

GLOBAL JOURNAL OF ENGINEERING EDUCATION

Editor-in-Chief: Zenon J. Pudlowski

World Institute for Engineering and Technology Education (WIETE) Ivanhoe East, Melbourne, VIC 3079, Australia

WIETE Partners



Commonwealth Science and Technology Academy for Research (C-STAR) Chennai, India



Faculty of Architecture Cracow University of Technology Kraków, Poland



Faculty of Architecture Slovak University of Technology in Bratislava Bratislava, Slovakia



Faculty of Engineering State University of Malang Malang, Indonesia



Polytechnic Institute of New York University New York, USA



University of West Attica Piraeus-Athens, Greece



Gaborone, Botswana

Published by:

World Institute for Engineering and Technology Education (WIETE) 141 The Boulevard, Ivanhoe East, Melbourne, VIC 3079, Australia

E-mail: info@wiete.com.au Internet: http://www.wiete.com.au

© 2018 WIETE

ISSN 1328-3154

Articles published in the *Global Journal of Engineering Education* (GJEE) have undergone a formal process of peer review by international referees.

This Journal is copyright. Apart from any fair dealing for the purpose of private study, research, criticism or review as permitted under the Copyright Act, no part may be reproduced by any process without the written permission of the publisher.

Responsibility for the contents of these articles rests upon the authors and not the publisher. Data presented and conclusions developed by the authors are for information only and are not intended for use without independent substantiating investigations on the part of the potential user.

Global Journal of Engineering Education

EDITOR-IN-CHIEF

Prof. Zenon J. Pudlowski World Institute for Engineering and Technology Education (WIETE)

141 The Boulevard, Ivanhoe East, Melbourne, VIC 3079, Australia Tel/Fax: +61 3 94994339, E-mail: zenon.pudlowski@wiete.com.au

Internet: http://www.wiete.com.au

MANAGER & ASSOCIATE

EDITOR

Dr Dianne Q. Nguyen WIETE, Melbourne, Australia

ASSOCIATE EDITORS

Dr Ian R. Dobson Monash University, Melbourne, Australia

Mrs Dorota I. Pudlowski WIETE, Melbourne, Australia

Ms Krystyna Wareing Independent Communications Consultant, Crawley, West Sussex, England, UK

ADVISORY BOARD MEMBERS

Prof. Hosni I. Abu-Mulaweh Indiana University-Purdue University Fort Wayne, Fort Wayne, USA

Prof. Wacław Celadyn
Prof. Colin U. Chisholm
Cracow University of Technology, Kraków, Poland
Glasgow Caledonian University, Glasgow, Scotland, UK

Prof. Ahmad Ibrahim Yorkville University, Toronto, Ontario, Canada

Prof. Adinarayana Kalanidhi Commonwealth Science and Technology Academy for Research, Chennai, India

Prof. Krzysztof Kluszczyński
Prof. Romanas V. Krivickas
Dr Wojciech Kuczborski
Prof. Viljan Mahnič
Silesian University of Technology, Gliwice, Poland
Kaunas University of Technology, Kaunas, Lithuania
Private Consultant & WIETE, Perth, Australia
University of Ljubljana, Ljubljana, Slovenia

Prof. George Metaxas Piraeus University of Applied Sciences (TEI), Piraeus-Athens, Greece

Prof. Andrew Nafalski University of South Australia, Adelaide, Australia Dr Zorica Nedic University of South Australia, Adelaide, Australia

Prof. Derek O. Northwood University of Windsor, Windsor, Canada

Prof. Robert Špaček Slovak University of Technology in Bratislava, Bratislava, Slovakia

Prof. Steven Thatcher Central Queensland University, Cairns, Australia Prof. Jacek Uziak University of Botswana, Gaborone, Botswana

Prof. Algirdas V. Valiulis Vilnius Gediminas Technical University, Vilnius, Lithuania

Dr Aji P. Wibawa State University of Malang, Malang, Indonesia

Global Journal of Engineering Education

Contents

Z.J. Pudlowski	151	Editorial
D. Pusca and D.O. Northwood	152	Curiosity, creativity and engineering education
K. Leahy, S.R. Daly, S. McKilligan and C.M. Seifert	159	Supporting idea generation with design tools: nesting design heuristics within morphological analysis
F.A.T. Putra, H.B. Santoso and R.F. Aji	171	Evaluation of learning analytics metrics and dashboard in a software engineering project course
P. Chatwattana	181	Concepts of an interactive adaptive learning system architecture design in an active learning environment through a cloud learning ecosystem
P. Pratumsuwan	190	Preparing engineering students to be in-company trainers through an experiential learning approach
I. Syamsuddin	196	Evaluation of NgeXTEA - a cryptography learning module
G.G. Nerona, J. Park, K.T. Bogbog and M.C. Tamondong	201	Improving the food storage and inventory management of a military cadet institution: boosting students' problem-solving skills through collaborative applied research
S. Heikkinen	207	Renewing a course structure can reduce the number of students to retake a course
A. Allahverdi	213	Samples of senior design projects in industrial engineering
W.F. Senjaya, O. Karnalim, E.D. Handoyo, S. Santoso, R. Tan, M.C. Wijanto and D. Edi	217	Information and communication technology awareness of Indonesian high school students
S. Kuc and A. Tadewicz	224	Interdisciplinary studies for PhD students in the Faculty of Architecture at Cracow University of Technology: part 1 - first year study
R.F. Herrera, J.C. Vielma and F.C. Muñoz	230	BIM and teamwork of civil engineering students: a case study
Index of Authors	236	