

BOOK REVIEWS

Environmental Science

G. Tyler Miller & Scott E. Spoolman Brookes/Cole, Belmont, USA, 14th edition, 2013, 411 pp, ISBN 978-1-111-988937
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In the preface to their book *Environmental Science*, Miller and Spoolman introduce the reader to several key words that resonate through their work — ‘explain’, ‘understand’, ‘evaluate’ and ‘inspire’. In providing a learning resource that focuses on developing an understanding of how our planet works, the problems we face and how those problems might be addressed — and presenting these issues using sustainability as an ‘integrating theme’ — Miller and Spoolman have delivered a compelling piece of work.

This beautifully presented book provides an introduction to environmental science using an interdisciplinary approach that brings together the environmental, economic and socio-cultural sustainability issues of our time. The book uses a combination of informative text, illustration, case studies, critical thinking, practical activities and key concepts to explore the clear links between how humanity interacts with its environment, and the increasingly severe impacts associated with this relationship.

Miller and Spoolman’s work is wide-ranging and extensive in its coverage, but carefully crafted so as to avoid overwhelming both instructors and students, given this is designed as an introductory text. This makes a welcome change from many publications during recent years in the environmental and sustainability fields, where there is sometimes an over-emphasis on climate change, to the exclusion of other equally important topics.

The authors make use of high-quality photographs and various types of graphics such as charts, diagrams, pictorial models and maps to reinforce the messages and concepts contained in the text. Some images are confronting — such as that of the dead white rhinoceros with its horns cut off, a victim of poachers, on page 163; and the homeless mother and child lying on the street on page 106. These encounters in the book challenge the reader to carefully and honestly examine their own beliefs, understandings and practices as potential future career environmental scientists of different specialisations. However, this material is carefully balanced with various tips about solutions that the reader can put in place in the home environment in particular — this is important in dispelling any sense of defeatism. While the book does focus on the United States, it is global in content.

The book is organised into five parts. The first section provides an overview of the concepts of sustainability, ecology, natural capital, the linkages between environmental

problems and costs, and impacts on society. It also provides a vision of what a more sustainable society might look like. The key message is the simple fact that the way in which humanity interacts with its environment is unsustainable, and that the consequences of not addressing the problems we face will ultimately be catastrophic. The three principles of sustainability, which effectively anchor the rest of the book, are also introduced — reliance on solar energy, biodiversity, and chemical cycling.

The second section examines the fundamentals of science, matter and energy, and explores how ecosystems work. A refreshing aspect of this section in particular is the obvious effort invested by the authors in debunking many of the myths associated with issues such as solar energy, natural gas, desalinisation and nuclear power, by taking an advantage/disadvantage approach to their presentation, as well as examining critical aspects such as cost, inputs and outputs/wastes. This groundwork is then used to focus the rest of the section on issues of biodiversity and evolution, human population and urbanisation, and finally how climate works, and its effects on different types of ecosystems. The third section focuses the reader on biodiversity as a key principle of sustainability, and two different approaches to understanding biodiversity — from a species perspective, and from a systems perspective.

The fourth section takes the reader back to more basic issues of science such as food, soil, water and energy. This section is effectively the key link between the first three sections and the last section of the book as it transitions from basic science through to how societies use resources, into waste generation and management, and consequently, the direct impacts on the very societies that utilise natural resources in the first place. The cyclical nature of this section is key to understanding the highly interlinked disciplines that are sustainable practice and environmental management.

The final section of the book examines the linkages between our economic and political systems, and the natural capital of our planet. Central to this section is how our market systems can be used to drive sustainable practice and responsible environmental management in our societies. The section concludes with an exploration of how individuals can live more sustainably and act collectively to initiate and drive change in how we interact with the world we live in.

The book touches briefly in the final section on different environmental worldviews, presenting a balanced account of critics' perspectives on the interactions between humanity and its environment. These range from the planetary management focus on unlimited growth provided that the appropriate technological and management systems are in place, through to the environmental wisdom perspective that recognises society as a subset of a larger environmental 'whole' to which it must respond appropriately. However, this material may have been more effectively located in the overview section of the book.

Overall, the work makes it clear that environmental practitioners and scientists of all types have a role to play in creating and maintaining sustainable societies. However, the book also provides clear caveats that even the most responsible environmental management and sustainability practices are not without consequences — no solution is entirely impact-free.

Environmental Science sends a clear message to educators and students alike that we must change how we interact with and manage our world, and the natural resources which are the very foundation of our societies. The evidence of the need for change continues to accumulate — Miller and Spoolman's updated work should be viewed as a portal to the field of environmental management and sustainable practice for both educators and students who wish to be inspired.

Reviewer Biography

Lorne Butt is a PhD candidate in sustainable practice at Macquarie University's Graduate School of Management. She has worked for over 12 years across the areas of corporate governance, strategic planning, project management, quality management and audit, risk management, sustainability, international education, and occupational health and safety. Lorne is a Director, and Company Secretary, of the Institute for Sustainable Leadership Ltd. Lorne also holds the role of Ecological Sustainability Coordinator with TAFE Western in NSW, and is a member of the Advisory Board of the Institute for Land, Water and Society at Charles Sturt University.

Learning Gardens and Sustainability Education: Bringing Life to Schools and Schools to Life

Dilafruz R. Williams and Jonathan D. Brown Routledge, New York, 2012, 227 pp, ISBN 978-0415899826
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Reviewed by Monica Green, Monash University (Gippsland), Victoria, Australia

In addition to the proliferation of school garden literature over the past decade, *Learning Gardens and Sustainability Education* brings a new theoretical framework to food garden discourses. Unlike other books, *Learning Gardens* takes up a critical, ecological and pedagogical lens to explain learning that occurs through gardening and growing food. Throughout the book, living soil is situated as a metaphor and central theme that drives and enables curriculum to advance children's understanding of broader ecological and social systems. Through discourses of human/more than human, sustainability, and ecology/culture the book uses new metaphoric language to disrupt traditional approaches to teaching and learning, which are replaced with whole-system methods.

The book is divided into three sections that examine the significance of gardens as learning sites, the pedagogical implications of learning gardens, and the practical application of garden-based frameworks via specific case studies that portray the perspectives of teachers, principals and the broader community.

Part I: *Learning Gardens, Living Soil, and Sustainability Education* provides a rigorous literature review on sustainability education and its varying definitions, the history and current trends of school gardens, and the role of curriculum for learning gardens. Mechanistic and dominant approaches underpinning current educational systems (for example, competitive, decontextualised and individualistic) are troubled and emphasised as incongruent with 'living systems and sustainability'. In asking: where is the learning in learning gardens, the authors examine the design and implementation of curricula and pedagogy that successfully integrates school gardens into the broader curriculum. The integrated approaches offered within the book provide educators with explicit examples of how a range of cross-curricula subject areas can be woven into garden-based learning.