Handbook of Research on Cloud-Based STEM Education for Improved Learning Outcomes

Lee Chao
University of Houston – Victoria, USA

A volume in the Advances in Educational Technologies and Instructional Design (AETID) Book Series

[Informotion Science] REFERENCE
An Imprint of IGI Global

Table of Contents

Preface xxiv

Section 1
Trends and Advances of Cloud-Based Teaching and Learning

Chapter 1
Strategic Planning for Cloud Computing Adoption in STEM Education: Finding Best Practice Solutions 1
Alan S. Weber, Weill Cornell Medical College in Qatar, Qatar

Chapter 2
Cloud Computing as a Catalyst for Change in STEM Education 12
John P. Sahlin, Coleman University, USA
Kim Lobera, Coleman University, USA

Chapter 3
The Emergence of Cloud Portfolio in Higher Education 31
Pooja Gupta, Uttaranchal University, India

Section 2
Development of Education Cloud Platform

Chapter 4
Strategies and Practice of Cloud-Based Learning Environment Implementation 42
Anwar Hossain Masud, Charles Sturt University, Australia
Xiaodi Huang, Charles Sturt University, Australia

Chapter 5
Designing, Developing, and Evaluating a Cloud-Based Laboratory for Online STEM IT Students.... 64
Dongqing Yuan, University of Wisconsin – Stout, USA
Brandon Cross, University of Wisconsin – Stout, USA

Chapter 6
Addressing Transport Layer Issues in Cloud Computing: A STEM Perspective 79
Claudio Estevez, Universidad de Chile, Chile

Chapter 7
Cloud-Based Social Media as LMS: A Fit for STEM in Developing and Newly Developed Economies
Matthew A. Eichler, Texas State University, USA
Las Johansen Balios Caluza, Leyte Normal University, Philippines

Chapter 8
A Cloud-Based Learning Platform: STEM Learning Experiences with New Tools
Rocael Hernandez Rizzardini, Galileo University, Guatemala
Christian Giitl, Graz University of Technology, Austria & Curtin University, Australia

Chapter 9
Context-Aware Cloud Computing for Personal Learning Environment
Feng Chen, De Montfort University, UK
Ali Al-Bayatti, De Montfort University, UK
Francois Siewe, De Montfort University, UK

Chapter 10
Free and Open Source Cloud Computing Technology
Lee Chao, University of Houston – Victoria, USA

Section 3
Teaching and Learning in the Cloud Environment

Chapter 11
Cloud Computing for Teaching and Learning: Design Strategies
Bay Arinze, Drexel University, USA
Cheickna Sylla, New Jersey Institute of Technology, USA
Onuora Amobi, LearnAboutTheWeb.com, USA

Chapter 12
Engaging Students in Conducting Data Analysis: The Whole-Class Data Advantage
Virginia Oberholzer Vandergon, California State University – Northridge, USA
John M. Reveles, California State University – Northridge, USA
Norman Herr, California State University – Northridge, USA
Dorothy Nguyen-Graf, California State University – Northridge, USA
Mike Rivas, California State University – Northridge, USA
Matthew d'Alessio, California State University – Northridge, USA
Brian Foley, California State University – Northridge, USA

Chapter 13
Hands-On Learning of Cloud Computing
Marta Beltrdn, Universidad Rey Juan Carlos, Spain

Chapter 14
Screencasts in Mathematics: Modelling the Mathematician 218
Robin Hankin, AUT, New Zealand

Chapter 15
Support for Cloud-Based Mobile Learning 225
Kritika Verma, ICAI, India
Sonal Dubey, RGPV, India
M. A. Rizvi, NITTTR, India

Chapter 16
Cloud Computing: An Agent of Promoting Interdisciplinary Sciences, Especially Information Science and I-Schools – Emerging Techno-Educational Scenario 247
Prantosh Kr. Paul, Indian Institute of Engineering Science and Technology (I1EST), India

Section 4
Security and Access Control in Cloud Computing

Chapter 17
Assessing Security with Regard to Cloud Applications in STEM Education 260
lhssan Alkadi, Southeastern Louisiana University, USA

Chapter 18
Security Issues Related to Cloud Applications in STEM Education 277
Yong Chen, Old Dominion University, USA

Section 5
Management and Evaluation of Classes Supported by Cloud Platform

Chapter 19
Inquiry-Based Learning on the Cloud: 291
Alexander Mikroyannidis, The Open University, UK
Alexandra Okada, The Open University, UK
Andre Correa, Universidade Estadual Paulista, Brazil
Peter Scott, The Open University, UK

Chapter 20
Cloud-Based Continuous Formative Assessment (CFA) 311
Norman Herr, California State University – Northridge, USA
Marten Tippens, California State University – Northridge, USA
Mike Rivas, California State University – Northridge, USA
Virginia Oberholzer Vandergon, California State University – Northridge, USA
Matthew d'Alessio, California State University – Northridge, USA
John Reveles, California State University – Northridge, USA

Chapter 21
Improving the Effectiveness of Research Supervision in STEM Education: Cloud-Based Multimedia Solutions 343
Tony Rickards, Curtin University, Australia

Chapter 22
Designing a Cloud-Based Assessment Model: A New Zealand Polytechnic Case Study 357
Tony Rickards, Curtin University, Australia
Aaron Steele, Universal College of Learning, New Zealand

Chapter 23
Cloud Services in UK Higher Education: A Feasibility Study for Providing IaaS in the Computing and Library Services of a UK University 377
Alexandros Chrysikos, University of Huddersfield, UK
James McDowell, University of Huddersfield, UK
Rupert Ward, University of Huddersfield, UK

Chapter 24
A Media Interpretation of the Negative Impact of Cloud Technologies 403
Michael S. Tang, University of Colorado – Denver, USA
Arunprakash T. Karunanithi, University of Colorado – Denver, USA

Chapter 25
The Significance of Situation Awareness in Education: Being Aware of What We Learn 421
Pio Alfredo Di Tore, Universita degli Studi di Salerno, Italy
Felice Corona, Universita degli Studi di Salerno, Italy

Compilation of References *430*

About the Contributors *468*

Index 478