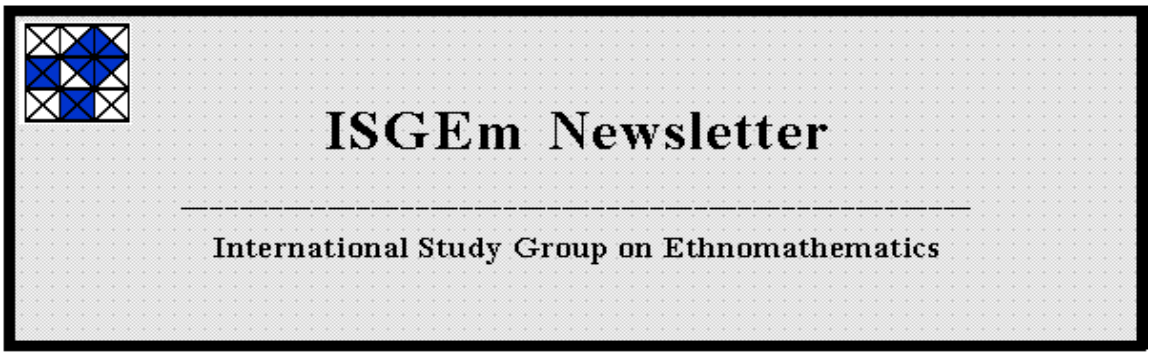

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WELCOME!

Dear Colleagues,

Members of the *Executive Board* (EB) continue to work to reinvigorate ISGEm by having regular meetings via *GoogleMeet* to discuss actions collectively taken into consideration to be further developed regarding short, medium, and long term goals of this study group.

For example, in August 2020, we restarted the publication of the *ISGEm Newsletter* and we are also updating the ISGEm website. Please, visit the ISGEm website at: *https://isgem.wordpress.com/*.

We also continue to update the ISGEm contact and member list and develop a facebook page. Please, visit our facebook page at: https://www.facebook.com/International-Study-Group-on-Ethnomathematics-ISGEm-109154377551936.

The EB is discussing the ISGEm Constitution and the improvement of the *Journal of Mathematics and Culture*, as well as the possibility of associating ISGEm with the *International Commission on Mathematical Instruction*– ICMI.

Due to unforeseen circumstances, the EB is considering a virtual conference for the 7th International Congress on Ethnomathematics – ICEm7. More information about the congress is provided in this Newsletter.

We are keeping the original ISGEm goal of publishing two issues of the Newsletter a year: the first one in May and the second one in November as originally conceived.

If you would like to participate in the ISGEm Newsletter, we invite you to send your contribution in English, Portuguese or Spanish by April 30th, 2022 to be considered for the publication of the next issue in May 2022.

Contributions may be related to: Articles (2-pages maximum), book reviews, information about conferences, study groups, ongoing research, meetings, journals, and others (1-page maximum) that are related to investigations in ethnomathematics and the cultural aspects of mathematics. Submissions and correspondences can be sent by email to the e-mail address: submissionisgem@gmail.com.

Best regards,

ISGEm Executive Board

NEWS!!!

THE 7TH INTENATIONAL CONGRESS ON ETHNOMATEHMATICS – ICEM7

ICEM7 IS STILL ON BUT ONLINE

Due to the impact of COVID19 on Papua New Guinea (only a small percentage have been vaccinated), ICEm7 conference scheduled in 2022, will be conducted fully online.

Thanks to Willy Alangui (Philippines) and our colleagues from South and Southeast Asia, the conference is expected to be held on **7-10 December, 2022 (to be confirmed).**

More information to come!

ARTICLES

This section presents 4 (four) articles on ethnomathematics written by researchers around the world.

When Culture Meets Mathematics as a Starting Point in Learning Mathematics

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Freudenthal's ideas on mathematics, namely Realistic Mathematics Education (RME), which suggested that mathematics is a human activity that must be connected to reality, have influenced how people learn mathematics worldwide, especially in Indonesia. RME is a mathematical instruction theory developed in the Netherlands (Van den Heuvel-Panhuizen & Drijvers, 2020). Because mathematics

teaching must be tied to fact or employ context problems, the basic knowledge is often out of the students' ideas. In RME, context issues supplement a learning sequence from the beginning to the finish (Gravemeijer & Doorman, 1999).

Many nations, including Indonesia, have adopted RME. *Pendidikan Matematika Realistik Indonesia* (PMRI) is the Indonesian version of RME. The history of RME in Indonesia began in 2007 when articles about RME were published in the Journal Pendidikan Matematika (Indonesia's oldest mathematics education journal). The number of RME's articles published in Indonesian national journals continues to rise, as evidenced by the increasing number of RME's research (Prahmana, Sagita, Hidayat, & Utami, 2020).

Yogyakarta, like the rest of Indonesia, has a diverse culture. We can use these cultures to investigate mathematical principles as part of a transformational endeavour to bring mathematics closer to people's lives and perceptions. Furthermore, we may employ culture to help students study mathematics in school. D'Ambrosio (1985) proposed Ethnomathematics as a solution based on how mathematics has been taught in schools and how mathematics has developed. Ethnomathematics is a way to understand and combine concepts, methods, and strategies utilized and developed by socio-culture or members of diverse cultures (Rosa & Orey, 2016).

Furthermore, Ethnomathematics aims to reposition mathematics to be anchored in other cultures, accommodating multiple perspectives for students to become critical reasoners, democratic, and tolerant (D'Ambrosio, 2016). Therefore, Ethnomathematics attempts to make students love mathematics, motivate them, and boost their creativity in performing mathematics as a pedagogical innovation in mathematics teaching and learning.

Our research experience combines the two approaches in teaching mathematics, namely the Ethno-Realistic Mathematics Education approach. Ethnomathematics will be seen as an exploration of culture that has elements of mathematics in it. This culture will later be used as a context in learning mathematics. This context is used as a starting point in learning mathematics to improve students' understanding of mathematical concepts.

For example, a starting point in learning geometry transformation utilizing the motif of Batik (Prahmana & D'Ambrosio, 2020), number operation using the traditional Indonesian games (Prahmana, Zulkardi, & Hartono, 2012), social arithmetic using *kubuk manuk* games (Risdiyanti, Prahmana, & Shahrill, 2019), mathematical modeling using *Pranatamangsa System* and the *Birth-Death Ceremonial in Yogyakarta* (Prahmana, Yunianto, Rosa, & Orey, 2021), and so on.

We believe this approach would suit the city with many cultures that can be explored as a starting point in learning mathematics.

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Creatively Insubordinating Indiscipline in an Ethnomathematical Perspective: A Qualitative Study with Mathematics Teachers

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Concerns in relation to student behavior have existed since the beginning of humanity. Diverse disciplinary methods have been changed over the years as a result of enlightened perspectives and the use of culturally irrelevant strategies for the maintenance of classroom discipline.

This study sought to explore the opinions of 8 (eight) mathematics teachers, in 3 (three) state schools and in 1 (one) private school, in two different cities, of the Regional Teaching Superintendence of Ponte Nova, Minas Gerais, on the disciplinary-related approaches experienced in schools in terms of public policies and teaching practices.

Particularly, this study sought to obtain information about the daily lives of these teachers, as well as their experiences and points of view in relation to the implementation of regulations related to student discipline and behavior issues.

The statement of the problem of this study is related to the following research question*: How can mathematics teachers understand students' indiscipline as a positive aspect that can assist them in transforming their own teaching practice according to the perspectives of Ethnomathematics and Creative Insubordination?*

Data were collected through the use of two questionnaires (initial and final), four semi-structured interviews, one adapted focus group, and the teacher-researcher field diary. The data analysis of this qualitative research was conducted through an adaptation of the Grounded Theory (Strauss & Corbin, 1990). In this theory, open coding identified the preliminary codes that were conceptually grouped for the development of three conceptual categories and two subcategories, which enabled the interpretation of the results obtained in this study.

Thus, these results showed that the participants of this study were able to understand the students' indiscipline as a positive aspect that could assist them in transforming their own teaching

practice according to the perspectives of Ethnomathematics (D'Ambrosio, 1990) and Creative Insubordination (Lopes & D'Ambrosio, 2016).

In addition, for these participants, the concepts of Ethnomathematics and its connection to Creative Insubordination (Rosa & Orey, 2015), discipline and indiscipline can be related to the relaxation of norms and rules imposed in the school environment without previous discussions being held with students and, also, with the opposition to educators that aim to exclude students from decisions made in the educational process.

In this regard, these participants became aware of Ethnomathematics as a pedagogical action that seeks to propose a teaching practice that makes it possible to value and respect the mathematical knowledge that students bring from their daily lives.

This research also resulted in an educational product, in the form of a suggestion book in order to help teachers, educators, pedagogical coordinators, school managers, supervisors, teacher educators, and others interested in this topic.

Thus, it is important that mathematics teachers reflect on their own teaching practices from the perspective of Ethnomathematics, as an intercultural and interdisciplinary pedagogical action, and creative insubordination as a flexibility of behavioral rules and norms in order to provoke disciplinary limits practiced in schools.

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Ethnomathematics in the U.S. Culture Wars

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On May 14th last, an editorial in the New York Times by David Brooks (www.nytimes.com/2021/05/13/opinion/this-is-how-wokeness-ends.html) was titled: *This is How Wokeness Ends*. *Wokeness* is a new word that means "a state of being aware, especially of social problems such as racism and inequality" according to the Cambridge English Dictionary. Sounds good, yes? However, its predominant use in the United States is as a derogatory term. Actually, I

claim it is mostly used sublinguistically as a kind of signal among people on the right, as is *Critical Race Theory*.

David Brooks is a regular contributor to the New York Times, who styles himself as a moderate conservative. I would wager heavily that he knows very little about mathematics or mathematics education, and nothing about ethnomathematics. Almost certainly, he picked up on stuff that is making the rounds in his circles, in particular reactions to a series of documents called: *A Pathway to Equitable Math Instruction*. Brooks begins his editorial by citing a friend who expresses fear that a hostile ideology, identified as "wokeness or social justice or critical race theory" is sweeping across America, and he continues as follows:

> This ideology […] divides the world into good and evil based on crude racial categories. It has no faith in persuasion, or open discourse, but it shames and cancels anybody who challenges the official catechism. It produces fringe absurdities like "ethnomathematics," which proponents say seeks to challenge the ways that, as one guide for teachers puts it, "math is used to uphold capitalist, imperialist and racist views" by dismissing old standards like "getting the 'right' answer".

A couple of points jump out of this passage. Apparently, the author, who appears to *challenge the official catechism*, has miraculously escaped being canceled to the extent that his views made the editorial page of the New York Times. Secondly, as a proponent of ethnomathematics, I would indeed say we should "challenge the use of mathematics to uphold capitalist, imperialist and racist views" but I cannot make any sense whatsoever of the bit about the old standard of getting the right answer.

The trigger for his editorial was a publication called: *A Pathway to Equitable Math Instruction* (PEMI). I have a strong feeling that Brooks did not read it but rather read some of the hysterical reactions to it. Unfortunately, those reactions are justified to a considerable extent. PEMI is a problematic production that, nevertheless, has been recommended to teachers as a resource, including in my own state of Oregon. The interested reader can download it from equitablemath.org, and check out, in particular, the extremely weak characterization of ethnomathematics, with next to no guidance to teachers on how to carry out such instructions as to "study more about ethnomathematics and how to authentically incorporate ethnomathematics […] into the curriculum" (p. 59).

Mathematics education has featured heavily in recent clashes in the culture wars in the United States, including attacks on Rochelle Gutiérrez. I think the main point I want to make is that our ideological opponents are skilled enough at propaganda without handing them easy targets. I would be interested to know of parallel developments in other countries. And for any conservatives reading this, be comforted to know that Brooks optimistically reminds us that "the primary ideology in America is success; that ideology has a tendency to absorb all rivals".

O Programa Etnomatemática: Contribuindo para a Descolonização do Currículo

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Durante os anos de 2018 e 2019, foi realizada a pesquisa de Mestrado, com um projeto institucional nomeado *África*, numa escola municipal com estudantes do 1º (primeiro) ao 5º (quinto) ano do Ensino Fundamental I.

Foram realizadas novas práticas educacionais e pedagógicas, de estudos e formação coletiva do corpo docente da Unidade Educacional, alicerçadas pelo Programa Etnomatemática e balizadas na Lei 10.639/03, contribuindo para a descolonização e elaboração coletiva da equipe docente de um novo currículo desenvolvido na Unidade, priorizando as Africanidades e a valorização de identidades negras no contexto escolar.

Um dos objetivos do projeto foi pensar em uma proposta de construção de um currículo colaborativo, envolvendo professores que ensinam Matemática, fazendo com que estes, percebessem e desenvolvessem a Etnomatemática nas propostas pedagógicas realizadas durante as atividades da pesquisa, compreendendo os limites e possibilidades do Programa Etnomatemática na constituição de um currículo transformador ao longo de seu desenvolvimento.

A temática africana no currículo pode ser instrumento de transformação de pensamentos, ações e representatividade e que o não uso da representatividade do povo negro pode negar aos estudantes um empoderamento e entendimento do quão importante é essa representatividade.

Conforme os projetos foram se desenvolvendo em sala de aula, percebemos ainda mais, o que a representatividade pode causar nas ações e fortalecimento da autoestima e como ações afirmativas são importantes para o processo de desenvolvimento social e educacional. Incorporar a representatividade no currículo é um dos passos para se oferecer instrumentos de autonomia e equidade aos estudantes e educadores.

Realizamos formação, estudo e elaboração de atividades curriculares para serem desenvolvidas com os estudantes, esses estudos aconteciam duas horas por semana, tendo como eixos principais a Lei 10.639, os estudos sobre África, inclusive jogos africanos e o Programa Etnomatemática.

As práticas educativas, a partir dos referenciais teóricos eram planejadas e, muitas vezes repensadas, considerando os apontamentos acerca dos estudantes relacionados à faixa etária e a realidade social e cultural.

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ONGOING RESEARCH ON ETHNOMATHEMATICS

This section presents 1 (one) report related to the ongoing research on ethnomathematics developed around the world.

Análisis Etnomatemático de los Elementos Involucrados en las Danzas Tradicionales de Costa Rica

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En Costa Rica, a partir del año 2012, la educación matemática en secundaria sufrió una reforma con el objetivo de mejorar la problemática que se ha venido presentando a lo largo de los años, estos planes de estudio se enfocaron en la resolución de problemas y la contextualización, pues a través de estas metodologías se quiere que los estudiantes desarrollen su pensamiento lógico-matemático, propicie una participación más activa, asimismo que incremente su capacidad y procesos matemáticos.

Por consiguiente, es importante tomar en cuenta la contextualización activa en nuestras aulas, pues con ello logramos un mejor entendimiento de dicha materia, así como la aplicación de las matemáticas en la vida cotidiana, de este modo se debe fomentar un cambio en la metodología de enseñar dicha área. Según el *Ministerio de Educación Pública* (MEP) de Costa Rica (Costa Rica, 2012) "se plantea una contextualización activa que estimule la acción estudiantil, lo que requiere el uso importante de modelos sobre la realidad cercana" (p. 36).

A través de estos cambios los docentes deben ser capaces de desarrollar en los estudiantes distintas competencias matemáticas, con el fin de que entiendan y actúen en diversos contextos reales. Como lo menciona Gavarrete (2014) es requerido "desarrollar en los programas de formación de profesores las ideas matemáticas de diversas culturas, a nivel regional, local o global, puesto que se hace necesaria la comprensión y el fortalecimiento de los valores de las matemáticas como fenómeno cultural" (p. 143).

Dentro de cada una de las aulas donde se imparte matemáticas, se encuentra una diversidad de cultura con una variedad de sistemas de creencias. Por tanto, es importante destacar la pertinencia del contexto en el cual se ha desenvuelto la sociedad costarricense y la educación en el país. La danza folclórica es un componente cultural que permite visualizar la cultura costarricense a nivel mundial, por lo que el interés en el que se centra esta propuesta radica en relacionar aspectos de índole antropológico y etnomatemático, para abordar desde la visión émica y ética (Rosa & Orey, 2017), para caracterizar el *conocimiento matemático cultural*[1], desde la perspectiva regional de las danzas tradicionales.

[1]Según la sociocultural, Jaramillo (2011) señala que la educación matemática asume el conocimiento matemático como una actividad sociocultural, cuya producción y legitimación es resultado de la explicación de diferentes prácticas sociales en las que están involucrados los miembros de grupos culturales distintos, a partir de los sentidos y de los significados compartidos y compatibilizados, respetando los diferentes *saberes* y *haceres* matemático constituidos por los diversos grupos socioculturales dentro de sus culturas. Así, de acuerdo con Rosa y Orey (2006), la vida cotidiana de esos miembros de diferentes puede ser percibida como si fuera representación de la propia realidad, que está generada, vía inferencias, con la utilización de representaciones mentales a través de la modelación en una perspectiva de las etnomatemáticas, haciendo possible el desarrollo de su conocimiento matemático cultural.

De esta manera, se pretende difundir los aspectos vinculados con la herencia del conocimiento cultural y su relación con el conocimiento matemático, para reforzar la identidad cultural de estos entornos y desentrañar el conocimiento matemático cultural de la región, así como también indagar las potencialidades de una propuesta didáctico-matemática con pertinencia sociocultural. La relevancia, atinencia y pertinencia del proyecto se justifican por el esfuerzo de resaltar el conocimiento de todas las personas que intervienen en la actividad y sus conocimientos específicos, tales como el uso de un lenguaje técnico y simbólico, las interacciones y prácticas sociales inmersas en las danzas.

Así, la contribución de este proyecto al Programa de Etnomatemáticas es proponer en la educación costarricense unas matemáticas contextualizadas más cercanas a los estudiantes, que potencien la capacidad de resolver problemas desde su realidad, proponiendo un *diálogo simétrico*[2] *y con alteridad*[3] entre la herencia del conocimiento cultural utilizado en las danzas folclóricas y las matemáticas escolares. Por lo que las etnomatemáticas nos permiten contextualizar las matemáticas presentes en las danzas tradicionales de Costa Rica.

Para D'Ambrosio (2000), las etnomatemáticas se reconocen como una práctica escolar valida que refuerza la creatividad, los esfuerzos, el auto-respeto cultural y ofrece una visión amplia de la humanidad que tiende de forma creciente hacia el multiculturalismo y pluriculturalismo. De ahí, la etnomodelación, desde la perspectiva de Rosa y Orey (2010), se concibe como la traducción de ideas matemáticas locales, reconociendo el conocimiento matemático específico de los miembros de un grupo diferenciado, que, en este caso, es el de las danzas caribeñas.

Dado la importancia de este estudio radica en cómo se ha tratado de rescatar el conocimiento matemático que ha sido desarrollado en las danzas folclóricas, por medio de sus sistemas de símbolos y artefactos desarrollados en grupos culturales específicos. Además, hay que destacar la forma en que desenvuelven su lógica interna y la toma de decisiones de cada uno de los miembros de esta cultura.

Consecuentemente, un apoyo importante para el desarrollo de este estudio es la Etnomodelación que, de acuerdo con Rosa y Orey (2107), puede proporcionar la descripción de los etnomodelos relacionados con en el diseño de coreografías y en el análisis de la creación artefactos culturales que se utilizan en la ejecución de la danza, como, por ejemplo, los sombreros y los vestuarios.

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[2]El dialógico simétrico es un componente importante de la cultura que valora las diferencias porque los diálogos con los otros ayudan en la exteriorización del mundo interior de los miembros de grupos culturales distintos. Para Freire (2002), en los diálogos simétricos se socializan las ideas y conocimientos *tácitamente*[2] adquiridos, que pueden generar cambios de comportamiento en miembros de diferentes grupos culturales a través del desarrollo de acciones transformadoras en la sociedad con el objetivo principal de analizar la realidad.

[3]Uno de los principales supuestos de la alteridad es reconocerse en los otros, incluso si existen diferencias físicas, sociales, lingüísticas, psíquicas y culturales. Entonces, es importante reflexionar sobre la alteridad en la investigación en etnomodelación, que puede ser considerada como la cualidad de ser diferente para que se perciban las distintas características socioculturales que apuntan a contemplar la diversidad. En este sentido, la alteridad es una situación, un estado o una cualidad que se constituye a través de relaciones de diferencia, contraste y distinción (Rosa & Orey, 2017).

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PUBLISHED BOOKS

This section presents 1 (one) published book related to ethnomathematics written around the world.

Ethnomathematics in Action: Mathematical Practices in Brazilian Indigenous, Urban and Afro Communities - Springer

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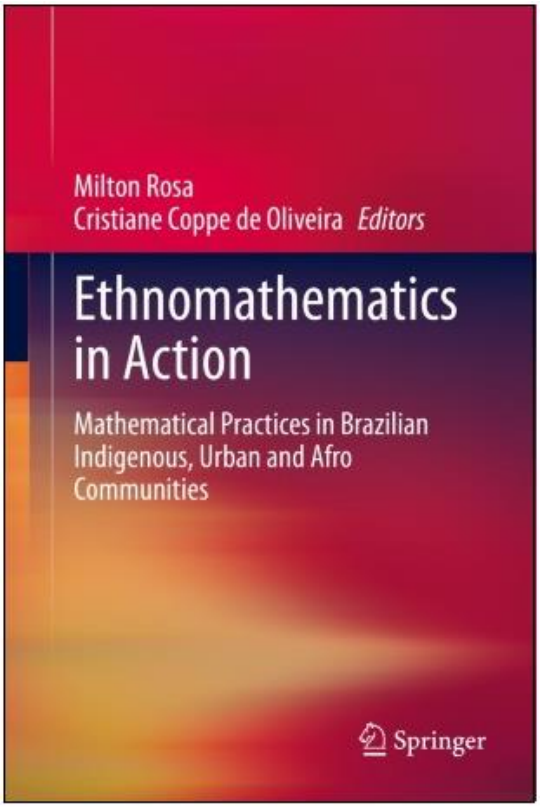
It is necessary to address the interrelationships of local mathematical knowledge sources with broader universal forms of mathematics in order for us to understand ideas, procedures, and practices found in distinct cultural groups. The main objective of this approach is to link or bridge mathematical ideas, procedures, and practices developed by the members of distinct cultures to clarify understanding and mutual respect among all communities.

In this regard, an ethnomathematics program aims to stimulate broader reflections about the nature of mathematical thinking in cognitive, historical, social, and cultural environments motivated

by the intention to clarify understanding from knowing and doing as the knowledge built by mankind in distinct cultural contexts found worldwide.

In order to elucidate, clarify and perhaps to facilitate new discussions about cultural diversity in Brazil, which deals with investigations conducted in an ethnomatematical perspective, we truly hope that readers will be able to capture the authors' thoughts and concepts regarding ethnomathematics as developed in the Brazilian context. From the authors own particular vantage points they each have accomplished a great deal to add to the growing body of scientific discourse of this program in relation to this particular.



There is a need to create a new role in relation to mathematics instruction that empowers people to understand power and oppression more critically by considering the effect of culture and language on mathematical knowledge by working with their students to uncover the often distorted and hidden history of mathematical knowledge. Any study of mathematics and its connection to culture represents a powerful means for validating a student's real life experiences and gives us the tools to become critical and reflective participants in society.

This perspective forms the basis for significant contributions of Dambrosian-based ethnomathematical perspectives in re-conceiving the discipline of mathematics and its pedagogical practices. In this context, the use of a Freirean dialogical methodology is essential in developing a pedagogical praxis of ethnomathematics by investigating cultures and languages in order to develop a mathematics curriculum that shows the contributions of people from other cultural groups, which seeks the enrichment of mathematical knowledge.

In the context of national and international dialogues, it is important to broaden the discussion for possibilities of the inclusion of cultural polysemy of ethnomathematics in the mathematics curriculum in order to provoke discussions about social justice and respect which is related to the sociocultural diversity of people in their search for peace. This approach guarantees the development of understanding of differences through dialogue and respect to avoid domination and oppression.

Mathematical thinking has been influenced by a diversity of human features such as languages, religions, morals, and economical-social-political activities. In concert with these characteristics, humanity has developed logical processes related to our universal need to pattern, quantify, measure, model and explain, all shaped and operating within different social and historical contexts. Because each cultural group has its own way of mathematizing, these connections have come to represent and are embedded in distinct cultural systems, especially in the way that people quantify and use numbers, use geometric forms and relationships, measure or classify objects in their own environment.

In this book, related to ethnomathematical research conducted in the Brazilian context, the authors share and discuss the necessity of issues regarding mathematics education, classroom practices, and the knowledge of specific cultural groups in order to explore mathematical knowledge, which has a role in helping us to clarify the nature of mathematical knowledge and of knowledge in general.

CONGRESSES, CONFERENCES, AND EVENTS

This section presents information about conferences and congresses related to ethnomathematics held around the world.

a) IX Congresso Ibero-americano de Educação Matemática – IX CIBEM
Local: Pontifícia Universidade Católica de São Paulo
Date: From December 5th 2022 to December 9th 2022
For information please access: https://www.pucsp.br/cibem2022

STUDY GROUPS

This section presents information about study groups around the world that develop investigations on ethnomathematics and the cultural aspects of mathematics.

The Ethnomathematics Research Group at the Universidade Federal de Ouro Preto GPEUfop

O Grupo de Pesquisa de Etnomatemática na Universidade Federal de Ouro Preto

GPEUfop

Daniel Clark Orey
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- Leader: Daniel Clark Orey.
- Vice-Leader: Milton Rosa.
- Pedagogical Technical Coordinator: Diego Pereira de Oliveira Cortes.
- Research Area: Mathematics Education.
- Research Line 3: History, Culture, and Inclusion in Mathematics Education
- Year of Formation: 2018.
- Certified by CNPq, which is the Brazilian Council for Scientific and Technological Development, and by the Universidade Federal de Ouro Preto (UFOP).
- Participants: 27 participants (10 students and 17 researchers).
- Synchronous meetings: Monthly meetings in the third Thursday of each month - from 10 am to 12 am (Brazilian time).
- Website: https://sites.google.com/view/gpeufop/home
- Facebook Page: https://www.facebook.com/GPEUFOP

Vision, Mission, and Values

This study group:

a) Investigates the History of Mathematics and its pedagogical potential in Mathematics Education by relating the development of mathematical knowledge to its history and culture.
b) Aims to problematize Ethnomathematics and Ethnomodeling as pedagogical actions that aim to reflect on the relationships between globalization, location and glocalization, which are related to the encounter between distinct cultures and knowledge, as well as their influences on the constitution of this program as a field of scientific research.
c) Seeks a broad understanding of the principles of Inclusive Education and Diversity contextualizing them historically, culturally and socially in order to provide a democratic space for reflection on the diverse mathematical practices and inclusive public policies in the context of Mathematics Education.
d) Understands the interrelationship between these fields of knowledge when seeking an understanding of the reality of sociocultural manifestations in inclusive, democratic, school and non-school educational environments.

Contributions and Influences of Ubiratan D'Ambrosio to GPEUfop

In this group, we consider an agenda for an Ethnomathematics Program that offers a broad and unrestricted view of mathematical nature, which aims to encompass mathematical ideas, processes, methods and practices that are related to diverse cultural environments.

This aspect is related to the development of evidence collection regarding cognitive processes and attitudes that lead to learning that is triggered in classrooms (pedagogical action of the Ethnomathematics Program).

As we reflect on the 6 (six) dimensions of Ethnomathematics: educational, political, historical, cognitive, epistemological and conceptual and social of the ethnomathematics program, this program's agenda seeks to offer an innovative perspective for the development of a dynamic and glocalized society by recognizing that members of distinct cultural groups develop unique methods, strategies, techniques and procedures to explain, understand, understand, act and transform reality itself.

Ethnomathematical Investigations in the Study Group

Member of this study group developed the following investigations in ethnomathematics:

- Ethnomathematics and its Pedagogical Action
    - Coffee Culture
    - Mathematics Trails or Ethnomathematical Trails
    - Peripheral Communities
    - Board Games (indigenous jaguar game, mancala, tic-tac-toe, checker, hex game) and virtual board games
    - Street Games (dodge ball, rolimã cart, and hopscotch)
    - Alternating Pedagogy
- Ethnomathematics and Creative Insubordination
- Ethnomathematics and the Trivium Curriculum
- Ethnomathematics and Interdisciplinarity
    - Financial Education
    - History of Mathematics

    - 12 Prophets of Aleijadinho (Congonhas, Minas Gerais)
    - The Christs of Aleijadinho (Congonhas, Minas Gerais)
- Ethnomathematics and Inclusive Education
    - Deaf Students, Deaf Culture, Brazilian Sign Language (Libras)
    - Bilingual Education
    - Students who are blind and visually impaired
- Ethnomodeling: Ethnomathematics + Mathematical Modeling
    - Emic, etic, and dialogic approaches
    - Local, global and glocal approaches (glocalization)
    - Emic, etic, and dialogic ethnomodels
- Ethnomathematics and Sociocultural Mathematical Practices
    - Renaissance Laces
    - Free Market fairs
    - Rural and urban schools
    - Costa Rican traditional dances
    - Gold mines in Ouro Preto

Future investigations of the Members of the Study Group

Member os this study group are planning to develop the following investigations in ethnomathematics:

- Ethnomathematics and STEM Education (Science, Technology, Engineering, and Mathematics)
- Quilombolas and Indigenous Education
- Cultural Diversity
    - Education for Gifted students
    - LGBTQIA+
    - Migration and Immigration
    - Portuguese Language Learners
- Other topics not yet researched by the group members.

Concluding Remarks

In this research group, Ethnomathematics represents a research program that seeks to analyze local mathematical practices, as well as global and glocal mathematical procedures, as it seeks to value, disseminate and respect mathematical knowledge (ideas, notions, procedures, processes, techniques, strategies and practices) that originate in diverse cultural contexts throughout history in the search for peace and social justice.

NEWS FROM THE WORLD

This section presents 3 (three) news from the world related to ethnomathematics.

Ethnomathematics Graduate Certificate and M.Ed. Curriculum Studies, Mathematics Education Master's Degree Program

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Aloha mai kākou, amidst unprecedented challenges and opportunities, we are sincerely grateful for the dedication, commitment, and aloha of educators in classrooms and communities around the world.

We honor and celebrate this critical role and we invite you to innovate, explore, and re-imagine education with us at the University of Hawai'i at Mānoa College of Education.

We extend a call for applications to the 2022-2023 Ethnomathematics Graduate Certificate and M.Ed. Curriculum Studies, Mathematics Education master's degree program.

Participants already holding a license in the State of Hawai'i may add-a-field of licensure in ethnomathematics through the Hawai'i Teacher Standards Board.

To learn more about the programs and join FREE virtual info sessions, please see the UH News Story: https://www.hawaii.edu/news/2021/10/04/ethnomathematics-information-session/

Please kindly share with your networks (@uhethnomath, #uhethnomath).

For more information, please see the UHM Ethnomathematics Program website or email coemath@hawaii.edu.

Mahalo!

An Ethnomathematics lens for Archeology in the Southwestern United States: A Reading Group Proposal

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Scholarship in ethnomathematics details how many Indigenous cultures create mathematical ideas: Mayan calendars, Marshall Island stick maps, Incan Quipus, among so many others, are a few such examples. The American Southwest is rich in archaeological and cultural heritage of the Ancestral Puebloan people, a civilization of impressive scale. Yet the mathematical research into these ancient peoples is scarce, to non-existent.

The Ancestral Puebloans lived on the Colorado Plateau, and areas surrounding the modern-day 4-corners Area in the Southwestern United States between 1500 BCE-1350 CE. They built elaborate cliff dwellings at Mesa Verde, Great Houses at Chaco Canyon, and thousands of cliff dwellings in canyons and mesa tops throughout the region. Their population was large and widespread and was united with complex social hierarchies, specialized craftsmanship, mastery of dry-land farming, long distance trade and incredible architecture. The Ancestral Puebloan people (previously referred to as the Anasazi) live on today with descendents among the Hopi, Zuni, Acoma, Zia and 17 other New Mexico Pueblos along the Rio Grande.

Speculation and research about "Ancestral Puebloan mathematics" is notably missing in published research. However, when considered from an ethnomathematics perspective, the practices that would constitute such a study are not, this includes astronomy, units of measurement, geometric pottery, and

geometric construction in architecture. Ancestral Puebloans and systematic ethnomathematical thinking should be investigated in interdisciplinary studies, in ethnomathematics, history of math research, and Southwestern Archeology, and as a basis for ethnomathematical curriculum proposals such as projects like Navajo Math Circles. This reading group will be a way to pilot those research ideas.

This reading group will meet over Zoom for 1.5 hours once a month from January to June, with the possibility to extend (exact dates and time TBD). Each week's readings will explore a mathematical practice of the Ancestral Puebloan people, primarily focused on architecture and astronomy, which is documented archeologically or ethnographically, and will also include cross-cultural comparison. For more information on the reading list or to sign up please email asmckown@gmail.com. No archeology or Southwest U.S. knowledge is needed. The reading group will be conducted in English.

BDEm - An International Invitation

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The *EtnoMatemaTicas Digital Library* (BDEm[4]) is an autonomous and collaborative special section of the *e-Almanaque EtnoMatemaTicas Brasis* (2020) (doi.org/10.51361/9786586592139) and functions as an intermediary resource for researchers and the various productions guided by a holistic view of Science and Education, Transdisciplinarity, Transculturality, based on the Ethnomathematics Program, as a general theory of knowledge.

BDEm gathers in its collection several types of productions (Books, Course Completion Papers (TCC[5]), articles, videos, proceedings, and others) that are dispersed on the internet, by providing a summary, name, and contact e-mail of the person(s) author(s), editor(s) or organizer(s), and in addition it offers a link to the full production where it was originally published for free download or purchase.

We invite everyone to know the collection already available, and which is divided into diverse types of works (circled in red in **Figure 01**). We also invite you to submit productions, authored or not, guided by the Program Ethnomathematics and in any language. Submission is through a form available on the BDEm website ("Send your contribution" tab) by selecting the type and filling in with the following information: title, author, and e-mail (of the author), and the abstract and the link of the work. Finally, please tell us how you found the BDEm, as well as whether or not you are the

[4] BDEm - *Biblioteca Digital EtnoMatemaTicas*
[5] TCC - *Trabalho de Conclusão de Curso*

author of the submitted work, if not, please identify yourself with your name and e-mail.

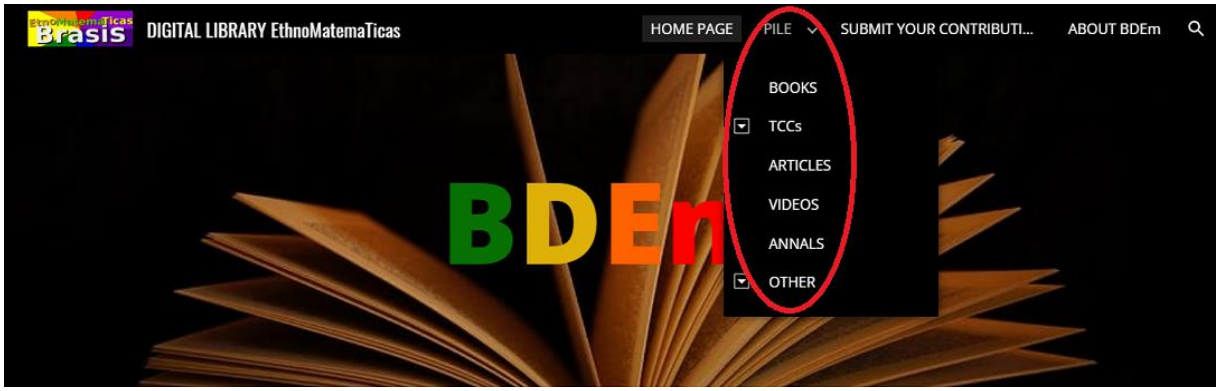

Figure 01: Screenshot of the website sites.google.com/view/etnomatematicas

Figure 02: Screenshot of the presentation at the MD Congress

BDEm: an invitation to epistemological reflection and the search for references, **Figure 02**, by the same authors, is the title of the paper presented at the International Congress for Teachers' Movements (MD[6]), in October 2021.

Please, check out the republishing of the presentation on Canal VEm Brasil - EtnoMatemaTicas Brasis: https://youtu.be/2mrdY6_4Qr4

Please, access BDEm sites.google.com/view/etnomatematicas and Send your contribution.

Please, access the e-Almanaque EtnoMatemaTicas Brasis: https://bityli.com/Emkcz7

BDEm - Um Convite Internacional

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[6] MD - Movimentos Docentes *(Teachers' Movements)*

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A Biblioteca Digital EtnoMatemaTicas (BDEm), é uma seção especial do e-Almanaque EtnoMatemaTicas Brasis (2020) (doi.org/10.51361/9786586592139), autônoma e colaborativa, e atua intermediando pesquisadores e as diversas produções pautadas em uma visão holística de Ciência e Educação, Transdisciplinaridade, Transculturalidade, fundamentados no Programa Etnomatemática, enquanto teoria geral do conhecimento.

A BDEm reúne em seu acervo diversos tipos de produções (Livros, Trabalhos de Conclusão de Cursos (TCCs), artigos, vídeos, anais e outros) que estão dispersas na internet, disponibilizando resumo, nome e e-mail de contato do(s) autor(es), editor(es) ou organizador(es), além de um link para a produção completa onde ela foi originalmente foi publicada para download gratuito ou compra.

Convidamos todos para conhecer o acervo já disponível e que se encontra dividido em tipos de obras (circulado em vermelho na Figura 01). Convidamos também para submeter produções, autorais ou não, orientadas pelo Programa Etnomatemática e em qualquer língua. A submissão é por meio de um formulário disponível no site da BDEm (aba Envie sua contribuição) selecionando o tipo e preenchendo com título, autor e e-mail (do autor), resumo e link da obra, por fim diga como encontrou a BDEm e se é ou não autor da obra submetida, caso não seja, identifique-se com nome e e-mail.

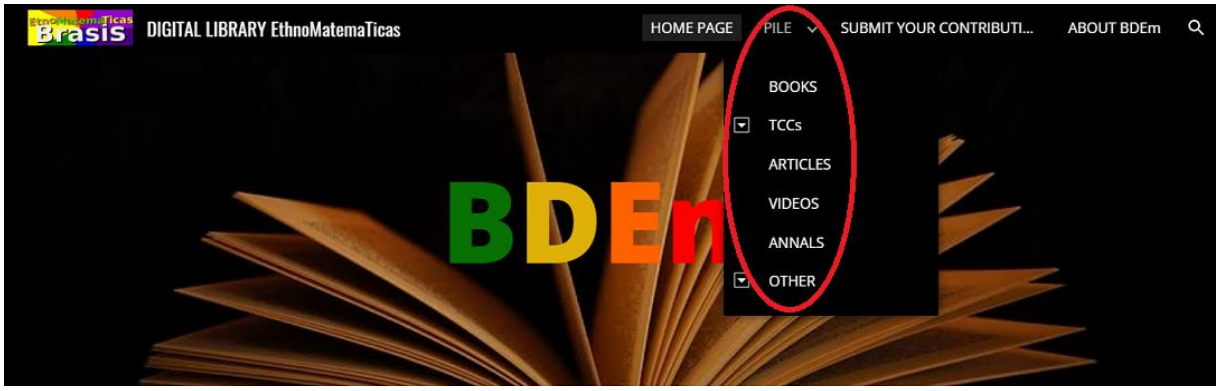

Figura 01: Captura de tela do site sites.google.com/view/etnomatematicas

Figura 02: Captura de tela da apresentação no Congresso MD

BDEm: um convite à reflexão epistemológica e à busca de referenciais, Figura 02, de mesmos autores, é o título do trabalho apresentado no Congresso Internacional Movimentos Docentes (MD), em outubro de 2021.

Confira a republicação da apresentação no Canal VEm Brasil - EtnoMatemaTicas Brasis: https://youtu.be/2mrdY6_4Qr4

Acesse a BDEm: sites.google.com/view/etnomatematicas e Envie sua contribuição.
Acesse o e-Almanaque EtnoMatemaTicas Brasis: https://bityli.com/Emkcz7

News from the Journal of Mathematics and Culture – JMC

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University of Toledo, USA

Milton Rosa
Universidade Federal de Ouro Preto, Brasil

Iman Chahine
University of Massachusetts Lowell, USA

Journal of Mathematics and Culture is a peer–reviewed journal sponsored by the *North American Study Group on Ethnomathematics* (NASGEm) and by the *International Study Group on Ethnomathematics* (ISGEm). You can also access *JMC* on *Google Scholar*[7].

a) **Journal Content**

The journal's contents examine the intersections between mathematics and culture in both western and non-western societies, and among both math professionals (such as university mathematicians, mathematics educators, and cryptologists) and non-professionals (such as carpenters, indigenous healers, and hair stylists).

We define culture broadly, to include all scales: ethnic groups, nations, labor communities, religious traditions, professions, and so on. Particular aspects of culture examined might include broad social dynamics such as race and gender, or micro-practices such as dancing or computer programming.

Mathematical practices include symbolic systems, spatial designs, practical construction techniques, calculation methods, measurement in time and space, specific ways of reasoning and inferring, and other cognitive and material activities which can be translated to formal mathematical representation.

Of particular interest are educational studies which take the classroom setting into account, such as pedagogical applications of ethnomathematics.

b) Review Process

An editor and at least two peers, chosen from the Editorial Board or from among authors of submitted manuscripts, will review each submission.

c) Submission Guidelines

Please, access *https://journalofmathematicsandculture.wordpress.com/submitting-to-jmc/* for submission guidelines. Articles may be submitted in English, Portuguese, Spanish, or Arabic.

LAST REMARKS

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If we put aside our ideological biases about the development of local mathematical knowledge and investigate the close relations between mathematics and culture, we can understand the thoughts and

[7]Please, access the following address to find Journal of Mathematics and Culture – JMC on Google Scholar: https://scholar.google.com/citations?hl=en&user=GPlEtUkAAAAJ&view_op=list_works&authuser=3&gmla=AJsN-F6yLIEaVASh0xhU7fCIXz_Y_-e-H6rwTIikFX1hRyfI45VZZN9TLMAhWRXZ4ClD-ADbHoPokw7klYhOHB34BmY8VmqWP2gKrENmpdfbUMHCMF6ILlM

feelings of diverse peoples. In order to work with these issues, it is important to rely on both academic sources and on the voices of the *invisible* members of distinct cultural groups, as well in the information recorded in their artifacts, in relation to their traditions and other sources, such as their writings and correspondences, diaries, and popular periodicals and almanacs.

For example, these sources are related to: a) *Biblioteca Digital EtnoMatemaTicas – BDEm* (*EtnoMatemaTicas Digital Library*), b) *e-Almanaque EtnoMatemaTicas Brasis* (*e-Alamanac EtnoMatemaTicas Brasis*) and c) *Calêndricas Etnomatemáticas* (*Calendrical Ethnomathematics*)[8]

In this context, it is necessary to develop research in relation to diverse perspectives on mathematics education that are sensitive to features of social, cultural, and historical contexts in which the teaching and learning process in mathematics takes place, as well as our concern in enabling its quality access to the entire population and not just to a privileged segments of society.

In this regard, it is always necessary to defend the principles, ethics, postures, behaviors, and values that seek the promotion of quality education that promotes the formation of critical, reflective, and active citizens for the social transformation.

Thus, it is important to include and value the many diverse strands of research in ethnomathematics. Some are common and typical to local communities where members live and work and are regarding theoretical issues, such as political-epistemological bases of ethnomathematics and its relation to culturally relevant pedagogies.

In my opinion, this approach opens new directions for research in Ethnomathematics because it enables us to see a range of themes that go from pedagogical action and arts to philosophical discussions about ethnomathematics related to the connection between mathematics and culture during the pandemic time.

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[8]For more information, please, access: a) *BDEm* at: sites.google.com/view/etnomatematicas, b) *e-Almanaque EtnoMatemaTicas Brasis* at: https://drive.google.com/file/d/1GLIFfk10mY_dyP7lYsSPlMXf14-rpU2l/view?fbclid=IwAR02czAfAz11oi3tSJ8CdG6SwFrx4h36kL8qQWRD9soxP1fA7oJNjFdz_Rc, and c) C*alêndricas Etnomatemáticas* at: https://docs.google.com/document/d/1gjDYUCtaNtncvuAebZOJcNktwLIDrZSZTF4KpqE3kSc/edit?fbclid=IwAR2R5HZ-KC2t3gFC2mnbgpdfKcQmJkZhlnLx5a6Fi_ZGqV8JmSHI5tqSH3Q.

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