ISGEm Newsletter

INTERNATIONAL STUDY GROUP ON ETHNOMATHEMATICS

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Prezado Colega

Paz!

No nosso II Congresso Internacional de Etnomatemática, realizado em agosto de 2002 em Ouro Preto – MG, aceitei o serviço de publicar o Boletim do ISGEm. Para isto, pedi a colaboração da graduanda em matemática, Inês Mendes **(inesmendes@yahoo.com.br).**

Esta edição é a primeira feita por nós e pensamos que o boletim teria mais o jeito da etnomatemática se a língua escrita fosse respeitada no texto, além de, nossas possibilidades de tradução/versão não poderia ser realizada a contento.

Gostaríamos que vocês colaborassem enviando artigos - trabalhos em etnomatemática – e enviassem endereços de pessoas interessadas no mesmo para que pudéssemos atualizar nossa lista de endereços.

Caso tenha havido alteração de endereços e/ou pessoas do "executive board", por favor comunique-nos.

As correspondências podem ser enviadas po email para o enderêço eletrônico: edicaoisgem@yahoo.com.br ou para o meu próprio endereço: pepe@edu.ibilce.unesp.br.

Um abraço

Pedro Paulo Scandiuzzi
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Ethnomathematics Place in Teacher Preparation Programs

By: Amy Dyal - Graduate student at the University of Florida.

I was a first semester graduate student at the University of Florida, before I was ever introduced to the idea of Ethnomathematics. I decided to enroll in a Multicultural Mathematics course that introduced the idea of connecting math to the student's culture.

There were two main components to this class: activities and core course component presentations. First, the activities introduced me to ethnomathematics and sparked my curiosity. The activities were lesson plans or activities that involved mathematics and were developed based on one of five regions: Africa, Asia, Europe, North America, and Central and South America. The activities identified the various ways people used mathematics in their day-to-day activities, such as sewing and/or quilting, games, trade, building construction, calendars and time, etc. Secondly, the presentations gave me more information on ethnomathematics, including background on what it is, why we should use this method in the classroom, groups or individuals related to invention of ethnomathematics, etc. For the presentations we were divided into groups of two and assigned a topic to present to the class. My partner and I received "ethnomathematics," and up until this point we had only discussed multicultural education and had never been introduced to the term ethnomathematics. However, we quickly learned they were closely related. We researched the topic a lot for our presentation, but my curiousity did not stop there. Afterwards, I still continued to research the topic because it seemed like a great approach to teaching mathematics.

As a child, I was often intimidated by mathematics because it seemed so abstract and/or distant from my everyday life. As a child, you wanted and possibly even need to make personal connections to truly understand the idea. While I always received good grades in mathematics, I never truly understood the ideas presented to me, I simply did the algorithms and procedures given to me by the textbook or the teacher. However, this only led to a superficial understanding of the material and I was unable to apply those concepts into other situations. Often I would have to be re-taught those same procedures in later mathematics classes. However, if I would have been taught using ethnomathematics, I feel things would have been better or easier for me. I would have greatly benefited from the connections between math and my day-to-day life. Mathematics can be found in sewing, calendars, architecture, trade, and many other things that I willingly participate in without even realizing the mathematics that is involved. Participating in explorations, as an elementary student like those in my multicultural mathematics class, would of allowed me to build self-confidence in mathematics, realize that it can be "conquered" and that I can be successful in mathematics.

Not only did these explorations, presentations, and individual research I did make me think about my mathematics as a young student, but it also made me think critically about my previous mathematics methods course. Why had I not been introduced ethnomathematics before? Creating a personal connection for students is a central component of all my other methods courses. Why are teacher preparation courses in mathematics behind, when mathematics is a subject that most often alienates or intimidates students?

Ethnomathematics has so many positive benefits for students. First, as stated before, it creates a personal connection that other teaching styles or methods simply do not provide. Students, especially at the elementary school level, need to see the material they are learning is useful in their everyday lives. They need to see the value of learning the material presented to them. Students will be more interested and engaged in activities they feel benefit them in some way. Secondly, it allows students to develop a sense of pride in their culture. When students see contributions their culture has made to mathematics, no matter how big or small, they will develop a sense of pride about who they are and where they come from. This pride will transfer over into self-confidence and will help them to take risks that they were unwilling to take before. Also, students acquire self-confidence by realizing they have been using mathematics, without even knowing it, in many of their daily activities. Ethnomathematics also helps to foster tolerance and acceptance among the children because they learn that each culture is valuable. As you can see, helping the students to create a personal connection with the mathematical material will affect so many aspects of that child's life.

As a student of mathematics, I was able to experience the positive benefits of ethnomathematics firsthand. I am extremely disappointed that I had not been introduced to this method, or teaching approach, before graduate school. Ethnomathematics should be part of all teacher preparation courses. There are many future teachers who did not attend graduate

school or who decide to enroll in another math methods course and as a result they missed the opportunity to learn about ethnomathematics. I have several friends who just graduated from another university, and I asked them if they had ever heard of ethnomathematics. Unfortunately, they all answered no. As a result, their students will not be receiving this type of instruction. I believe learning about and implementing ethnomathematics in the their future curriculum will allow their students to truly understand mathematical content and make them all want to become life-long mathematicians.

Contact: amydyal@yahoo.com

Check out www.webCT.com/math, and then click on Math Medley to hear a radio talk show with guest Gloria Gilmer. Math Medley is a weekly call-in talk radio show, hosted by Pat Kenschaft from the Department of Mathematical Sciences at Montclair State University. Each show features an interview with a guest discussing a topic with an underlying theme of mathematics such as education, parenting, equity, or the environment.

Email de 22/10/02

Hello Pedro,

Here is one more site to consider for the newsletter, this was submitted by Marcia Ascher.

http://redescolar.ilce.edu.mx/redescolar/act_permanentes/mate/kolam01.htm

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Email recebido dia 30/10/02

Dom Pepe -

Eduardo asked me to do a write up for HPM, you can use it if you want for the next newsletter.here it is:

http://www.csus.edu/indiv/o/oreyd/hpm.html

Hello Pedro,

My name is Tod Shockey and I've been trying to help edit the newsletter for the past year. Here are a few items that I have accumulated for the newsletter that you might consider including. If I can offer any assistance please let me know.

Cheers,
Tod

Tod L Shockey, Ph.D.
Assistant Professor
Department of Computer Science, Mathematics & Statistics

Email de 21/10/02

II CIEM: Report on the International Congress on Ethnomathematics in Ouro Preto, Brazil.

5-7 August 2002
Ouro Preto, Brazil

History and Pedagogy of Mathematics Newsletter

The 2nd International Congress on Ethnomathematics (II CIEM) met 5-7 August 2002. Ouro Preto, Brazil Over 300 participants from 19 countries came from; South Africa, Germany, Brazil, Canada, Denmark, Spain, United States, Greece, Guatemala, India, Italy, Japan, Mexico, Mozambique, New Zealand, Peru, Portugal, United Kingdom and Zimbabwe. The conference began with a moving tribute to Paulo Freire: entitled: “Paulo Freire´s Contribution to the Epistemology of Ethnomathematics”. During the conference four lectures were given: Terezinha Rios spoke about the “Philosophy of Education and Ethnomathematics Perspectives”; .Emmanuel Lizcano talked was titled “The Mathematics of the European Tribe: A Case Study; Prof. Eduardo Sebastiani shared his experience with Ethnomathematics in national Perspective of Brazil. The conference ended with a moving lecture given by Ubiratan D’Ambrosio entitled “Ethnomathematics an Overview”. The conference was organized as well around 6 Round Tables:

1- Ethnomathematics and Indigenous: Coordinated by: Bill Barton, New Zealand:

2- Ethnomathematics and Rural Education: Coordinated by: Gelsa Knijnik, Brazil

3- Ethnomathematics and its Theory: Coordinated by: Maria do Carmo Domite, Brazil
4- Ethnomathematics Urban Education: Coordinated by: Arthur Powell, United States;

5- Ethnomathematics and Teaching Qualification: Coordinated by: Lawrence Shirley, United States;

6- Ethnomathematics through History: Coordinated by: Franco Favilli, Italy

Two poster sessions allowed over 90 posters to be presented and discussed by conference participants. The posters showed the real diversity found in the emerging field of ethnomathematics. II CIEM also added a new activity, the presentation of the 1st Ubiratan D'Ambrosio Prize which was awarded for the most significant work in ethnomathematics. The award was given for work in:

• Teacher Education: Helena Dória de Oliveira
• Rural Education: Franco Favilli, Laura Maffei and Irene Venturi
• Indigenous Education: Ieda Maria Giogo
• Urban Education: Josinalva Menezes, Simone da Silva and Rosália da Silva
• History /Epistemology: Roseli Correa, Caroline dos Passos and Dirceu dos Santos.

The III International Congress on Ethnomathematics will take place in Auckland, New Zealand in 2006. For further information related to future ethnomathematics activities we invite the reader to go to: ISGEm International Study Group on Ethnomathematics (http://www.rpi.edu/%7Eeglash/isgem.htm). For more information and a copy of the CD Rom, contact Prof. Eduardo Sebastiani at: sebastiani@uol.com.br.

Daniel Clark Orey - California State University, Sacramento - http://www.csus.edu/indiv/o/oreyd/

Book Review by Claudia Zaslavsky

Bazin, Maurice, Modesto Tamez, and the Exploratorium Teacher Institutue. *Math and Science Across Cultures; Activities and Investigations from the Exploratorium.* New York: The New Press, 2002. Pb, 192 pp, $19.95. 1-56584-541-2.

This collection of fourteen inquiry-based activities was developed by the staff of the famed San Francisco Exploratorium, working with teachers and students over a period of several years. Subjects include ancient Egyptian numeration, the quipus of the Inca, a game of solitaire from Madagascar, Maya numeration and calendars, patterns in basket weaving of many cultures, and much more. During a visit to the United States, Paulus Gerdes created the activity dealing with African *sona* sand 'drawings. Mathematical concepts are developed clearly in both the math and science activities.

Each of these "hands-on and minds-on" activities is carefully designed to engage the students in discovery and encourage creativity. Symbols placed at strategic places suggest that the student stop reading and try an experiment or investigation. Each chapter is self-contained and can be used independently. Teachers of middle and secondary classes, of inservice courses, and of liberal arts college courses, will find this a valuable collection.

Etnomatemática e hortaliças: caminhos facilitadores da vida cotidiana dos horticultores

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Gramorezinho, comunidade situada no litoral norte da cidade de Natal (RN), originou-se na década de 50 quando um grande número de famílias, fugindo da seca, emigrou do interior do estado. Hoje conta com 300 famílias que vivem da cultura de hortaliças (alface, coentro, cebolinha e pimentão). Na comunidade há duas escolas municipais do ensino fundamental. Não há transporte coletivo, posto médico e nem posto policial. As ruas não são calçadas e não dispõem de saneamento básico.

A produção de hortaliças em Gramorezinho é caracterizada por pequenas propriedades familiares nas quais trabalham no máximo quatro pessoas de uma família. Quase não se emprega mão de obra assalariada.

As propriedades são hortas irrigadas com água da Lagoa de Gramoré, adubadas com adubo comprado do aviário, contendo no máximo 90 leiras de 20 metros de comprimento por 2 metros de largura.

Os horticultores trabalham na horta todos os dias, desde o nascer ao pôr do sol, o que em Natal habitualmente acontece às cinco horas da manhã e às seis horas da tarde. A única exceção é aos domingos, dia em que eles vão para casa descansar depois da irrigação da horta pela manhã.

Detectamos práticas específicas elaboradas pelos agricultores que já foram incorporadas na sua rotina de

trabalho. Tais práticas se revelam tanto na etapa da produção como na etapa da comercialização das hortaliças. Das práticas da etapa de produção observamos o "par de cinco", a utilização de medidas não oficiais de comprimento e volume, contagem de tempo pelos processos naturais, etc.

O "par de cinco". As hortaliças, à medida que vão sendo colhidas, são amontoadas no chão, dentro da leira, em grupos de cinco unidades (cinco pés de alface, cinco molhos de coentro, cinco molhos de cebolinha), o "par de cinco". Depois de ter uma determinada quantidade de hortaliça colhida, o horticultor toma um saco de farinha de trigo aberto e vai passando para ali as hortaliças, contabilizando a quantidade de "par de cinco". Havendo, numa trouxa, duzentos molhos de coentro, o horticultor os contabiliza como quarenta "par de cinco". Pode-se ver aí um instrumento facilitar da atividade do horticultor, onde agrupamentos de cinco aparece como uma base auxiliar do sistema de base dez.

Medidas não oficiais. As medidas oficiais (centímetro, metro) são utilizadas em ocasiões como na construção de leiras, o que é feito raramente. Já nas atividades diárias, se utilizam medidas não oficiais como o palmo, ou mesmo o pé, como na horta de seu Edvaldo. Tanto o palmo como o pé são utilizados no momento do plantio das hortaliças (no espaçamento entre as mudas de alface, cebolinha e pimentão, na distância entre as covas de coentro). Na medição do adubo, seja na etapa da comercialização ou na adubação das leiras, comumente se usam latas, carrinhos de mão e outras medidas informais como subdivisões do metro cúbico.

O controle de adubação das hortaliças é feito observando o tamanho e/ou aparência das mesmas. Esse procedimento de observar o tamanho e/ou aparência das hortaliças para, em seguida, aplicar a adubação necessária, ocorre também com o período da colheita, ou seja, os horticultores não registram a data que as hortaliças devam ser colhidas. Aqui podemos ver uma noção de tempo intrinsecamente ligada aos processos que decorrem na natureza. O tempo é quantificado pelos processos que vão surgindo: *germinação, crescimento das plantas, cor das folhas, etc.*

À etapa de comercialização nós relacionamos procedimentos tais como: cálculo do custo de produção das hortaliças, cálculo do preço de venda, avaliação do lucro obtido.

Os horticultores mencionaram como custo de produção das hortaliças, em sua maioria, apenas as despesas com adubo e sementes de coentro. De fato, pouquíssimos horticultores utilizam mão de obra assalariada, mas gastos com energia elétrica (para a bomba d'água), impostos, utensílios com pás, enxadas, foram mencionados *apenas por um* dos entrevistados.

O preço de venda das hortaliças depende de vários fatores tais como, a época do ano (inverno ou verão), presença ou não de chuvas e oferta ou não de hortaliças de outras regiões do interior do Rio Grande do Norte, fatores estes sobre as quais o horticultor não tem controle. Resta-lhes apenas estabelecer uma proporcionalidade no plantio de hortaliças de acordo com a demanda (mais coentro, menos alface, etc.).

Para os horticultores, o lucro está associado à quantidade de hortaliças vendidas e à localização das feiras. Eles não têm idéia precisa do ganho que auferem de sua atividade. Conforme nos relatou José Vieira, em 01/02/01, "não tenho base mais ou menos não, porque não tem um canto de controle. As vez dá mais, as vez dá menos".

As práticas relacionadas com a produção das hortaliças nos pareceram eficazes e nelas percebemos a intenção de FACILITAR o trabalho diário dos horticultores;

Algumas das práticas relacionadas com a comercialização das hortaliças nos pareceram DESVANTAJOSAS para os horticultores e merecem uma investigação mais cuidadosa. Tal investigação nos ajudaria a esclarecer se, de fato, a falta de um instrumento de contabilidade e administração de sua atividade está levando os agricultores a ter seu ganho minimizado. Caso isto se confirme, seria o caso de propor-lhes algum tipo de ação conjunta que os ajudasse na administração dos aspectos econômicos de sua horticultura.

Recebido dia 21/08/02

ISGEm Executive Board