

2007 IEEE Meeting the Growing Demand for Engineers and Their Educators 2010-2020 International Summit

**Munich, Germany
9-11 November 2007**



IEEE Catalog Number: CFP07MGD-PRT
ISBN: 978-1-4244-1915-9

TABLE OF CONTENTS

IEEE Activities in Pre-University Engineering, Computing and Technology (ECT) Education	1
<i>Moshe Kam, Yvonne Pelham, Douglas Gorham</i>	
Teaching History of Electrotechnology to Combat Shortage of Engineers.....	7
<i>Jacob Baal-Schem</i>	
Educating a Nation's Engineers: A New Paradigm for Industry/Academia Cooperation.....	12
<i>V. Melikyan, G. Markosyan, H. Musayelyan, K. Bartleson, T. Wood, R. Goldman</i>	
A Flagship Joint Sino-British Engineering Degree	20
<i>Laurie Cuthbert, Yashu Ying, Na Yao, Dan Zhang</i>	
University Society Interface: A Case Study from Portugal and Spain.....	27
<i>Natália Fernandes Gomes</i>	
An Integral Model for Interleaving 21st Century Education with Career and Life Long Learning. Introduction to Historical Scope and Design Rational.....	33
<i>Evangelos M. Mylonas, P. K. Bouyouris</i>	
Developing Engineers; The Case of Electronics Education in English Schools	63
<i>David Barlex, Torben Steeg</i>	
Holistic Engineering and Educational Reform	73
<i>Domenico Grasso, Joseph J. Helble</i>	
Attractive Universities: New Curricula in Natural Sciences and Engineering.....	89
<i>Maria Elsner, Nicole Natho, Sabina Jeschke, Olivier Pfeiffer, Christian Schröder</i>	
Potential Remedies for Improving the Engineering Students' Learning Strategies at Thailand's Assumption University	96
<i>Kyi Kyi Tin, Min Aung</i>	
Teaching "Real-World" Design in the Classroom	109
<i>Daniel R. Sommers, Gustav Engbretson</i>	
Lack of Mathematical Knowledge and Skills of Students as a Problem for the Further Development of Modern Quantitative Geography	117
<i>A. Zaree, U. Wieczorek</i>	
Planting the Seeds of Change: K-12 Engineering Education	126
<i>Yvonne M. Spicer</i>	
Recruiting Future Engineers through Effective Guest Speaking in Elementary School Classrooms	139
<i>Kevin L. Young</i>	
Addressing the Demand for Engineers by Teaching Engineering to Counselors and Teachers	153
<i>G. Bruce Gehrig, Lyndon Abrams, Deborah Bosley, James Conrad, Stephen Kuyath</i>	
Generation NXT	166
<i>Richard Gale, Tanja Karp, Laura Lowe, Vickie Medina</i>	
Ways of Increasing the Pool of Technologists and Engineers, and the Role of the Teacher In-Service Training Program (TISP) in the Field of Technology and Engineering a South African Approach.....	179
<i>Nico Beute, Moloko E. Matlala</i>	

Futureintech: A Career in Technology, Engineering and Science	188
<i>Angela Christie, Laura Fergusson</i>	
How Industry Can Help Improve STEM Graduation Rates	193
<i>Renato Recio, Lisa Gable</i>	
Universities, Research Institutions, Industry & Schools Can Jointly Increase the Interest of Pupils in Engineering	213
<i>A. Schütze, A. Picard, B. Krämer, T. Conrad</i>	
Education and Human Resources Strategy for the Vision 2023 Technological Foresight Study of Turkey	221
<i>A. Hamit Serbest</i>	
Strategy for Training and Development of Engineering Manpower in Indian Context	234
<i>V. K. Sharma, Kavita Menon, Yogita M. Vaidya</i>	
Shortage of Engineers - A U. S. Government Contractor Perspective	242
<i>Thomas Decot, Mike Townshend</i>	
Modeling Student Interest in Science, Technology, Engineering and Mathematics	253
<i>Brian H. Wells, H. Alex Sanchez, Joanne M. Attridge</i>	
Aerospace Education Initiative of Hochschule Bremen	270
<i>Bernd Steckemetz, Christian Siegmund</i>	
The EEA (Electronic, Electrical and Automation Engineering) and Surface Transportation Platform: Education by Practice and Projects: The System Approach	276
<i>David Bouquain, Abdellatif Miraoui</i>	
The Making of Engineers: The Robot Challenge	285
<i>Neville Jacobs</i>	
Trends in Engineering Education	292
<i>Michael Wald</i>	
I'd Rather be a Hammer than a Nail	309
<i>Edward C. Epp</i>	
Meeting the Demand for Broadband Communications Engineers: The Role of Academia	323
<i>G. Lioudakis, I. O. Vardiambasis, K. Vassilakis, J. Kaliakatsos</i>	
Preparation of Teachers for a Rapidly Changing Technological World: Engineering in Teacher Education	333
<i>Holly Garrett Anthony, Darrell Garber, Glen Johnson</i>	
Attracting More Students with New Engineering Programs	347
<i>Jan A. van Alsté</i>	
SPARCS from the University of Victoria: Supporting Sustainable and Integrated Outreach Activities for Educators and Young Minds	350
<i>Jennifer Murdoch, Anissa Agah St. Pierre, Yvonne Coady, Sarah Carruthers, Celina Gibbs, Steven Lonergan, Gautam Srivastava, Ulrike Stege, Onat Yazir</i>	
Demand & Supply for Science and Technology Teachers at the Secondary and Tertiary Level within Jamaica and wider CARICOM Region	365
<i>Paul R. Aiken, Diane M. West</i>	
Rethinking of Engineering Education in China	381
<i>Hanbing Kong, Yangqiong Qiu</i>	
Attracting More Entrants into Engineering: The UK Perspective	388
<i>F. J. Maillardet, F. Martlando, R. C. S. Morling</i>	

Growing Demand of Educators in Electrical and Electronic Engineering	397
<i>Olivier Bonnaud</i>	
Future View of Engineers Education at the "College of Technology" in Japan	403
<i>Tomio Fujii</i>	
Educating 21st Century Engineers	405
<i>James Gover, Paul Huray</i>	
An Innovative Linkage of Curricula Design, Power Engineering Industries and Universities in Queensland Australia to Promote Engineering Education	435
<i>Nasser Hosseinzadeh, Steven Senini</i>	
Making Research Internships Work	443
<i>Roger Boyle, Joanna Briggs</i>	
Educational Application of Role-Playing and Simulation of Professional Environments Related to the Power Systems and the Electricity Market	452
<i>J. Carpio, G. Quejo, R. Guijado, M. Valcárcel, P. Simón, A. Santamaría, N. Acero, M. García-Lorenzo, R. Chacón, Q. Martín-Moreno, M. D. Fernández-Pérez</i>	
The Pupils' Laboratory Techlab: A Bridge Between School and Engineering Science	462
<i>Ole Gleiche, Holger Thye, Klaus Delto, Heyno Garbe</i>	
Meeting the Growing Demand for Engineers and Their Educators: The Potential for Open and Distance Learning	467
<i>Chris Bissell, Mark Endean</i>	
The "Inside Tech USA" Summer Course: A leadership Program that Offers New Qualifications for Engineers.....	485
<i>Romano Giannetti, Ramón R. Pecharromán, Christine Heller, José Herrero</i>	
Retraining Engineers for New Skills and Getting Jobs in a Modern World.....	488
<i>Donald K. Hsu</i>	
Industry Taking Control of its Future by Using Training as a Focus	499
<i>Diane Tompson</i>	
Engineering Über Alles; A Multi-System Approach to Educating and Developing Engineers.....	508
<i>Paul Stiefel</i>	
Needs and Examination of Strategies for Lifelong Learning in Engineering Education	517
<i>Ioannis Vardambasis, George Liodakis, Costas Petridis, Michael Tatarakis, John Kaliakatsos</i>	
CeTUSS (Centrum för Teknikutbildning i Studenternas Sammanhang): A National Center for Pedagogical Development in Technology Education from a Student Oriented Perspective	526
<i>Arnold Pears, Mats Daniels</i>	
Author Index	