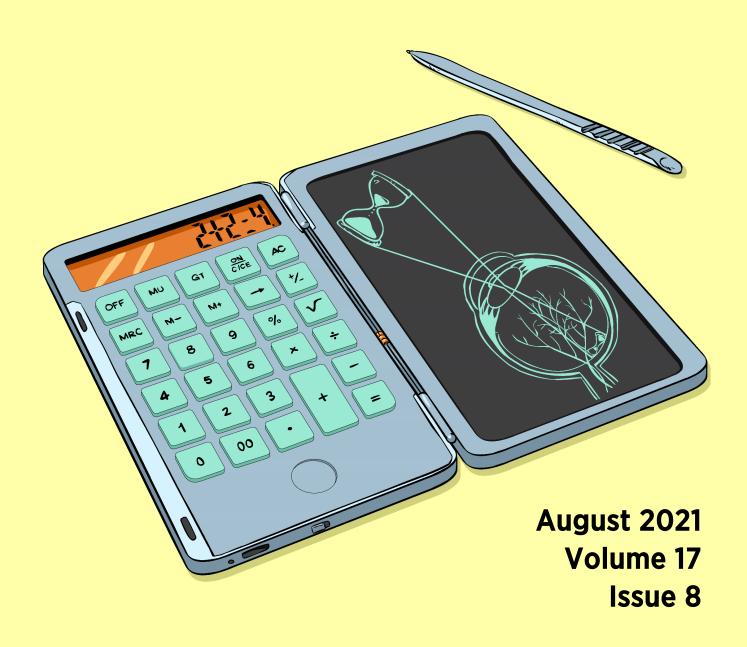
ISSN: 1305-8223

EURASIA JOURNAL OF MATHEMATICS, SCIENCE AND TECHNOLOGY EDUCATION



Published by: Modestum Publishing LTD

Publication Office: 29 Gildredge Road, Eastbourne, East Sussex, BN21 4RU, United Kingdom

Phone: + 44 7432 276676

Email: publications@modestum.co.uk

Publisher: https://modestum.co.uk

Journal Web: https://www.ejmste.com

Twitter: https://twitter.com/ejmste

Facebook: https://www.facebook.com/ejmste

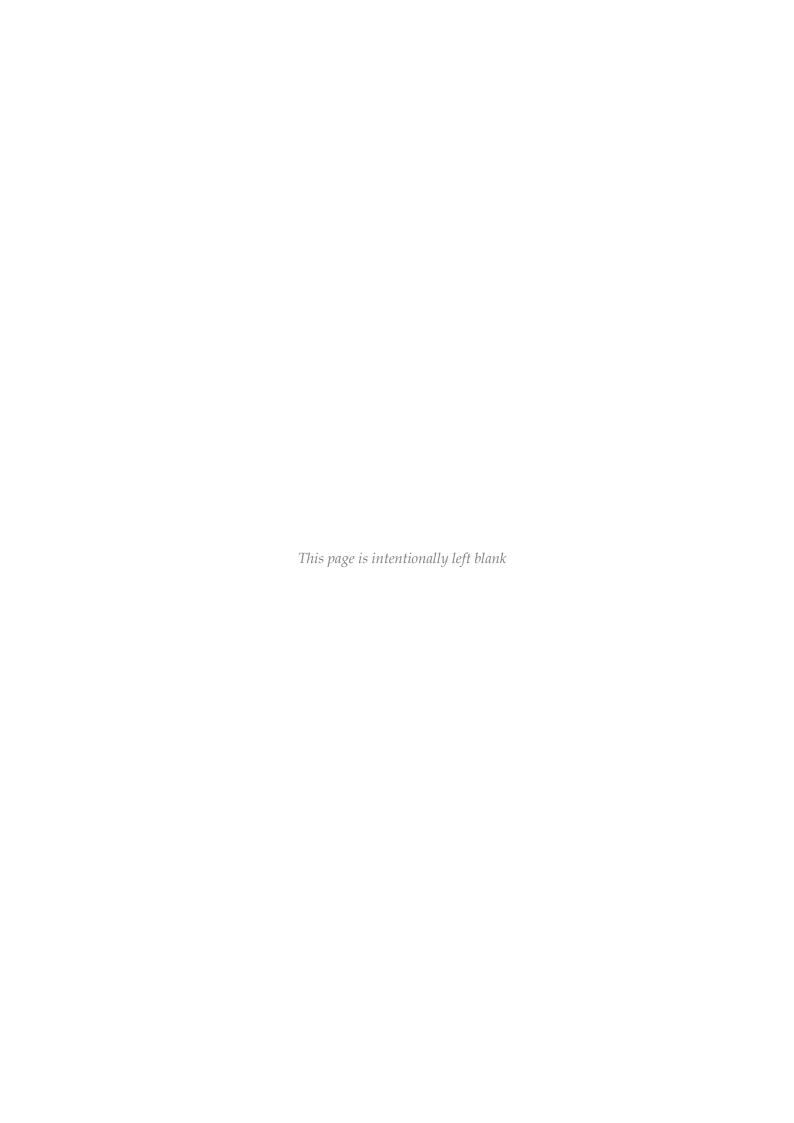
© 2005-2021. All rights reserved by Modestum Publishing LTD. Copyright for Open Access Content is Retained by Authors. Also, authors continue to hold the copyrights of their own papers by acknowledging that their papers are originally published in the Eurasia Journal of Mathematics, Science and Technology Education. Hence, articles published are licensed under a "Creative Commons Attribution 4.0 International License."

ISSN: 1305-8223 (Online)

EURASIA JOURNAL OF MATHEMATICS, SCIENCE AND TECHNOLOGY EDUCATION

August 2021 Volume 17 Issue 8





EURASIA JOURNAL OF MATHEMATICS, SCIENCE AND TECHNOLOGY EDUCATION

The Eurasia Journal of Mathematics, Science and Technology Education (Abbrev. EURASIA J. Math., Sci Tech. Ed. or EJMSTE) is an English Open Access peer-reviewed journal publishing articles on all aspects of Mathematics, Science and Technology Education with ISSN: 1305-8223 (online). The journal is published 12 times in a year, and strictly adheres to the principles of the peer review process.

EURASIA Journal of Mathematics, Science and Technology Education encourages submissions from all authors throughout the world. Manuscripts are judged by two experts solely on the basis of their contribution of original data, ideas and their presentation. All manuscripts must comply with Manuscript Preparation Guidelines. Submitted manuscripts must not have been published, accepted for publication or be under consideration elsewhere.

Submissions: EJMSTE has a fully online review system. This system offers authors the convenience of submitting their manuscripts via **EditorialPark**. Please send your manuscripts an MS Word attachment to the editors via the following address: https://www.editorialpark.com/ejmste/

Eurasia Journal of Mathematics, Science and Technology Education (EJMSTE) is a monthly journal published online 12 times annually in January, February, March, April, May, June, July, August, September, October, November, and December.

EJMSTE is indexed and/or abstracted in

- ROAD
- ERIC
- ERIH PLUS
- Google Scholar
- Genamics JournalSeek
- PsvcINFO
- SCOPUS
- Scimago

Publication of any material submitted by authors does not necessarily mean that the journal, publisher, editors, or any of the editorial board members endorse or suggest the content. Publishing decisions are based and given only on scholarly evaluations. Apart from that, decisions and responsibility for adopting or using partly or in whole any of the methods, ideas or the like presented in EJMSTE pages solely depends on the readers' own judgment.

EDITORIAL BOARD

Editors-in-Chiefs

Chun-Yen CHANG, National Taiwan Normal University (NTNU), TAIWAN

Lianghuo FAN, University of Southampton, UNITED KINGDOM

Editors

Engineering Education

Xiangyun DU, Qatar University, QATAR & UNESCO PBL Center for Engineering and Science Education, Aalborg University, DENMARK

Teen-Hang MEEN, National Formosa University, TAIWAN

Mathematics Education

Kwok Cheung CHEUNG, University of Macau, MACAU

Mei-Shiu CHIU, National Chengchi University, TAIWAN

Oh Nam KWON, Seoul National University, SOUTH KOREA

Joohi LEE, University of Texas at Arlington, USA

Sandra NITE, Texas A&M University, USA

Chunxia QI, Beijing Normal University, CHINA

Der-Ching YANG, National Chiayi University, TAIWAN

Science Education

Onofrio Rosario BATTAGLIA, University of Palermo, ITALY

Ozcan GULACAR, University of California, Davis, USA

Hayat HOKAYEM, Texas Christian University, USA

Milan KUBIATKO, Jan Evangelista Purkyně University, CZECH REPUCBLIC

Jing LIN, Beijing Normal University, CHINA

Silvija MARKIC, University of Education Ludwigsburg, GERMANY

Jan Alexis NIELSEN, University of Copenhagen, DENMARK

Mariusz PANCZYK, Medical University of Warsaw, POLAND

Sarantos PSYCHARIS, School of Pedagogical and Technological Education, GREECE

Technology Education

M. Shane Tutwiler, University of Rhode Island, USA

Tzu-Hua WANG, National Tsing Hua University, TAIWAN (R.O.C.)

Yi-Shun WANG, National Changhua University of Education, TAIWAN

Zacharia ZACHARIAS, University of Cyprus, CYPRUS

Assistant Editors

Jana FANCOVICOVA, University of Trnava, SLOVAKIA

E-mail: fankaj@gmail.com

Vanda JANSTOVA, Charles University, Prague, CZECH REPUBLIC

E-mail: vanda.janstova@natur.cuni.cz

Editorial Board Members

Mathematics Education

Lyn ENGLISH, Queensland University of Technology, AUSTRALIA

Uwe GELLERT, Freie Berlin University, GERMANY

Anjum HALAI, Aga Khan University, PAKISTAN

Gert KADUNZ, University of Klagenfurt, AUSTRIA

Mailizar MAILIZAR, Syiah Kuala University, INDONESIA

Charis VOUTSINA, University of Southampton, UNITED KINGDOM

Science Education

Fouad ABD-EL-KHALICK, University of Illinois at Urbana-Champaign, USA

Agustin ADÚRIZ-BRAVO, Universidad de Buenos Aires, ARGENTINA

Maria Pilar Jiménez ALEIXANDRE, Universidade de Santiago de Compostela, SPAIN

Michael ALLEN, Kingston University, UK

Kyriacos ATHANASIOU, National and Kapodistrian University of Athens, GREECE

Alipaşa AYAS, Bilkent University, TURKEY

Nélio BIZZO, Universidade de São Paulo, BRAZIL

Saouma BOUJAOUDE, American University of Beirut, LEBANON

Lynn A. BRYAN, Purdue University, USA

Peter C. CORMAS, California University of Pennsylvania, USA

Colleen T. DOWNS, University of KwaZulu-Natal, SOUTH AFRICA

Eurasia Journal of Mathematics, Science and Technology Education

Jan H. VAN DRIEL, University of Melbourne, AUSTRALIA

Ingo EILKS, University of Bremen, GERMANY

Olle ESKILSSON, Kristianstad University, SWEDEN

Anna Maria GRUGNETTI, University of Pavia, ITALY

Gürol IRZIK, Sabanci University, TURKEY

Marika KAPANADZE, Ilia State Univesity, GEORGIA

Gregory J. KELLY, The Pennsylvania State University, USA

Sarika KEWALRAMANI, Monash University, AUSTRALIA

Vanessa KIND, Durham University, UK

Vincentas LAMANAUSKAS, University of Siauliai, LITHUANIA

Jari LAVONEN, University of Helsinki, FINLAND

Rachel MAMLOK-NAAMAN, Weizmann Institute of Science, ISRAEL

Sonya N. MARTIN, Seoul National University, REPUBLIC OF KOREA

Mansoor NIAZ, Universidad de Oriente, VENEZUELA

Pernilla NILSSON, Halmstad University, SWEDEN

Rolf V. OLSEN, University of Oslo, NORWAY

Kamisah OSMAN, Universiti Kebangsaan Malaysia, MALAYSIA

Paul PACE, University of Malta, MALTA

Pavol PROKOP, Trnava University, SLOVAKIA

Sarantos PSYCHARIS, School of Pedagogical and Technological Education - ASPETE, GREECE

Martin RUSEK, Charles University, CZECH REPUBLIC

Rohaida Mohd. SAAT, University of Malaya, MALAYSIA

Chieh-Jen SHIEH, Huaqiao University, CHINA

Kenneth TOBIN, The Graduate Center of CUNY, USA

Do-Yong PARK, Illinois State University, USA

Technology Education

Chin-Chung TSAI, National Chiao Tung University, TAIWAN

Lung Hsiang WONG, Nanyang Technological University, SINGAPORE

CONTENTS

Exploring Grade 8 Students' Errors When Learning About the Surface Area of Prisms	em1985
Shakespear Maliketi Chiphambo, Nomxolisi Mtsi	
https://doi.org/10.29333/ejmste/10994	
Exploring the Effectiveness of Two Types of Virtual Reality Headsets for Teaching High School Mathematics	em1986
Yi Chen Hsu	
https://doi.org/10.29333/ejmste/10996	
The Influence of Flipped Learning Methods on High School Learners' Biology Attainment and Social Intelligence in Kuwait	em1987
Ali Hassan Ebrahim, Salwa A Ben Naji	
https://doi.org/10.29333/ejmste/10997	
Representational Trajectories in the Understanding of Mendelian Genetics	em1988
Fernando Flores-Camacho, Elena Calderón-Canales, Beatriz García-Rivera, Leticia	
Gallegos-Cázares, Araceli Báez-Islas	
https://doi.org/10.29333/ejmste/10998	
The Mathematics Performance of Aboriginal Pupils for Computation and Word Problem Items in Using Academic and Community Languages	em1989
S.Kanageswari Suppiah Shanmugam, Arsaythamby Veloo, Ruzlan Md-Ali	
https://doi.org/10.29333/ejmste/11017	
Characterizing Levels of Reasoning in Graph Theory	em1990
Antonio González, Inés Gallego-Sánchez, José María Gavilán-Izquierdo, María Luz Puertas	
https://doi.org/10.29333/ejmste/11020	
Effectiveness of the Augmented Reality on Improving the Visual Thinking in Mathematics and Academic Motivation for Middle School Students	em1991
Sabah Abdalla Elsayed, Hamda Ibrahim Al-Najrani	
https://doi.org/10.29333/ejmste/11069	
The Effect of a Socio-Scientific Context-Based Science Teaching Program on Motivational Aspects of the Learning Environment	em1992
Ekaterine Slovinsky, Marika Kapanadze, Claus Bolte	
https://doi.org/10.29333/ejmste/11070	
Exploring Female Undergraduate Education Students' Perceptions of Collaborative Online Project-Based Learning (COPBL)	em1993
Essa A. Alibraheim, Sabah A. El-Sayed	
https://doi.org/10.29333/ejmste/11079	

Pre-Service Teacher Experiences of the 5E Instructional Model: A Systematic Review of Qualitative Studies	em1994
Serife Turan	
https://doi.org/10.29333/ejmste/11102	
Pupils' Summative Assessments in Mathematics as Dependent on Selected Factors	em1995
Vlastimil Chytry, Milan Kubiatko	
https://doi.org/10.29333/ejmste/11112	
Methods Course for Primary Level STEM Preservice Teachers: Constructing Integrated STEM Teaching	em1996
Pattamaporn Pimthong, P John Williams	
https://doi.org/10.29333/ejmste/11113	
An Assessment of the Impact of an Animation on Biology Students' Visualization Skills Related to Basic Concepts of Mitosis	em1997
Lindelani Mnguni, Dudrah Moyo	
https://doi.org/10.29333/ejmste/11116	