Biology Education for Social and Sustainable Development
Biology Education for Social and Sustainable Development

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FOREWORD

The Asian Association for Biology Education (AABE) has held its meetings in many Asian countries. Its 2010 meeting in Singapore is the second time AABE meets in this garden city. I am pleased the university’s National Institute of Education (NIE) was able to partner the AABE to co-organise the conference with AABE, and to host the conference on this beautiful campus. I believe the conference has opened further opportunities for future collaboration.

Biological sciences have advanced rapidly during the last decades. This new biocentury has made us more conscious than ever before of the social, economic, and environmental challenges that man faces in an increasingly urbanised, but ecologically interconnected global environment. Biological knowledge, as we all know, is intrinsically related to building a sustainable relationship between nature and human society. Hence the role of biology education needs to be rethought to respond to life in this century. The theme of the conference- Rethinking Biology Education for Social and Sustainable Development- was indeed timely and relevant for biologists and biology educators to discuss responsible and responsive roles for practitioners and researchers in biology education.

This publication of selected papers presented at the conference will further help disseminate the key ideas on sustainable development and biology education that were discussed at the conference to an even wider audience. I congratulate the contributors and editors for making this publication possible.

With best wishes,

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MESSAGE FROM THE EDITORS

In an era of globalization and urbanization, the world faces many social, economic, and environmental challenges as well as ethical problems around advances in biotechnology and biomedicine. Considering how biological knowledge is intrinsically related to building a sustainable relationship between nature and human society, the roles of biology education need to be thoroughly rethought to respond to issues and changes in life and the world in the twenty-first century.

A key measure of the value of an academic discipline is its capacity to offer perspectives and solutions that positively impact societies, communities and people beyond the confines of the classroom. How can biology be relevant across societies all over the world that face uniquely local conditions, but are also very much interdependent in today’s globalized world? Biology is undoubtedly a key discipline in understanding and responding to some of the most pressing issues of the day, from the many challenges arising from population growth, human impacts on ecosystems and services to climate change and sustainability.

The papers in this book were first presented at the 23rd Biennial Conference of the Asian Association for Biology Education (AABE) held at the National Institute of Education, Nanyang Technological University, 18–20 Oct 2010. To promote responsible and responsive roles for researchers and practitioners in biology education in the Asian region and beyond, the AABE 2010 Conference was intended to build a platform for Asian biologists and biology educators to: (i) identify current and future challenges in society and the environment, (ii) rethink the roles and goals of biology education to meet these challenges, and (iii) discuss possible frameworks and strategies for knowledge building and implementation. The theme of the conference, Biology Education for Social and Sustainable Development, further reflects the need for biologists and biology educators from diverse cultures and societies to come together to discuss several current issues under the subthemes of biology education curriculum and policy, teacher learning and education, student learning in K-12 levels, biology education at tertiary levels, environmental and social issues in biology, and assessment and evaluation.

The 42 papers in this book, Biology Education for Social and Sustainable Development, explore how biology education can contribute to social and sustainable development. They are organized around four main themes: (i) Visions and Challenges of Biology Education for Sustainability, (ii) Biology, Community and Higher Education, (iii) Teaching Practice and Student Learning of Biology and the Environment, and (iv) Developing Teacher Education and Biology Science Curriculum. The book is informative, stimulating, and thought-provoking to read, and is a useful resource for graduate seminar courses in science education and anyone interested in biology education in the region.

Because the concept of sustainable development is rooted in specific and unique local contexts, the case studies presented in this book offer valuable insights into the varied ways in which biology education can foster sustainability. A broad spectrum of issues is discussed, from the exploration of alternative fuel supplies in
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the Philippines, adult education programs that empower small farmers in Asia and bioentrepreneurship projects.

Several studies in this book also present recommendations on how to improve learning outcomes for students. They range from teaching students writing strategies to the use of advance organizers, the provision of timely and targeted feedback and the use of cues to facilitate inference, to cite a few. Studies were also done to assess the effectiveness of educational field trips to increase student interest in science and knowledge integration.

The development of teacher training programs and science curriculum is also discussed through case studies taken from countries such as China, South Korea, Thailand, Indonesia, Japan and Ukraine. The power a science teacher has to spark a thirst for learning and the core beliefs that guide a good science teacher are explored in those studies as well as the need for strategic professional development programs. Several researchers sound the call for reform of science curriculum and teaching methodologies to provide more relevant contexts for learning, and to foster meaningful collaboration amongst students and local communities.

The papers and studies presented here paint an exciting picture for the future of biology education in promoting sustainability. Critical reviews of the challenges highlight the possibilities for growth and positive case studies of effective collaboration point the way towards greater interdisciplinary integration and networking. Whether one is a science student, educator or field worker, the issues raised in this book will provoke thought and action towards fostering sustainability.

We thank the keynote speakers for their invited papers and authors for the contributed papers. It has been our pleasure to acknowledge and appreciate all your contributions to this publication. Your enthusiastic participation in the conference contributed richly to the discussions and at the same time extended and enlarged the existing network of biology educators, as well as helped propel biology education for social and sustainable development.

Rethinking and reconstruction of biology education in the Asia-Pacific region is increasingly grounded in deep understandings of what counts as valuable local knowledge, practices, culture, and ideologies for the global issues. Collaborative approach among us plays an undeniably significant role in those challenges and contributes to the richness and diversity of problem solving in Asia and around the world. It is our sincere hope that this publication will act as a catalyst to further promote education for sustainable development and enliven on-going discussions and collaborations among the community of science educators in the Asia-Pacific region and beyond. We look forward to opportunities for further collaboration in the near future.

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