

ENGINEERING EDUCATION:
UNITED STATES AND JAPAN

PROCEEDINGS OF THE FOURTH U.S.-JAPAN SCIENCE POLICY SEMINAR

October 19-23, 1986, Honolulu, Hawaii

Editors:

Edward E. David and Takashi Mukaibo

National Science Foundation

Washington, D.C.

1988

PREFACE

The publishing of this volume of papers contributed by a distinguished group of Japanese and U. S. scholars represents fitting culmination to celebration of twenty-five years of Japan-United States cooperation in science. Most appropriately, the anniversary of the U. S.-Japan Cooperative Science Program was not purely ceremonial. The celebration was dominated by a substantive seminar with a fitting topic-- engineering education -- as suggested by the Japanese Co-Chairman, U. S.-Japan Committee on Scientific Cooperation, Dr. Takashi Mukaibo, and strongly supported by his U. S. counterpart, Dr. Bowen Dees.

Engineering education while perhaps the most studied of curricula, also has been the most adaptable -- in tune with the changing nature of technology and with engineering practice. This very adaptability made engineering education a lively and timely topic for the seminar. For example, concerns had grown in the United States that adequate attention had neither been paid to the subject of design and manufacturing, nor to life-long education.

Beyond these technology-driven issues, U. S. corporations, large and small, and government had begun to more insistently demand the "complete engineer" -- engineers with excellent communication skills, with management savvy, and with knowledge of the economic, social, and business ideas so heavily invoked by technological innovation. This meant a tall order for any curriculum or educational institution. This meant facing the issue of how much to include of these skills and lore, since training in these subjects was bound to displace technical subjects.

Even more critical than these and other concerns was the tradeoff between graduate and undergraduate education in engineering. Because both play central roles in preparing engineers for leadership in industry and government, this tradeoff became widely discussed in the United States during the first half of the 1980s.

These issues of engineering education set the agenda for a productive and congenial two-and one-half day seminar hosted by the National Science Foundation and the U. S. Department of State. Japanese and U. S. delegations learned from each other in that forum. This volume shares with policy makers, academics, and business persons the discussions and finding of this group.

Dr. Edward E. David
U. S. Organizer,
U. S.-Japan Engineering Education Seminar

ACKNOWLEDGMENTS

The U.S.-Japan Program of the National Science Foundation's International Division funded the seminar and preparation of this volume through contracts with SRI International, Washington, D.C. and the East-West Center in Hawaii. Special thanks go to the staff of the East-West Center for their skillful assistance during the meeting and in making arrangements. For SRI International, appreciation is expressed to Susan Owens for her helpful editing of the Japanese papers, and to Marie Brewer for her professional preparation of this manuscript for publication.