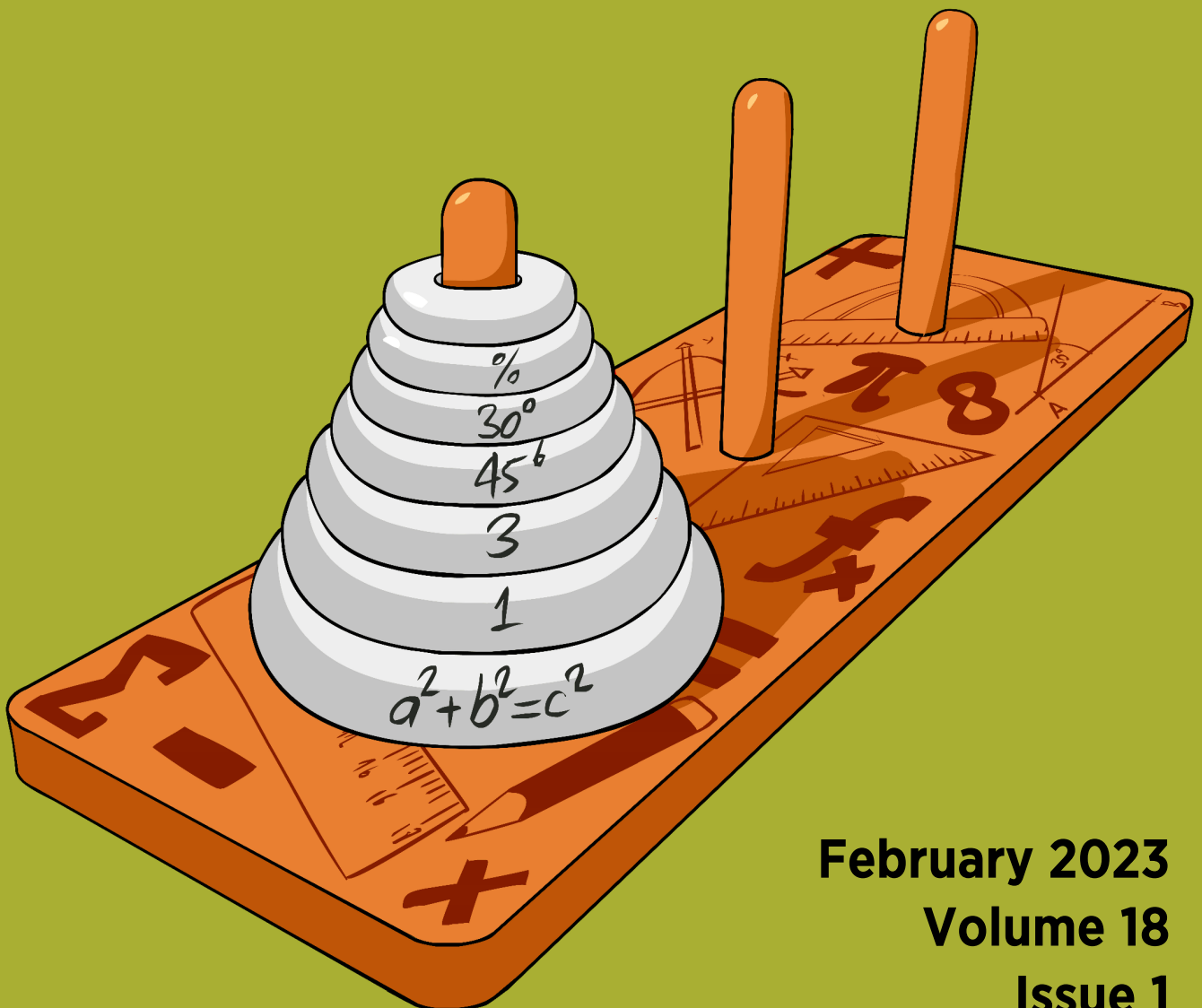


ISSN: 1306-3030

# INTERNATIONAL ELECTRONIC JOURNAL OF MATHEMATICS EDUCATION



February 2023  
Volume 18  
Issue 1

Published by: **Modestum**

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

Serbia Office: Modestum DOO, Bulevar Mihajla Pupina 10i, 3. Sprat, Stan 133, Belgrade,  
SERBIA

Phone: +381 61 6600107

Email: [publications@modestum.co.uk](mailto:publications@modestum.co.uk)

Publisher: <https://modestum.co.uk>

Journal Web: <https://www.iejme.com>

© 2006-2023. All rights reserved by Modestum. 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 International Electronic Journal of Mathematics Education. Hence, articles published are licensed under a “Creative Commons Attribution 4.0 International License.”

ISSN: 1306-3030 (Online)

**INTERNATIONAL ELECTRONIC  
JOURNAL OF MATHEMATICS  
EDUCATION**

February 2023

Volume 18

Issue 1



*This page is intentionally left blank*

# INTERNATIONAL ELECTRONIC JOURNAL OF MATHEMATICS EDUCATION

---

**International Electronic Journal of Mathematics Education (IEJME)** is a peer-reviewed, online, open access, academic journal devoted to disseminate new research and theory in the field of mathematics education.

IEJME is published four times a year, in February, May, August and November.

IEJME aims to stimulate discussions at all levels of mathematics education through disseminating significant and innovative scholarly studies that are of value to the international research communities. The journal welcomes articles focusing on all aspects of mathematics education including empirical, theoretical, methodological, and philosophical works that have a perspective wider than local or national interest.

IEJME publishes only original scholarly works. Manuscripts that are indeed a derivative or replication /duplication (if there is not clear reason, justification) of previous work are not accepted and will not be published in IEJME. Please do not submit the same manuscript simultaneously or separately to IEJME with another journal. In such cases the responsibility solely rests with the author(s).

## Peer Review Policy

### Procedure

The journal operates a double-blind peer-review procedure. To ensure this, authors should anonymize elements within the manuscripts that can reveal their identities, such as authors' names, institutional affiliations, contact information, and references to authors' own works.

Peer review is a critical assessment procedure for maintaining a high standard of intellectual work. The process is designed to provide constructive critical evaluation to submissions to ensure that work achieves high academic standards. Review reports assist editors in determining the eligibility of a manuscript for publication. Manuscripts that pass the initial screening of the editors are sent out for external expert evaluation by two or more reviewers. Editors may decide to seek assistance from additional editors or reviewers before reaching a final decision.

Peer-review reports should provide valuable information and suggestions to authors on how to improve article quality so that readers can benefit more from the article. Review reports should be presented in a professional manner and constructive manner. Not only criticism of the content, but also positive aspects of the work should be included. To this end, we advise the reviewers to include answers to the following items in their evaluation reports: a) summary of the contributions of the work to the literature, its potential impact and intended audience; b) strengths and weaknesses of the work, assessment of whether objectives of the study were achieved and whether the evidence presented supports the conclusions; c) recommendations to authors regarding methodology, findings and discussions, references, language and presentation, etc., along with suggested corrections; d) recommendations to editors on whether to request additional minor/major revisions or whether to reject the article or whether to accept the article as is, and the basis for these recommendations.

Review process is expected to be completed within 6-9 months after submission. In some cases, longer times may be unavoidable depending on feedback from reviewers, author response times to revisions, and the number of revisions.

### Competing interests

If reviewers realize a competing interest that might influence the review report, they should immediately alert the editors and refrain from continuing the review. Competing interests occur when a professional decision might be affected by another interest, such as a monetary connection, an intellectual trust, or an individual relationship or competition. To maintain high levels of objectivity and credibility, we ask the reviewers to disclose any possible competing interests.

### Confidentiality

Submission content, including its abstract, ideas, and research data, should be treated as privileged information by reviewers and editors, and should not be shared with any third parties or used personally. As part of the double-blind peer-review process, authors and reviewers should be cautious not to reveal their identities.

### Timeliness

We request that reviewers deliver review reports on time to ensure a good publication experience for everyone. If reviewers fail to meet the review deadline, they should notify the editorial office and request an extension as soon as possible.

## Editorial Policy

Authors must ensure that the submission is free of linguistic errors and conforms to the journal's requirements for manuscript preparation. Manuscripts that are not written in compliance with author guidelines or do not demonstrate a proficient use of the English language will not be eligible for full external peer-review process and for publication.

Non-native speakers of English are advised to employ language editing services to have their manuscripts examined and edited by native language professionals for grammar, content clarity, formatting, punctuation, and spelling before submission.

The authors confirm that the submission is appropriate for the journal's scope, has not been published before, even partially, and is not being considered for publication elsewhere, is prepared in conformity with the journal's publishing ethics, is approved by all co-authors, corresponding author is authorized to handle any communication regarding the manuscript on other co-authors' behalf, complies with the journal's author guidelines regarding stylistic, bibliographic, and linguistic standards.

Incoming submissions undergo an **initial screening** by the editors before they are sent out for peer review. At this point, editors can send the article back to the authors for adjustments or reject it without further evaluation. Editors may appoint additional reviewers, request minor or major revisions from authors, or commit a final decision about manuscript at any point during peer review. The submission portal assigns each manuscript a unique manuscript ID,

and this identification number should be provided in any communication with the editorial or support personnel.

The journal accepts the submission of research articles, review articles, book reviews, and interviews.

### **Indexing and Abstracting**

IEJME is indexed and abstracted by:

- Emerging Source Citation Index (Web of Science)
- EBSCO Education Source Complete
- ERIC
- ERIH PLUS
- Cabell's Directory Index
- Genamics JournalSeek
- Index Copernicus
- Mathematics Education/Didactics Database
- The Mathematics Information Service (fidmath)
- Mathedjournals
- Mathguide
- NCM
- OCLC WorldCat
- EdNA Online Database
- ResearchGate
- ROAD
- Crossref
- Google Scholar

All articles are archived by:

- The British Library
- Portico

Authors should submit their manuscripts online via <https://www.editorialpark.com/iejme>. Manuscripts are accepted only in Word format.

## EDITORIAL BOARD

---

### Editors

**Prof. Dr. Melanie Platz**

Chair of Didactics of Primary Education – Mathematics

Faculty of Mathematics and Computer Science, Saarland University, Saarbrücken, Germany

E: [platz@math.uni-sb.de](mailto:platz@math.uni-sb.de)

W: <https://www.melanie-platz.com/>

**Dr. Scott A. Courtney**

Associate Professor, Mathematics Education

College of Education, Health, and Human Services, Kent State University, USA

E: [scourtn5@kent.edu](mailto:scourtn5@kent.edu)

**Dr. Zara Ersozlu**

Mathematics Education, Faculty of Arts and Education, School of Education, Deakin

University, Geelong Waurm Ponds Campus, Locked Bag 20000, Geelong, VIC 3220, Australia

T: +61 3 5227 3007 E: [zara.ersoazlu@deakin.edu.au](mailto:zara.ersoazlu@deakin.edu.au) W: [www.deakin.edu.au/education](http://www.deakin.edu.au/education)

### Special Issue Editor

**Dr. Francisco Regis Vieira Alves**

Federal Institute of Science and Technology of Ceara, Brazil

E: [fregis@ifce.edu.br](mailto:fregis@ifce.edu.br) & [fregis@gmx.fr](mailto:fregis@gmx.fr)

### Book Review Editor

**Yujin Lee**

Indiana University-Purdue University Indianapolis, USA

E: [yl146@iu.edu](mailto:yl146@iu.edu)

### Editorial Board Members

**Abdul Halim Abdullah**, Universiti Teknologi Malaysia, Malaysia

Research Areas/Interest: Technology in mathematics education, Problem solving in mathematics education, Mathematical/ geometrical thinking skills, Current issues in mathematics education

W: <http://people.utm.my/halim/> R: <http://www.researcherid.com/rid/I-2326-2017>

ORCID: <http://orcid.org/0000-0002-7966-9334>

**Ali Bicer**, University of Wyoming, USA

Research Areas/Interest: STEM education, STEM schools, Informal STEM learning

W: <http://www.uwyo.edu/ste/faculty-staff/ali-bicer.html>

**Arturo García-Santillán**, Universidad Cristóbal Colón, Mexico

E: [agarcias@ucc.mx](mailto:agarcias@ucc.mx)

**Bárbara Palharini**, Northern Paraná State University, Brazil

**Belén Giacomone**, Granada University, Spain



**Carmen Batanero**, Universidad de Granada, Spain

**Hamide Dogan-Dunlap**, The University of Texas at El Paso, USA

**Iran Abreu Mendes**, Universidade Federal do Pará, Brazil

**Ivanildo Carvalho**, Universidade Federal de Pernambuco, Brazil

**Jogymol K. Alex**, Walter Sisulu University, South Africa

**Karen Junqueira**, University of the Free State, South Africa

**Leong Kwan Eu**, University of Malaya, Malaysia

T: +603-79675196 F: +603-79675010 E: [rkleong@um.edu.my](mailto:rkleong@um.edu.my)

**Lyn English**, Queensland University of Technology, Australia

**Man-Fung Lo**, The Chinese University of Hong Kong, Hong Kong

**Marcos Formigosa**, Universidade Federal do Pará, Brazil

**Mashau Nkhangweni Lawrence**, Tshwane University of Technology, South Africa

**Merlin John**, Walter Sisulu University, South Africa

**Miftachul Huda**, Universiti Teknologi Malaysia (UTM), Malaysia

**Mildred A. Sebastian**, Cavite State University, Philippines

**Mourat A. Tchoshanov**, The University of Texas at El Paso, USA

ORCID: <http://orcid.org/0000-0002-2852-4311> Scopus ID: 6507539390 E: [mouratt@utep.edu](mailto:mouratt@utep.edu)

**Patricia Patrick**, Texas Tech University, USA

**Peter Van Petegem**, University of Antwerp, Belgium

**Rachel A. Ayieko**, Duquesne University, USA

**Raiva Vladimir**, Universidade Federal do Pará, Brazil

**Roldan C. Bangalan**, St. Paul University Philippines, Philippines

**Souza Leandro**, Universidade Federal de Uberlândia, Brazil

**Thomas E Ricks**, Louisiana State University, USA

**Victor Oxman**, Western Galilee College, Israel

**Zarith Sofiah Binti Othman**, Universiti Teknologi MARA (UiTM), Malaysia

### **Managing Editor**

**Tim Heider**, Modestum Publishing LTD

E: [iejme@iejme.com](mailto:iejme@iejme.com)

## CONTENTS

---

- Unsupervised machine learning to classify language dimensions to constitute the linguistic complexity of mathematical word problems** em0719  
*David Bednorz, Michael Kleine*  
<https://doi.org/10.29333/iejme/12588>
- 
- Interaction patterns: An approach for enhancing students' retention in geometric construction** em0720  
*Ifeoma Julie Osakwe, Felix Oromena Egara, Onyemauche Christopher Inweregbuh, Augustina Chinyere Nzeadibe, Chinyere N. Emefo*  
<https://doi.org/10.29333/iejme/12596>
- 
- Exploring contextual factors for pre-service teachers teaching with technology through planning, teaching, and reflecting** em0721  
*Didem Akyuz*  
<https://doi.org/10.29333/iejme/12624>
- 
- Math is beautifully intimidating: Analyzing the conflict between teacher affective disposition and observed positioning-by-others** em0722  
*Ruby L. Lynch-Arroyo, Mourat Tchoshanov, William Medina-Jerez*  
<https://doi.org/10.29333/iejme/12627>
- 
- Social and socio-mathematical norms constructed by teachers in classes through the development of noticing skills** em0723  
*Gulsah Ozdemir Baki, Elif Kilicoglu*  
<https://doi.org/10.29333/iejme/12649>
- 
- Examining the effect of inquiry-based learning versus traditional lecture-based learning on students' achievement in college algebra** em0724  
*Elaina Khasawneh, Angie Hodge-Zickerman, Cindy S. York, Thomas J. Smith, Hayley Mayall*  
<https://doi.org/10.29333/iejme/12715>
- 
- The solo pantomime in the pandemic: Distance postgraduate education in the department of mathematics education during COVID-19** em0725  
*Naci Kucukgençay, Bilge Peker*  
<https://doi.org/10.29333/iejme/12716>
- 
- Pre-service mathematics teachers investigating the attributes of inscribed circles by technological and theoretical scaffolding** em0726  
*Ruti Segal, Moshe Stupel*  
<https://doi.org/10.29333/iejme/12803>
- 
- Teachers' appraisal of various aspects of the efficiency of homogeneous and heterogeneous learning groups** em0727  
*Mara Cotič, Daniel Doz, Milena Valenčič Zuljan, Amalija Žakelj, Darjo Felda*  
<https://doi.org/10.29333/iejme/12810>

**Reflections from planning and implementing a modelling task**

em0728

*Ayşe Tekin Dede, Esra Bukova Guzel*

<https://doi.org/10.29333/iejme/12821>