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CareOurEarth Archives



A HANDBOOK OF ENVIRONMENTAL EDUCATION



www.careourearth.com

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First edition

Edited by Alan C. W. Wang

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CareOurEarth Archives is published by Earth Scientific Press Limited. It is a regularly updated communication product that delivers and spreads the latest information and knowledge about the triple planetary crises—climate change, pollution, biodiversity loss—and other environmental challenges, with an aim to promote sustainable development and human health.

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About CareOurEarth

CareOurEarth is a short name for Care for Our Mother Earth. It comprises a blog and news website - CareOurEarth.com - and a communication product - CareOurEarth Archives.

CareOurEarth.com is a home-based blog and news website launched in December 2017. It is also a platform dedicated to raising, spreading, and promoting public awareness of our earth's emerging environmental challenges and problems.

“Earth, with all its life, is our only home.” It is unique and irreplaceable. With rapid industrialization, urbanization, and overconsumption driven by population explosion in recent decades, unfortunately, our humanities are disrupting our planet and jeopardizing our future by trashing our living environment and exhausting natural resources. Unprecedentedly, we face many environmental challenges and crises, including air pollution, climate warming, extreme climate events, freshwater scarcity, land degradation, deforestation, biodiversity loss, species extinction, sea level rise, ocean acidification, etc. All these problems threaten our health, our lives, and our generation's wellbeing.

Tackling or overcoming these challenges successfully or effectively will only happen if we all work together—policymakers, scientific researchers, academic professionals, environmental activists, social advocates, technological innovators, business managers, and general citizens. This requires shared knowledge, information, and understanding of emerging environmental and social challenges, essential for our efforts and actions.

CareOurEarth.com aims to aggregate, produce, deliver, and share the latest environmental knowledge and evidence-based information to promote public awareness of the planet's challenges, increase understanding of the importance of modifying our lifestyle and behaviors, and inspire efforts or actions to achieve sustainable development goals. It is intended to facilitate the interaction of natural and social knowledge or information, foster a commitment to significant social changes, inspire citizens' engagement in addressing environmental challenges, and make our world and societies better and sustainable.

CareOurEarth Archives is a data-driven reference that provides quick, easy access to vital information about the triple planetary crises, environmental issues, and sustainable development challenges. It is an informative communication product that can be used as a handbook for environmental education. It is published for the first time in April 2024 and will be updated annually or biannually to provide up-to-date knowledge and information.

Both CareOurEarth.com and CareOurEarth Archives are founded and edited by Dr. Alan C. Wang and operated by Earth Scientific Press Limited – a startup company with limited liability, incorporated in Hong Kong in October 2018.

Please visit <https://www.careourearth.com>

Introduction of **The Founder**

Dr. Alan C. W. Wang is the founder of the website careouearth.com, the founding editor of CareOurEarth Archives, and the founding director of Earth Scientific Press.

Dr. Wang graduated from a medical college in 1985. He obtained a master's degree in ophthalmology in 1991. In the late 1980s and throughout the 1990s, Dr Wang worked as a medical doctor. In the early 2000s, he was awarded a post-graduate diploma in public health (PGDipPH) and a Ph.D. degree in social sciences by the University of Hong Kong.

From 2007 to 2017, Dr. Wang worked in Hong Kong as a psycho-social researcher. During that period, he published over thirty research articles on quality of life, bioethics, disaster relief, body-mind intervention, and population health. As of April 2024, his research articles have been cited over 3300 times in total, according to Google Scholar. A notable and relevant one of his publications is the article entitled “Prevalence and Trajectory of Psychopathology among Child and Adolescent Survivors of Disasters: A Systematic Review of Epidemiological Studies Across 1987–2011” (Social Psychiatry and Psychiatric Epidemiology 2013: 48, 1697-1720). This article focuses on natural disasters from a global perspective and has been widely cited.

In December 2017, Dr. Wang built the website careouearth.com, initially out of concern about air pollution and then concerns about “triple planetary crises” - climate change, various pollution, biodiversity loss – and other environmental issues at the global or regional levels. Since then, his interest and focus have shifted from psycho-social issues to ecological challenges. He dedicated his time to promoting environmental sustainability and population health.

In October 2018, Dr. Wang registered the Earth Scientific Press Limited in Hong Kong. It is a single-member startup company, a self-publishing platform, and an entity running the website careouearth.com. In April 2024, he published the first edition of CareOurEarth Archives – an informative communication product for environmental education.

PREFACE

Dr. Alan C. W. Wang

Earth is our mother. Earth is our home. It is the only planet we can live on. However, our planet is facing multiple interconnected crises caused by human activities, such as global warming, air pollution, biodiversity loss, environmental degradation, and resource depletion. Since 1970, our humanity's consumption of natural resources has outstripped what our earth could reproduce. In recent years, humanity's annual demand for natural resources is equivalent to that of more than 1.7 Earths [1]. Our planet's resources are being depleted, and our living environment is being polluted or destroyed, affecting our humanity and all species.

In 2021, the United Nations Educational, Scientific and Cultural Organization (UNESCO) launched a campaign – Learn for Our Planet - calling on the world “to invest in education for sustainable development and ensure that it is embedded in learning systems globally” [2]. Given the exploding volume of knowledge and information related to climate change, ecological systems, environmental problems, and sustainable development, developing a theoretical framework to integrate multidisciplinary knowledge for ecological education and learning is a great challenge. To enhance awareness of sustainable development challenges, the framework should address not only environmental but also social and economic unsustainable practices.

Although the United Nations has announced a framework entitled “Education for Sustainable Development: Towards Achieving the Sustainable Development Goals” (ESD for 2030) through resolutions A/RES/74/223 and A/RES/76/209, its structure and content remain vague. This framework is developed at the policy rather than the educational practice level. Thus, a suitable and practicable framework for environmental education is needed. The present article aims to introduce an ideal framework, CareOurEarth, to fill this knowledge gap. This framework can effectively integrate multidisciplinary knowledge and information relevant to climate, environment, socioeconomic practice, and sustainable development into environmental education at every level.

Environmental information is scattered and fragmented

As a result of rapid industrialization, urbanization, and overconsumption driven by population explosion in the past century, our planet is facing a wide range of environmental challenges or crises, including global warming, air pollution, biodiversity loss, deforestation, extreme climate events, freshwater scarcity and pollution, land degradation, marine pollution, ocean acidification, sea level rise, species extinction, and resource depletion. These problems are destroying our living environment, threatening our health and life, and jeopardizing our future. Climate change, pollution, and biodiversity loss are evident almost everywhere and encoded by the United Nations as the "triple planetary crises." The presence and extent of other environmental problems may vary in different regions, areas, and countries.

Given the increased attention paid to the planetary crises and increased investment in global sustainability in recent years, environmental knowledge is exploding, and the related information is rapidly updating. On the other hand, environmental data are scattered and fragmented. Few communication products or books can cover all aspects of the knowledge and information relevant to climate change, environmental problems, and unsustainable practices. Consequently, many people have not been fully informed of our planet's and humanity's challenges. Even professionals and scholars may be familiar only with a few environmental issues within their expertise and do not have sufficient knowledge about and awareness of

other environmental challenges. Thus, environmental education is needed, as called by the United Nations in SDG Target 4.7, to “ensure that all learners acquire the knowledge and skills needed to promote sustainable development.”

Every year, numerous research articles, scientific books, and international reports in related fields are published. However, they may be abstruse or not easily understandable for many people, particularly for youths, students, non-professionals, amateurs, and laypersons. Even professionals or scholars may have little time or interest in reading those articles, books, and world reports that fall outside the scope of their expertise. For most people, news articles, factsheets, graphics, videos, and social networking platforms are the primary sources they can receive relevant knowledge and information. However, information from these sources is quite fragmented. It is usually not comprehensive and systematic. Some people eager to know more may need to search the internet. Such an effort may be pretty time-consuming and sometimes confused with misinformation and disinformation.

All these obstacles may make it difficult for people to understand our planet's and humanity's challenges. Thus, a framework that can integrate multidisciplinary knowledge and information will be useful for developing relevant communication products for environmental education. A high-quality communication product can not only promote learning about planetary challenges but also meet diverse interests.

The green movement is a flag rather than a framework

Green movement is a social and environmental movement that addresses environmental concerns through advocacy and activism. It is an international movement that aims to raise public awareness, preserve the environment, reduce pollution, and minimize the destruction of the Earth's natural habitat. The movement encompasses thousands of grassroots nonprofit organizations, various political parties, numerous professionals, and millions of individual advocates operating at international, national, and local levels. It is led by mass environmental advocacy organizations such as Greenpeace and Friends of the Earth. They are the two largest international networks of environmental groups in the world.

Environmental protection and conservation began in the late 19th century, out of concerns for increased levels of smoke pollution caused by coal consumption, industrial chemical discharges from emerged factories, and the large volume of untreated human waste produced during the Industrial Revolution [3]. In the early 20th century, the environmental movement grew in popularity and recognition. Its focus also extended to wilderness protection, wildlife preservation, forest conservation, and recycling waste products (such as glass, paper, and plastics).

Since 1970, the word or color “green” has been widely used, following the formation of an international nonprofit organization – Greenpeace, to describe various environmental protection and conservation attempts, efforts, and activities. “Green” stands for the natural world and a peaceful future. The green movement has gained rapid speed of growth around the world since then. The development of the green movement reflected widespread and scientific concerns about global, regional, and local degradation of the natural environment. It is customary for numerous nonprofit organizations and mainstream political parties to adopt green agendas as part of their developmental or electoral strategies.

A notable feature of the green movement is that it often uses nonviolent and creative confrontation or protest to expose environmental problems, raise public awareness, and advocate for solutions to environmental issues. Another feature may be its remarkable success in motivating volunteer work to protect and conserve the natural environment. The weakness of the traditional green movement may be its limited role in advocating and nurturing solutions for climate warming [3]. Given its focus on the natural environment, the conventional green movement plays little role in addressing social and economic unsustainable practices. As a result, membership in large environmental protest groups has declined in recent years. Thus, the green movement is a flag for environmental protection rather than a framework for policymaking and environmental education.

Global Agenda for Sustainable Development Goals is a framework for policymaking

The Global Agenda for Sustainable Development Goals is a framework designed by the United Nations to "transforming our world." It adopts "a comprehensive, far-reaching and people-centered set of universal and transformative sustainable development goals and targets", with a mission of "achieving sustainable development in its three dimensions—economic, social and environmental—in a balanced and integrated manner" [4]. It is the first framework that has integrated multidisciplinary knowledge and information, with parts related directly to environmental issues, climate change, and sustainable development.

This framework has its roots in the World Commission on Environment and Development, created by the United Nations in 1983, which defined "sustainable development" for the first time as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." In 1992, the first Agenda for Environment and Development, Agenda 21, was adopted in the first United Nations Conference on Environment and Development. This agenda was grouped into four sections to achieve global sustainable development goals by 2000. Agenda 21 was then replaced by the Millennium Development Goals (MDGs) in 2000 – which has eight goals for 2015. Subsequently, the United Nations implemented the 2030 Agenda for Sustainable Development Goals, starting from 2016, to replace the MDGs. It is not doubtful that the 2030 Agenda will be replaced by a post-2030 or 2050 agenda for sustainable development goals several years later.

The 2030 Agenda has 17 sustainable development goals (SDGs), with 169 associated targets. Eight SDGs are closely linked to environment, climate, and sustainable development: SDG 6 - clean water and sanitation, SDG 7 - affordable and clean energy; SDG 9 - industry, innovation and infrastructure; SDG 11 - sustainable cities and communities; SDG 12 - responsible consumption and production; SDG 13 - climate action; SDG 14 - life below water; and SDG 15 - life on land. Additional eight SDGs address social and economic issues: SDG 1 - no poverty; SDG 2 - zero hunger; SDG 3 - good health and well-being; SDG 4 - quality education; SDG 5 - gender equality; SDG 8 - decent work and economic growth; SDG 10 - reducing inequalities; and SDG 16 - peace, justice, and institutions. The last goal (SDG 17) focuses on partnerships for the SDGs. The 17 SDGs are a universal call to action to protect the environment, address climate change, end poverty, and ensure a peaceful and prosperous future.

Scholars have identified some flaws in the design of the 2030 Agenda SDGs, such as too many goals, a non-hierarchical structure of the goal framework, a weak emphasis on environmental sustainability, etc. [5]. Some scholars have criticized the SDGs for failing to recognize that planetary, people, and prosperity concerns are all part of one earth system [5]. Most importantly, the SDGs focus on plans and goals rather than status and evidence. They are not data-based and thus not informative or interesting enough. The SDGs seem complex and not readily or thoughtfully understandable for many people. Even professionals, scholars, and policymakers may only be familiar with a few SDGs and targets that fall within the scope of their expertise. Given the wide range of fundamental issues addressed and their focus on goals, the SDGs are not a practicable framework for environmental education. Instead, the SDGs are the proper framework for policymaking and an outstanding guideline for legislation.

CareOurEarth is an ideal framework for environmental education

Care for Our Mother Earth Campaigns have been widely underrecognized, unlike well-known green movement. They are diverse scientific, social, and educational attempts and activities that address the concerns about environmental sustainability through research, advocacy, and education, with primary focuses on the "triple planetary crises" - climate change, pollution, and species extinction. They are an international movement, represented by the organizations of the United Nations system, nonprofit think tanks, non-governmental organizations, educational bodies, private sectors, scholars, scientists, professionals, and individual advocates. With increasing concerns about global warming and other environmental challenges, more and more people and organizations are getting involved in the Care for

Our Mother Earth Campaigns.

The root of Care for Our Mother Earth Campaigns can be traced back to as early as 1970 when International Mother Earth Day was created. In 1992, the Earth Summit, also known as the United Nations Conference on Environment and Development, was held. In 1995, the Earth Institute was established at Columbia University. The institute aims to address complex issues facing the planet and its inhabitants, focusing on sustainable development. It is the world's largest institute of this type, with more than twenty research units. In 2005, former U.S. Vice President Al Gore founded The Climate Reality Project, a non-profit organization devoted to spreading the truth about the climate crisis. The UNEP established an annual awards program - Champions of the Earth - to recognize outstanding leaders with significant contributions to environment protection.

In 2006, Earth Overshoot Day was calculated by the Global Footprint Network. In 2007, Earth Hour was established on the last Saturday of March. In 2012, the United Nations launched Future Earth, an international research program. Other well-known organizations include Earthjustice (the most significant environmental law organization founded in 1971), Pure Earth (founded in 1999 to fight against global toxic pollution), Earth Champions Foundation (founded in 2000 to nurture and protect the environment), Earth Rights Institute (founded in 2002 to build sustainable communities in the world's poorest regions), and Berkeley Earth (founded in 2010 to address concerns about global warming). Apart from these bodies, thousands of organizations focusing on the triple planetary crises and our planet's sustainable development have been established worldwide in past three decades.

The term "Care for Our Mother Earth Campaigns" has not been widely recognized so far as it is often viewed as a faction of the green movement. However, there are differences between them. Traditional green movement was led by grassroots green organizations, such as Greenpeace and Friends of the Earth. Its programs usually focus on environmental issues at regional or local levels. Care for Our Mother Earth Campaigns are often initiated by scientists, scholars, and non-profit think tanks and coordinated by related organizations of the United Nations, such as IPCC. They address planetary crises. Unlike the traditional green movement, which usually uses direct action and advocacy to achieve its goals, Care for Our Mother Earth Campaigns focus on producing knowledge, nurturing innovative solutions, and promoting environmental education. A hierarchy of three models for sustainable development is shown in Figure 1. Nowadays, many mass green organizations have also engaged in Care for Our Mother Earth Campaigns.

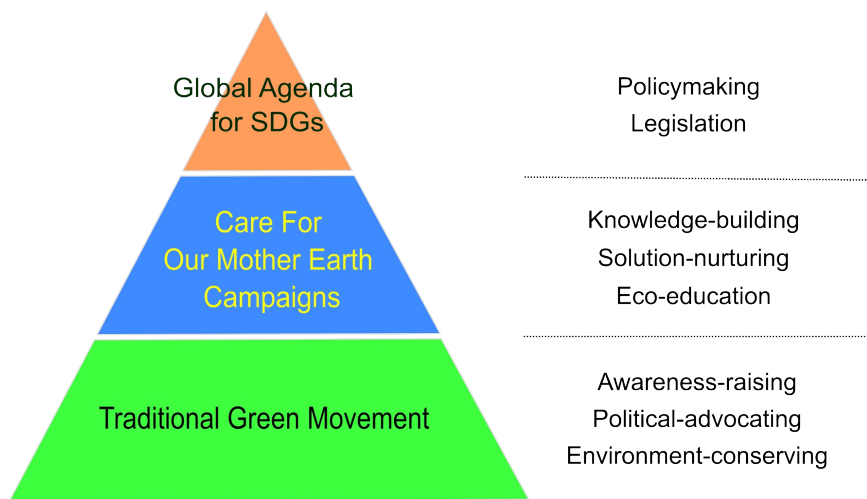


Figure 1. A hierarchy of three models for sustainable development

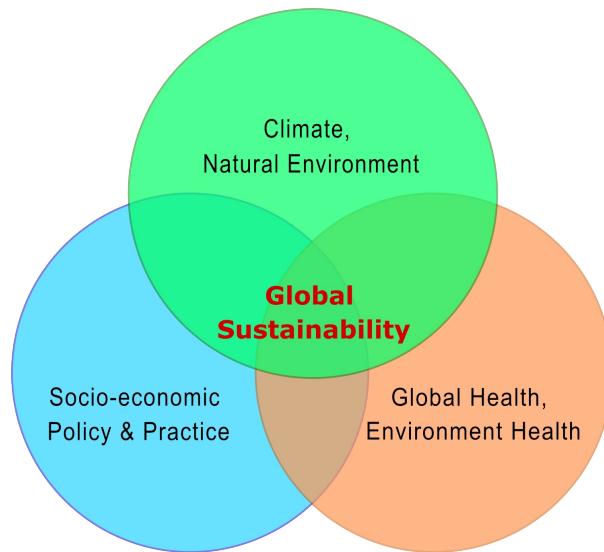


Figure 2. Interrelated dimensions of environmental education

CareOurEarth, a short name for Care for Our Mother Earth, is an ideal framework for environmental education. “Care” refers to socio-economic policies and human activities or behaviors, and “Earth” represents the natural environment or ecological systems. “Our” indicates a dynamic interaction between humanity and the natural environment. This framework represented diagrammatically in Figure 2 consists of three crucial dimensions of sustainable development: natural environment, socio-economic policies, and public health concerns. Each dimension comprises different categories. All these categories are inextricably bound to the core content of sustainable development. Unlike the structure of SDGs, this framework puts social and economic issues into one dimension. Instead, it includes an additional dimension – global health, which can be viewed as a collection of impact assessment measures.

CareOurEarth is an innovative framework for environmental education. It recognizes that the natural environment, humanity, species, and prosperity are all part of one earth system. This framework can integrate multidisciplinary and interdisciplinary knowledge or information effectively. It forms a basis for linking any specific topic, either an environmental issue or a socio-economic practice, into a coherent and progressive discussion of sustainable development. The framework can help to promote transformative education, enhance public awareness of global challenges, and call for responsible actions to promote environmental sustainability.

CareOurEarth Archives is the proper handbook for environmental education

In 2019, the United Nations General Assembly adopted a resolution (A/RES/74/223), calling on the international community to scale up education for sustainable development. Several innovative education programs, such as Education for Sustainable Development (ESD), Climate Change Education (CCE), Global Action Program (GAP), and Science Education (SE), have also been implemented by the United Nations in past years [6]. UNESCO has stated that environmental education is critical in addressing the issue of climate change, enhancing public awareness of environmental challenges, and safeguarding future global development.

UNESCO urges to make environmental education a core curriculum component in all countries [7]. A study supported by the UNESCO has analyzed educational plans and curricula frameworks in nearly 50 countries across all regions and found that more than half do not refer to environmental issues and climate change [7]. Scholars have criticized the current efforts on environmental education as insufficient to “reach

This version is for preview. Thank you for reading it. Welcome to read the full version of this handbook.