td><strong>12.376</strong></td>
<td>5</td>
<td><strong>0.030</strong></td>
</tr>
<tr>
<td>Researching</td>
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<td>Entrepreneurship</td>
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<td>0.173</td>
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<tr>
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<td>0.641</td>
</tr>
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<td>Resilience</td>
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<td>0.133</td>
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</table>

*Grouping Variables: Education Levels
Appendix 10 Pairwise test of education levels and their priority ranking of personal abilities.

<table>
<thead>
<tr>
<th>Sample 1-Sample 2</th>
<th>Test Statistic</th>
<th>Std. Error</th>
<th>Std. Test Statistic</th>
<th>Sig.</th>
<th>Adj. Sig. a</th>
</tr>
</thead>
<tbody>
<tr>
<td>bachelor's degree holder-undergraduate student</td>
<td>6.70</td>
<td>15.63</td>
<td>0.43</td>
<td>0.67</td>
<td>1.00</td>
</tr>
<tr>
<td>bachelor's degree holder-master's degree student</td>
<td>-13.02</td>
<td>20.97</td>
<td>-0.62</td>
<td>0.54</td>
<td>1.00</td>
</tr>
<tr>
<td>bachelor's degree holder-PhD or Professional Doctorate</td>
<td>-23.03</td>
<td>30.76</td>
<td>-0.75</td>
<td>0.45</td>
<td>1.00</td>
</tr>
<tr>
<td>bachelor's degree holder-Doctoral student</td>
<td>-37.57</td>
<td>25.13</td>
<td>-1.50</td>
<td>0.14</td>
<td>1.00</td>
</tr>
<tr>
<td>bachelor's degree holder-master's degree holder</td>
<td>-57.47</td>
<td>17.35</td>
<td>-3.31</td>
<td>0.00</td>
<td>0.01</td>
</tr>
<tr>
<td>under-graduate student-master's degree student</td>
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<td>23.26</td>
<td>-0.27</td>
<td>0.79</td>
<td>1.00</td>
</tr>
<tr>
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<td>32.37</td>
<td>-0.51</td>
<td>0.61</td>
<td>1.00</td>
</tr>
<tr>
<td>under-graduate student-Doctoral student</td>
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<td>27.07</td>
<td>-1.14</td>
<td>0.25</td>
<td>1.00</td>
</tr>
<tr>
<td>under-graduate student-master's degree holder</td>
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<td>20.06</td>
<td>-2.53</td>
<td>0.01</td>
<td>0.17</td>
</tr>
<tr>
<td>Master's degree student-PhD or Professional Doctorate</td>
<td>-10.01</td>
<td>35.26</td>
<td>-0.28</td>
<td>0.78</td>
<td>1.00</td>
</tr>
<tr>
<td>Master's degree student-Doctoral student</td>
<td>-24.55</td>
<td>30.47</td>
<td>-0.81</td>
<td>0.42</td>
<td>1.00</td>
</tr>
<tr>
<td>Master's degree student-master's degree holder</td>
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<td>24.45</td>
<td>-1.82</td>
<td>0.07</td>
<td>1.00</td>
</tr>
<tr>
<td>PhD or Professional Doctorate-Doctoral student</td>
<td>14.54</td>
<td>37.88</td>
<td>0.38</td>
<td>0.70</td>
<td>1.00</td>
</tr>
<tr>
<td>PhD or Professional Doctorate-master's degree holder</td>
<td>34.44</td>
<td>33.23</td>
<td>1.04</td>
<td>0.30</td>
<td>1.00</td>
</tr>
<tr>
<td>Doctoral student-master's degree holder</td>
<td>19.90</td>
<td>28.10</td>
<td>0.71</td>
<td>0.48</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.

Asymptotic significances (2-sided tests) are displayed. The significance level is .050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.
Appendix 11 Kruskal-Wallis test of respondents' locations and priority of attributes

<table>
<thead>
<tr>
<th></th>
<th>Kruskal-Wallis H*</th>
<th>df</th>
<th>Asymp. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Abilities</td>
<td>1.743</td>
<td>2</td>
<td>0.418</td>
</tr>
<tr>
<td>Cultural sensitivity</td>
<td>2.220</td>
<td>2</td>
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</tr>
<tr>
<td>Management</td>
<td>3.611</td>
<td>2</td>
<td>0.164</td>
</tr>
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<td>Environmental literacy</td>
<td>5.188</td>
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<td>0.075</td>
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<td>Thinking proficiency</td>
<td>6.947</td>
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<td>0.031</td>
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<td>Language proficiency</td>
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</tr>
<tr>
<td>Work experience</td>
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<td>0.051</td>
</tr>
<tr>
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<td>Personal abilities</td>
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</tr>
<tr>
<td>Researching</td>
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<td>0.074</td>
</tr>
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<td>0.163</td>
</tr>
<tr>
<td>Resilience</td>
<td>3.763</td>
<td>2</td>
<td>0.152</td>
</tr>
</tbody>
</table>

*Grouping variable: Regions of the respondents
Appendix 12 The priority ranking order of the graduate attributes based on the FGD participants' rating from two dimensions.

<table>
<thead>
<tr>
<th>Graduate Attributes</th>
<th>Frequencies in Important (Y)</th>
<th>Frequencies in Impact (X)</th>
<th>Mean score of Y ($\mu_Y$)</th>
<th>Mean score of X ($\mu_X$)</th>
<th>Priority Score ($\mu_Y \times \mu_X$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H</td>
<td>M</td>
<td>L</td>
<td>H</td>
<td>M</td>
</tr>
<tr>
<td>Thinking proficiency</td>
<td>13</td>
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<td>0</td>
<td>12</td>
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</tr>
<tr>
<td>Social abilities</td>
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<td>0</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Personal abilities</td>
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<td>5</td>
<td>0</td>
<td>11</td>
<td>4</td>
</tr>
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<td>Management</td>
<td>11</td>
<td>2</td>
<td>2</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Resilience</td>
<td>9</td>
<td>5</td>
<td>1</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Professionalism</td>
<td>9</td>
<td>4</td>
<td>2</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Digital literacy</td>
<td>8</td>
<td>6</td>
<td>1</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Teaching</td>
<td>8</td>
<td>7</td>
<td>0</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Language proficiency</td>
<td>7</td>
<td>8</td>
<td>0</td>
<td>5</td>
<td>9</td>
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<td>Cultural sensitivity</td>
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<td>3</td>
<td>6</td>
<td>8</td>
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<tr>
<td>Researching</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Environmental literacy</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Work experience</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

($H = \text{High}, M=\text{Medium}, L=\text{Low}$)

Note: The table shows the descending order of priority rankings for the fourteen graduate attributes rated by 15 research participants from two FGDs. The colours in this table were generated by algorithm to help visualise the results – darker red means higher value (priority) and the greener ones shows the lower value (priority). The last column (Priority score) shows the degree of values with gradient shades - the darker the colour, the higher its priority value.
Appendix 13 Ranking tables for attributes from two dimensions

Appendix 13.1 Ranking of attributes from importance dimension (FGD participants).

<table>
<thead>
<tr>
<th>Graduate Attributes</th>
<th>N</th>
<th>Percentiles</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>25th</td>
<td>50th (Median)</td>
</tr>
<tr>
<td>thinking proficiency</td>
<td>15</td>
<td>3.00</td>
<td>3.00</td>
</tr>
<tr>
<td>social abilities</td>
<td>15</td>
<td>2.00</td>
<td>3.00</td>
</tr>
<tr>
<td>personal abilities</td>
<td>15</td>
<td>2.00</td>
<td>3.00</td>
</tr>
<tr>
<td>management</td>
<td>15</td>
<td>2.00</td>
<td>3.00</td>
</tr>
<tr>
<td>teaching</td>
<td>15</td>
<td>2.00</td>
<td>3.00</td>
</tr>
<tr>
<td>resilience</td>
<td>15</td>
<td>2.00</td>
<td>3.00</td>
</tr>
<tr>
<td>professionalism</td>
<td>15</td>
<td>2.00</td>
<td>3.00</td>
</tr>
<tr>
<td>digital literacy</td>
<td>15</td>
<td>2.00</td>
<td>3.00</td>
</tr>
<tr>
<td>language proficiency</td>
<td>15</td>
<td>2.00</td>
<td>3.00</td>
</tr>
<tr>
<td>environmental literacy</td>
<td>15</td>
<td>2.00</td>
<td>2.00</td>
</tr>
<tr>
<td>research knowledge and skills</td>
<td>15</td>
<td>1.00</td>
<td>2.00</td>
</tr>
<tr>
<td>cultural sensitivity</td>
<td>15</td>
<td>2.00</td>
<td>2.00</td>
</tr>
<tr>
<td>entrepreneurship</td>
<td>15</td>
<td>1.00</td>
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<tr>
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<td>15</td>
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<td>2.00</td>
</tr>
</tbody>
</table>

Appendix 13.2 Ranking of attributes from potential impact dimension (FGD participants).

<table>
<thead>
<tr>
<th>Graduate Attributes</th>
<th>N</th>
<th>Percentiles</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>25th</td>
<td>50th (Median)</td>
</tr>
<tr>
<td>social abilities</td>
<td>15</td>
<td>2.00</td>
<td>3.00</td>
</tr>
<tr>
<td>cultural sensitivity</td>
<td>15</td>
<td>2.00</td>
<td>3.00</td>
</tr>
<tr>
<td>management</td>
<td>15</td>
<td>2.00</td>
<td>3.00</td>
</tr>
<tr>
<td>environmental literacy</td>
<td>15</td>
<td>2.00</td>
<td>2.00</td>
</tr>
<tr>
<td>thinking proficiency</td>
<td>15</td>
<td>3.00</td>
<td>3.00</td>
</tr>
<tr>
<td>language proficiency</td>
<td>15</td>
<td>2.00</td>
<td>2.00</td>
</tr>
<tr>
<td>work experience</td>
<td>15</td>
<td>1.00</td>
<td>2.00</td>
</tr>
<tr>
<td>digital literacy</td>
<td>15</td>
<td>2.00</td>
<td>2.00</td>
</tr>
<tr>
<td>personal abilities</td>
<td>15</td>
<td>2.00</td>
<td>3.00</td>
</tr>
<tr>
<td>research knowledge and skills</td>
<td>15</td>
<td>2.00</td>
<td>2.00</td>
</tr>
<tr>
<td>entrepreneurship</td>
<td>15</td>
<td>1.00</td>
<td>2.00</td>
</tr>
<tr>
<td>teaching</td>
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</tr>
<tr>
<td>professionalism</td>
<td>15</td>
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<tr>
<td>resilience</td>
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</table>
Appendix 14 Comparison of tables showing ranking order of graduate attributes in four different tests

<table>
<thead>
<tr>
<th>Online Survey (N=417)</th>
<th>Mean score of follow-up survey (N=15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank</td>
<td>Graduate attributes</td>
</tr>
<tr>
<td>1</td>
<td>Professionalism</td>
</tr>
<tr>
<td>2</td>
<td>Thinking proficiency</td>
</tr>
<tr>
<td>3</td>
<td>Personal abilities</td>
</tr>
<tr>
<td>4</td>
<td>Social Abilities</td>
</tr>
<tr>
<td>5</td>
<td>Management</td>
</tr>
<tr>
<td>6</td>
<td>Digital literacy</td>
</tr>
<tr>
<td>7</td>
<td>Cultural sensitivity</td>
</tr>
<tr>
<td>8</td>
<td>Resilience</td>
</tr>
<tr>
<td>9</td>
<td>Environmental literacy</td>
</tr>
<tr>
<td>10</td>
<td>Teaching</td>
</tr>
<tr>
<td>11</td>
<td>Work experience</td>
</tr>
<tr>
<td>12</td>
<td>Researching</td>
</tr>
<tr>
<td>13</td>
<td>Language proficiency</td>
</tr>
<tr>
<td>14</td>
<td>Entrepreneurship</td>
</tr>
</tbody>
</table>

Follow up survey - Importance (N=15) | Follow up survey - Impact (N=15) |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank</td>
<td>Graduate attributes</td>
</tr>
<tr>
<td>1</td>
<td>thinking proficiency</td>
</tr>
<tr>
<td>2</td>
<td>social abilities</td>
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<tr>
<td>3</td>
<td>personal abilities</td>
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<tr>
<td>4</td>
<td>management</td>
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<tr>
<td>5</td>
<td>teaching</td>
</tr>
<tr>
<td>6</td>
<td>resilience</td>
</tr>
<tr>
<td>7</td>
<td>professionalism</td>
</tr>
<tr>
<td>8</td>
<td>digital literacy</td>
</tr>
<tr>
<td>9</td>
<td>language proficiency</td>
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<tr>
<td>10</td>
<td>environmental literacy</td>
</tr>
<tr>
<td>11</td>
<td>research</td>
</tr>
<tr>
<td>12</td>
<td>cultural sensitivity</td>
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<tr>
<td>13</td>
<td>entrepreneurship</td>
</tr>
<tr>
<td>14</td>
<td>work experience</td>
</tr>
</tbody>
</table>
Appendix 15 An example of draft concept map during coding and categorising in NVivo