

Intersection Points

The Newsletter of the Research Council on Mathematics Learning

October 2006

Volume 31, No. 2

The Research Council on Mathematics Learning seeks to stimulate, generate, coordinate, and disseminate research efforts designed to understand and/or influence factors that affect mathematics learning.

Visit us on the Web at: www.unlv.edu/RCML

President's Message
Pages 1-2

BALLOT – Candidates for
Election. Page 3

REGISTER – RCML
Conference 2007. Page 4

Points of Puzzlement
"Flipping Out." Page 5

RCML Personnel
Page 6

PRESIDENT'S COLUMN

Changing Landscape

Bea Babbitt, President

As most of you know, I live in a desert. Nevada is the natural home of cactus, sagebrush, and yucca. Many people moved to the southwest to escape high humidity and excessive pollen. But as residents from across the United States moved to southern Nevada, they brought their native plants with them to make it feel more like home. They planted grass, oleander bushes and flowering trees. Maintaining those plants has resulted in rising humidity, high pollen counts, and impending water shortages. It's taken the southern Nevada population a while to read the hand-



writing on the wall, but large numbers of desert landscapes are reappearing in this desert climate. I've been thinking lately about these changing landscapes.

RCML operates under a Constitution and By-Laws drafted and approved by our members at various times in the past. The documents

build in opportunities for members to initiate changes in these documents over time describing both the procedures and timelines. We have the opportunity to change the landscape, if you will. Hence, if you are interested in proposing a change to the Constitution or By-

laws certain actions must be completed shortly to be included on the Annual Business Meeting agenda in March 2007. This is your yearly reminder that according to Article VII of the Constitution, "Amendments to the Constitution can be submitted to the Executive Committee, [by any regular member], not less than sixty days prior to the annual business meeting. These proposed amendments shall be considered by the Executive Committee with recommendations to the regular members at the annual meeting." Similarly, according to Article VI of the By-Laws, "The Executive Committee shall distribute in writing all proposed amendments to the By-Laws together with its recommendations for approval or rejection to the regular members not less than thirty days prior to the annual business meeting of the Council." This means suggestions for bylaws changes should be sent to me by early December so the Executive Committee would have

the opportunity to review them and make recommendations to the members in accordance with our Constitution and By-laws.

The publication of Curriculum Focal Points by NCTM (2006) represents another change in the national mathematics landscape. The document describes curriculum focal points for each grade level, pre-K-8. The document is one attempt to describe the most significant mathematical concepts and skills to be taught at each grade level. According to the document, the need for renewed focus in mathematics curricula arises from accountability requirements, the high mobility of students and teachers, and the high cost of curriculum development. Skip Fennell, NCTM president and former RCML president (91-93), says the intent of the publication is to serve as a catalyst for important discussions and decision making on curricular frameworks at the state and local school district levels (NCTM website). The authors of the document argue that the identification and implementation of curriculum focal points will benefit students by extending student experience with core concepts and skills, deepen student understanding, help students develop mathematical fluency and the ability to generalize. I want to take this opportunity to begin to discuss Curriculum Focal Points – a discussion we can continue at the RCML conference in March. Several points in the landscape have caught my attention. For example, one perspective that is minimally addressed in the document is that of the teacher. Importantly, an attempt to focus curricular efforts at each grade

level does make sense from an effective teacher perspective. Cognitive theory suggests that we build schema of reoccurring life events that help us easily comprehend discussions of and taking action related to such events. “Birthday party” and “national elections” are two common schema examples that come to mind. Candles, cake, and presents are common items associated with “birthday party” schema. Candidates, billboards, and polling booths are common items associated with “national elections.” Experienced teachers often have well developed schema of particular grade-level curricula and use that often unarticulated schema to guide instructional planning and adjust the rate of instruction to meet annual goals. They know what an end-of-the-year student should know and be able to do. Experienced teachers periodically check student performance to make sure their students are systematically developing important knowledge and skills. And if an experienced and effective teacher experiences a time crunch, they refocus their efforts on the instructional essentials. The schema is so useful because it can easily be carried in a teacher’s mind at all times and it directly affects the numerous decisions that teachers make on a daily basis about the use of instructional time. Similarly, I would anticipate that a shared schema of grade level focal points should help teachers and schools keep their instruction on target and guide important instructional decisions.

The second issue is really a concern. Curriculum Focal Points clearly states that as we organize

mathematics curricula around the grade-level focal points, we should maintain a clear emphasis on the processes of communication, reasoning and proof, problem solving, connections, and representation. My concern is that in implementation we may ignore these processes as we focus back on mathematics content. Why do I have this concern? People in power and the general public often ignore the subtleties of an argument. The baby boomers, for example, are likely to see the similarity in the focal points to the mathematics of their childhood. Superficially, except for the geometry content, the focal points sound very much like their elementary mathematics curriculum (third grade - multiplication, fourth grade - division, fifth grade - fractions etc.). They may take comfort in the familiar landscape. In contrast, I hope we have made some permanent positive changes over their lifetime in how we teach mathematics and in how students understand mathematics. From my perspective, those positive changes reside in the processes students use to understand and to express their understanding of mathematics. What’s your view?

The math landscape is changing. As always, I look forward to gaining your perspectives on the changes in Cleveland in March.

Candidates for Election – Fall 2006

Please mail this page to: Pat Jordan
325 Donna Ave.
Guthrie, OK 73044

Or email your selections to patricia.jordan@okstate.edu

BALLOTS ARE DUE DECEMBER 1st. PLEASE VOTE!

V-P for Publications

Serves a 2-year term beginning 18 hours prior to Business meeting

Duties - Coordinates activities of Newsletter Editor, FOCUS Editor, and Membership Coordinator, serves on Editorial Board of FOCUS, and serves on the Executive Committee

CHOOSE ONE:

- Azita Manouchehri – Central Michigan University
- Sheryl A. Maxwell – University of Memphis
- Rama Menon – California State University at Los Angeles

Secretary

Serves a two-year term beginning 18 hours prior to Business meeting

Duties – Records and maintains minutes of Business and Executive meetings, coordinates correspondence with President, and oversees master Handbook

CHOOSE ONE:

- Marilyn Sue Ford – University of Nevada at Las Vegas
- Lynae Sakshaug – SUNY at Brockport
- Elaine Young – Texas A&M University at Corpus Christi

Conference Committee (we will elect two members)

Serves for a three-year term

Duties – Assists local Conference Committee with conference and conducts and assesses evaluation of conferences.

CHOOSE TWO:

- Lynn Breyfogle – Bucknell University
- Andy Carter – Roosevelt University
- Tamara Carter – Oklahoma City Community College
- Darlinda Cassel – University of Central Oklahoma
- Gabriel Matney – University of Arkansas at Fort Smith
- James Telese – University of Texas at Brownsville
- Juliana Utley – Oklahoma State University



Thirty-Fourth Annual RCML Conference
 Cleveland, Ohio
 March 1-3, 2007



ADVANCED REGISTRATION FORM

Name _____
 Print or type your name as you wish it to appear on your name badge.

Address _____

Phone () _____ Fax () _____

Email _____ (if you are a speaker, this will be listed on the program)

Advanced Registration Fee (includes 2 breakfasts, 2 lunches, and 3 breaks)

RCML Member

Speaker _____ \$125
 Non-speaker _____ \$135

Non-RCML Member

Speaker _____ \$155
 Non-Speaker _____ \$165
 Full-Time Graduate Student _____ \$50
 Guest of Registrant (For food functions only) _____ \$50

Name of Guest _____

Total enclosed _____

PLEASE INDICATE WHICH MEALS AND FUNCTIONS YOU PLAN TO ATTEND

- Thursday Reception
- Friday Breakfast
- Friday lunch
- Friday Dinner
- Saturday Breakfast
- Saturday Lunch

Make checks payable to ACMSE – RCML. Mail your registration to:

Roland Pourdavood
 Cleveland State University
 2121 Euclid Ave
 Chester Building Rm. 266
 Cleveland, Ohio 44115-221

For a full refund, cancellations must be made no later than January 9, 2007

For room reservations call Wyndham Cleveland Hotel @ Playhouse Square (216) 615-7500. Rates are \$83 per night for a single or double room plus \$10 dollars each additional person (max 4 people) in the room. Indicate that you are attending the RCML conference in March, 2007.

Points of Puzzlement

Michael Naylor

Here's a very puzzling probability question, one that has generated a lot of arguments amongst my friends and colleagues. Before you jump in with the "obvious" answer, read the notes below.

Flipping Out

You have two coins, one is a fair coin with heads on one side, tails on the other. The second coin has heads on both sides.



You select one coin at random and flip it three times. It comes up heads each time. What is the probability it will come up heads on the fourth flip?



Send solutions to mnaylor@cc.wvu.edu. Top entries win valuable intrinsic rewards!

Notes:

- Does the number of heads you witness change the probability of which coin you selected? If you flipped it 100 times and it came up heads each time, would you be fairly certain that you had chosen the double-headed coin?
- This question is very different from the question: "A fair coin is flipped 3 times and it comes up heads each time, what is the probability the next flip will be heads?"
- What if there had been only flip and it shows heads. What is the probability the other side is also heads? (It is not 50%!)

Last Issue's Puzzle:

HOCKEY PUCK MIND EXPERIMENT

Imagine a circular table which can spin in place. 4 pockets are equally spaced around the edge, and in each pocket there is a hockey puck which is white on one side and black on the other. You can't see the hockey pucks but they're either white side up or black side up, and you'd like to flip them so they all have the same color facing up.

You may reach into two pockets at the same time and pull out two pucks, look at them, flip them however you like, and then return them to their pockets. Now here's the catch: the table is spun, and you now you don't know which pockets are which. Once again you can choose two pockets, pull out two pucks at the same time, set them either side up, and the table is again spun. The game ends when all four pucks are either all white- or all black-side up.

Is it possible to guarantee a solution in a finite number of turns, or might it be that if you were terribly unlucky you might never succeed?

Solution: It can be done! Note that the strategy of flipping pucks to the black side until you've found and flipped all the white pucks will not work. We must assume you always make the unluckiest draws possible. Here's how:

1. Draw two pucks in adjacent pockets, turn them so they are both white. It is now WWBB or WWWB, ordering the pockets clockwise.
2. Draw two pucks diagonally opposite, turn them so they are both white. The state will now be WWWB. (The only other possibility would be WWWW, which would mean you'd won, but we're assuming the worst.)
3. Draw two adjacent pucks again. Assume they're both white (we're very unlucky, remember.) Make one black and one white. Now we've got two black and two white, either BBWW or BWBW ordering them clockwise.
4. Draw diagonally opposite pucks. If they're the same color, flip them both and win... but we're unlucky so they're not. The state must be BBWW. Progress! Don't bother flipping any right now.
5. Draw adjacent pucks. They'll be BW (otherwise they'd be the same color and we'd flip them and win). Change them to WB. The state is now BWBW.
6. Draw diagonal pucks... they'll be the same color. Flip them both and WIN!

RCML 2006 Officers

President 2005-2007

Bea Babbitt
University of Nevada – Las Vegas
Henderson, NV 89074-4940
babbitt@unlv.nevada.edu

VP – Publications, 2005-2007

Anne Reynolds
Kent State
Kent, OH 44242
areynol5@kent.edu

Membership Chair

Roland Pourdavood
Cleveland State University
Cleveland, OH 44115-2440
r.pourdavood@csuohio.edu

President-Elect 2006-2007

Patricia Lamphere Jordan
Oklahoma State University
Stillwater, OK 74078-4042
patricia.jordan@okstate.edu

Secretary 2005-2007

Diana Perdue
Virginia State University
Chester, VA 23835
dperdue@vsu.edu

Focus Editor

Jean Schmittau
SUNY-Binghamton
Binghamton, NY 13902
Jschmitt@binghamton.edu

VP Conferences, 2004-2006

David Boliver
University of Central Oklahoma
Edmond, OK 73034
dboliver2@cox.net

Treasurer, 2006-2008

Dixie Metheny
Montana State University
Billings, MT 59101
wmallam@tsu.edu

Newsletter Editor

Michael Naylor
Western Washington University
Bellingham, WA 98225
mnyaylor@cc.wvu.edu

Webmaster

Ryan Speer
Perrysburg, OH 43551
speer99@yahoo.com

Intersection Points -- RCML Newsletter

Michael Naylor - Editor
Dept. of Mathematics MS 9063
Western Washington University
Bellingham WA 98225-9063

ADDRESS CORRECTION REQUESTED