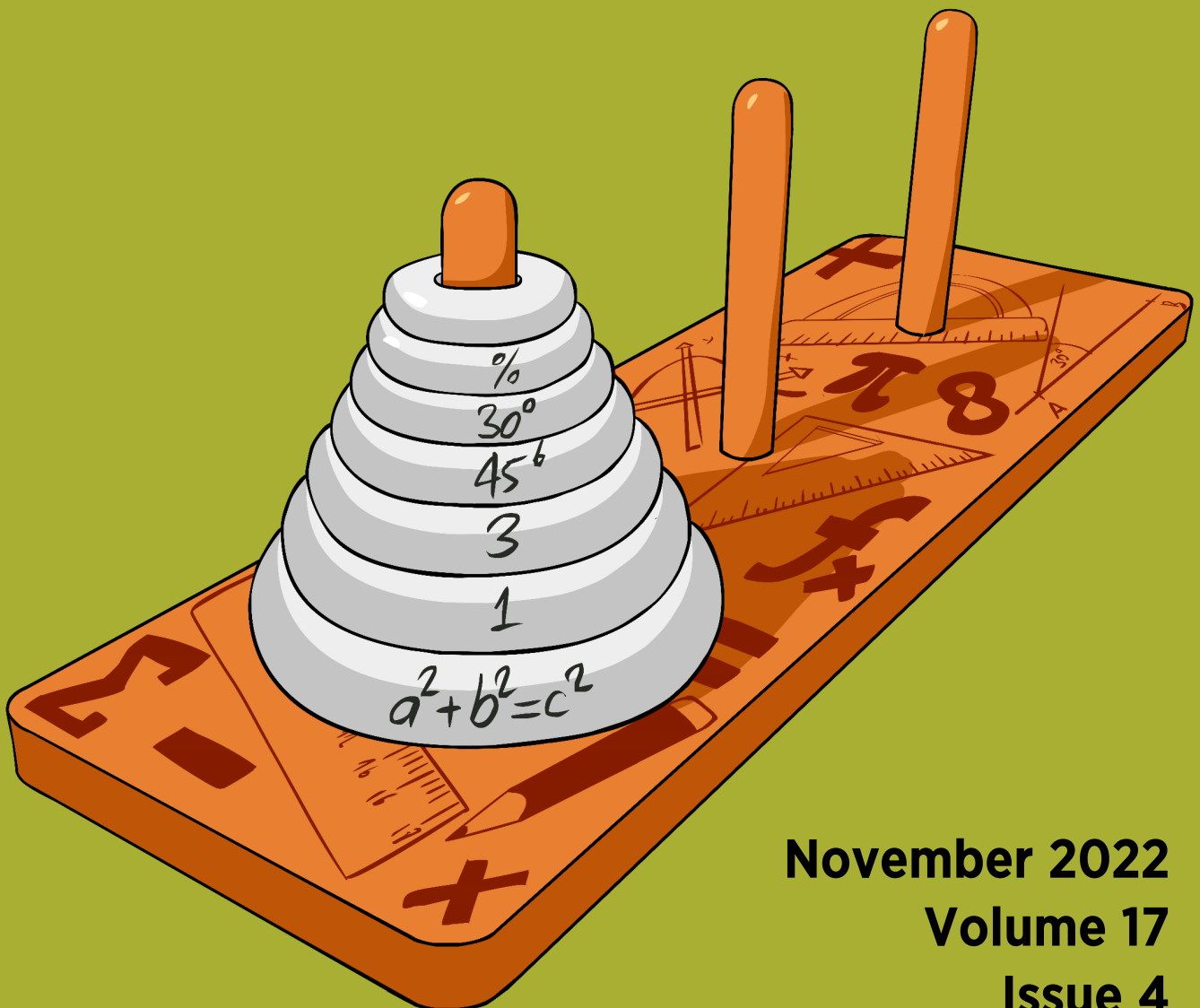


ISSN: 1306-3030

INTERNATIONAL ELECTRONIC JOURNAL OF MATHEMATICS EDUCATION



November 2022
Volume 17
Issue 4

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

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

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

© 2006-2022. 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**

November 2022

Volume 17

Issue 4



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or replication /duplication (if there is not clear reason, justification) of previous work are not accepted and will not be published in IEJME.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

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

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 W: 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 & fregis@gmx.fr

Book Review Editor

Yujin Lee

Indiana University-Purdue University Indianapolis, USA

E: 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

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

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

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

CONTENTS

- Description of the activated mathematical knowledge of the triangle concept in three empirical contexts** em0697
Felicitas Pielsticker
<https://doi.org/10.29333/iejme/12170>
-
- Incoherencies in elementary pre-service teachers' understanding of calculations in proportional tasks** em0698
Surani Joshua, Mi Yeon Lee
<https://doi.org/10.29333/iejme/12178>
-
- Relational equity: Adapting an elementary mathematics teaching methods course to online contexts** em0699
Jennifer L. Ruef, Reid Shepard
<https://doi.org/10.29333/iejme/12224>
-
- Exploring Calculus I students' performance between varying course times among other predictive variables** em0700
Zachariah Benton Hurdle, Enes Akbuga, Paul Schrader
<https://doi.org/10.29333/iejme/12234>
-
- A meta-synthesis of studies on the use of augmented reality in mathematics education** em0701
Elif Korkmaz, Hasibe Sevgi Morali
<https://doi.org/10.29333/iejme/12269>
-
- A multi-faceted framework for identifying students' understanding of the generality requirement of proof** em0702
Kimberly A. Conner
<https://doi.org/10.29333/iejme/12270>
-
- A cross-national comparison of fourth and eighth grade students' understanding of fraction magnitude** em0703
Rachel Angela Ayieko, Giovanna Moreano, Lauren Harter
<https://doi.org/10.29333/iejme/12287>
-
- Expressive writing interventions for pre-service teachers' mathematics anxiety** em0704
Barbara Jane Brewster, Tess Miller
<https://doi.org/10.29333/iejme/12298>
-
- Supporting mathematics public school teachers' professional development and the teaching of statistics in elementary and middle school: An imperative for teacher education in Brazil** em0705
Jose Aires de Castro-Filho, Eurivalda Ribeiro dos Santos Santana, Maria Elizabete Souza Couto, Juscileide Braga de Castro, Dennys Leite Maia
<https://doi.org/10.29333/iejme/12305>

-
- Pre-service teachers' professional noticing when viewing standard and holographic recordings of children's mathematics** em0706
Karl W. Kosko
<https://doi.org/10.29333/iejme/12310>
-
- Mathematical proof and epistemological obstacles: Assumptions of the methodological teaching proposal of the Fedathi sequence** em0707
Carlos Henrique Delmiro Araújo, Daniel Brandão Menezes
<https://doi.org/10.29333/iejme/12315>
-
- Exploring the effect of student-teaching on elementary student-teachers' math anxiety** em0708
Muhammad Sharif Uddin
<https://doi.org/10.29333/iejme/12316>
-
- Peer interactions and their role in early mathematical learning in kindergarten discourses** em0709
Esther Henschen, Martina Teschner, Anna-Marietha Vogler
<https://doi.org/10.29333/iejme/12362>
-
- Whom do they become? A systematic review of research on the impact of practicum on student teachers' affect, beliefs, and identities** em0710
Lisa Österling, Iben Christiansen
<https://doi.org/10.29333/iejme/12380>
-
- Aspects of attitudes towards mathematics in modeling activities: Usefulness, interest, and social roles of mathematics** em0711
Aldo Peres Campos Lopes
<https://doi.org/10.29333/iejme/12394>
-
- Configuring the landscape of research on problem-solving in mathematics teacher education** em0712
Anette de Ron, Iben Christiansen, Kicki Skog
<https://doi.org/10.29333/iejme/12457>
-
- The didactical phenomenology in learning the circle equation** em0713
Clement Ayarebilla Ali
<https://doi.org/10.29333/iejme/12472>
-
- Comparison of the learning outcomes in online and in-class environments in the divisibility lessons** em0714
Dina Kamber Hamzić, Daniela Zubović, Lamiya Šćeta
<https://doi.org/10.29333/iejme/12473>
-
- Trends in learning and teaching of geometry: The case of the Geometry and its Applications Meeting** em0715
Paola Castro, Pedro Gómez, María C. Cañadas
<https://doi.org/10.29333/iejme/12474>

Misconceptions and resulting errors displayed by in service teachers in the learning of linear independence em0716

Lillias Hamufari Natsai Mutambara, Sarah Bansilal

<https://doi.org/10.29333/iejme/12483>

The influence of practical illustrations on the meaning and operation of fractions in sixth grade students, Kosovo-curricula em0717

Saranda Kamberi, Ismet Latifi, Shpetim Rexhepi, Egzona Iseni

<https://doi.org/10.29333/iejme/12517>

The effect of assessment for learning on prospective teachers' learning of algebra through a professional development program em0718

Ayanaw Yigletu Asfaw, Kassa Michael Weldeyesus, Mulugeta Atnafu Ayele

<https://doi.org/10.29333/iejme/12587>