

迈向新的世纪

21 世纪理科教育与师资培训 国际学术研讨会论文集

主 编 于燕京 副主编 熊术新 罗明东

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Preface

At the time when the world is striding into the 21st century, we are happy to see the convention of the International Conference of Science Education and Teacher Training, jointly hosted by Yunnan Normal University of People's Republic of China and La Trobe University of Australia. Experts and scholars from America, Thailand, Australia, and China are gathering together, with the whole world in view, to explore ways and possibilities of science education and teacher training for the new century. This book is a collection of the essays carefully chosen from the papers submitted to the conference. The book consists of four parts, each part with its own clear focus. Part One presents an introduction to the purpose and task of the conference and makes a fair comment on its achievement. Part Two takes a global view of science education, with its focuses on a comparative study of science education inside and outside of background in which science education is conducted. Essays in this part allow readers a view of the approach to such subjects as the coordination between science education and humanity, as well as modes and reforms of science education in terms of culture, history and philosophy. Part Three probes into curricula and reforms in teaching strategies. It records the heated discussion at the conference on the ways of teaching mathematics, physics, chemistry, computer science and ways of directing laboratory work. Part Four concentrates on the training of the basic potentials that are required for science teachers in the 21st century. In the essays of this part, readers can experience the

great foresight that the scholars show in their discussion, which covers the topics of the scholars show in their discussion, which covers the topics of the prerequisites for science teachers, as well as the contents and ways of teacher training against a background where new technology revolution, information technology, and trend of learning are prevailing.

This book is edited by Yu Yanijing, with Xiong Shuxin and Luo Mingdong as coeditors. We sincerely hope that the book will supply useful advice and reference for the administrators and teachers who work in the field of higher education.

Finally, to our readers, we wish to apologize for the unavoidable faults that may appear in the book due to the limited time for our compilation. Therefore we shall highly appreciate comments and criticisms of all kinds from our readers.

The Editor

March 6, 1998

前 言

在即将跨入 21 世纪的时候,云南师范大学和澳大利亚拉特布大学共同主办了“21 世纪理科教育与师资培训国际学术研讨会”。美国、泰国、澳大利亚、中国等国家的专家、学者聚集在云南师范大学,放眼全球,共同探讨 21 世纪理科教育和师资培训问题。本书是这次国际学术研讨会论文精选。全书分四个部分:第一部分是这次国际学术研讨会的介绍与评论,属导论性质;第二部分是对理科教育的全球展望,特别是中外理科教育师资培训的比较分析及国际背景的宏观分析,各国学者分别从文化学、历史学、哲学的角度,探讨了理科教育与人文科学教育的协调性问题、理科教育的模式以及理科教育改革等问题;第三部分是学科课程改革与实验研究,各国学者探讨了数学、物理、化学、计算机及实验教学问题;第四部分是 21 世纪理科教师素质展望。各国学者站在时代的制高点上,讨论了新技术革命、信息化、学习化背景下高师院校理科教师的素质、培训内容以及培训模式。

此文集由于燕京主编,熊术新、罗明东副主编。在本书编辑出版过程中,要感谢刘守兰教授在英文译、校方面所作的工作,张大群副研究员对书稿审阅修订所付出的心血,特别要感谢云大出版社的张丽华副编审、责任编辑陈季英同志为其顺利出版付出的劳动。

本书对教育行政部门和高等院校行政干部、教师具有重要的指导意义和参考价值。

由于水平有限,错漏定有不少,请祈指正。

编 者

1998.3.6

Striding Into the New Century

—A Collection of Thesis from the International Conference of Science Education and Teacher Training for the 21st Century

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第一部分 导 论

面向未来的教育

——21 世纪理科教育与师资培训

国际学术研讨会开幕词

李存俊

(中方主席,云南师范大学校长、教授)

女士们、先生们:

我很荣幸地在这享有“春城”美喻的昆明,欢迎远道而来的国内外朋友,共同来探讨面向 21 世纪理科教育与师资培训问题。

教育质量的提高与师资培训永远是我们教育工作者的话题。

理科教育是学校教育的重要内容,指导学生掌握科学知识和科学方法论,提高学生的科学素质,培养学生的创造性能力是学校教育的重要目标,也是理科教育的核心之所在。21 世纪是提高教育质量的世纪。理科教育水平是衡量学校办学成败的重要指标之一。这个世纪中叶以来,社会发展日新月异。新技术革命的爆发,信息化的高速发展,学习化社会的到来,对理科教育提出了严峻的挑战。理科教育内容的更新,科技发展、社会发展与教育发展的一体化,科学的大众化,科技教育与人文学科教育的协调性等等一系列问题突出出来;要求我们更新理科教育观,改革理科教育现状,根据 21 世纪的要求,调整理科教育目标,调整专业的结构,设计新的课程体系,更新、拓宽教学的内容,改革陈旧的教学方法,促进理科教育的新发展,以更好地适应新世纪的需要。

教师是教育活动的实施者。如果没有教师去落实,任何最美好的教学方案只是一纸空文。要培养高质量的人才,必须要有高质量的教师。教师的质量永远是教学质量的根本保证。时代在进