

SIGMAA-QL NEWSLETTER

OCTOBER 2007



LETTER FROM THE CHAIR

MAURA MAST, SIGMAA-QL CHAIR

Welcome to the second edition of the SIGMAA-QL Newsletter! I didn't expect to be writing to you as Chair this time, but I'm glad I've had the opportunity to continue as Chair for another year. I've learned a lot now about official SIGMAA details (reports to the MAA and so on) and also how to plan for and organize QL events at conferences. There is a real excitement, on a national level, about QL right now and I am impressed by the number of QL activities that are taking place. Our SIGMAA has had a strong role in many of these, and we need to continue to lead the national discussions about quantitative literacy.

This February, Kimberly Vincent will become the SIGMAA-QL Chair. Caren Diefenderfer, who served as Past-Chair for an extra year, will leave the Executive Committee. Caren has been a great voice for this SIGMAA and I will be sorry to see her go. Our secretary-treasurer Semra and our webmaster Aaron have also been a great support for this SIGMAA and their work is truly appreci-

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QL NEWS FROM WASHINGTON STATE UNIVERSITY

KIMBERLY VINCENT, WASHINGTON STATE UNIVERSITY

Kimberly Vincent has the goal of embedding QL in all majors and even some general education courses such as English Composition at WSU and is working with administrators to gain support for a campus-wide program. There is a requirement that every major must have writing embedded in two upper division classes. The writing cannot be technical writing. It is hoped to have a parallel requirement for QL. To this end Kimberly received a grant to run a pilot program called "Quantitative Literacy in the Major" at Washington State University Pullman, involving faculty from Sociology, English, Mathematics and Entomology. To prepare faculty, a series of guest speakers came to campus to discuss QL, and QL programs. Then each partici-

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QUANTITATIVE LITERACY INTERSECTS WITH SOCIOLOGY

CINNAMON HILLYARD, UNIVERSITY OF WASHINGTON BOTHEL
MAURA MAST, UNIVERSITY OF MASSACHUSETTS BOSTON

Mathematics and sociology faculty had an unusual opportunity to talk about common interests in quantitative literacy at a recent joint meeting organized by SIGMAA-QL and NNN (the National Numeracy Network). Representatives from SIGMAA-QL, NNN and the American Sociological Association, with support from a grant from the National Science Foundation, worked together for over 18 months to plan for and organize a special program on quantitative literacy at the annual meeting of the Midwest Sociological Association and the North Central Sociological Association. The meeting took place in April 2007, in downtown Chicago, and the special program featured the following sessions:

- A workshop on "Models of Quantitative Literacy Across the Sociology Curriculum"
- A panel discussion with Joel Best and Bernie Madison on the topic "Quantitative Literacy: Mathematicians, Statisticians, and Sociologists Share What Works"
- A panel on "Assessment of Quantitative Literacy in Sociology Courses and Related Fields"
- A panel on "Visual Representations of Data"
- A panel on "Teaching Statistics for the Social Sciences"
- A panel on "Teaching Quantitative Literacy: Examples from Across the Disciplines."

These panels and workshops featured over 30 different participants from across the nation and included faculty teaching mathematics, statistics, quantitative literacy,

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PREP WORKSHOP ON QL

KAY SOMERS, MORAVIAN COLLEGE

Moravian College in Bethlehem, PA was the site of a 2007 MAA Professional Enhancement Program (PREP) workshop, Quantitative Reasoning: Activity-Based Teaching Using Real Data. Sixteen workshop participants joined guest speakers Caren Diefenderfer from Hollins University, Maura Mast from the University of Massachusetts, Boston, and Bettie Smolansky from Moravian College and Directors Alicia Sevilla and Kay Somers from Moravian College for four days of work and play. Caren Diefenderfer and Maura Mast discussed quantitative reasoning programs on their own campuses and nationally, and Bettie Smolansky explored further the interdisciplinary nature of quantitative reasoning from a Sociologist's viewpoint.

Participants and guests discussed models for teaching quantitative reasoning on various campuses, sampled activities from the text *Quantitative Reasoning: Tools for Today's Informed Citizen*, and explored how to actively involve students in quantitative reasoning projects. The lively discussions included an investigation of how to design activities to engage students. Participants worked in groups to develop their own student activities on such diverse topics as dating and characteristics of an "ideal" partner, DNA fingerprinting, and gasoline prices over time. During social time, participants explored the historic areas of Bethlehem, shopped, and walked along the canal towpath.

SPREADSHEETS ACROSS THE CURRICULUM (SSAC)

LEN VACHER, UNVIERSITY OF SOUTH FLORIDA

Spreadsheets Across the Curriculum (SSAC) held its third, annual module-making workshop in Olympia WA in July 2007. SSAC is an NSF-funded project to develop and test a specific design of educational modules that aim to enhance quantitative literacy wherever problem-solving opportunities arise in the undergraduate curriculum. SSAC modules are PowerPoint presentations that guide students to build Excel spreadsheets while they examine and solve elementary mathematics problems in non-mathematics context. In working through the modules, students work with three, interacting sets of problems simultaneously — by determining the correct cell equations to populate the spreadsheets, by working through the embedded mathematical content, and by attacking the in-discipline problem or problems of the context.

Currently there are 42 modules available on the SSAC web site (<http://serc.carleton.edu/sp/ssac>, click on “Examples” to go to the searchable list). The posted modules have been developed by 31 authors from 15 educational institutions in eight states. They are “cataloged” into 19 different Library of Congress classifications (DT, G, HB, HG, LB, LC, PN, Q, QA, QC, QD, QE, QH, QP, QR, S, TC, WY), thus ranging from History - Africa to Nursing, with various stops in economics/finance and science along the way. The library of modules continues to grow as modules go through the editing, review and revision process. A new Web site is deep in development with a target launch in November.



Len Vacher, Maura Mast, and Anne Chase
at Colby-Sawyer's QL Workshop

QL INITIATIVE AT COLBY-SAWYER COLLEGE

SEMRA KILIC-BAHI, COLBY-SAWYER COLLEGE

Colby-Sawyer College, a small liberal arts college in New Hampshire, organized and hosted a four-day Quantitative Literacy faculty development workshop at the beginning of summer 2007. This workshop, supported by a NSF-DUE -CCLI Phase I grant, was attended by 23 Colby-Sawyer faculty and staff representing all departments and several student service areas. The President of the college, Tom Galligan, in introducing the workshop, inspired and energized participants with his description of why QL was so important for the nation and so appropriate for Colby-Sawyer. The atmosphere at the workshop was one of imagination, creativity and collaboration. Five invited speakers; Maura Mast, Univ. of Massachusetts; Judith Moran, Trinity College; Len Vacher, Univ. of Southern Florida; Frank Robinson, Yale University, and Dick Jardine, Keene State College; shared their experience and expertise with the participants. Participants heard from experts in the field, searched for materials already developed by others

and adapted them to their courses, and developed new materials of their own. The college is planning to host the second faculty development workshop in summer 2008. For further information about the program please contact Dr. Semra Kilic-Bahi, skilic-bahi@colby-sawyer.edu.

SSAC: A PARTICIPANT'S PERSPECTIVE

CHERYL COOLIDGE, COLBY-SAWYER COLLEGE

In the spring of 2005, my colleague Dr. Semra Kilic-Bahi invited Dr. Bill Thomas and me to accompany her to Olympia, Washington to participate in the Spreadsheets across the Curriculum (SSAC) project. We arrived on a Monday afternoon and spent the remainder of the day enjoying the beautiful waterfront. I thought I was on vacation!

The next day, we met the SSAC team and it became clear that this was no holiday! We were introduced to the project by examining one of the modules created by Dr. Len Vacher to study the concept of scale using the solar system as a model. Participants were asked to create a module in their own discipline, focusing on quantitative literacy (QL) skills. I chose to produce an activity dealing with chemical equilibrium, and noted that one of the benefits of using a spreadsheet is the ease with which “what if” questions can be incorporated into the students’ learning. Most participants quickly became obsessed with their module, often working late into the night on the computers provided by the SSAC team.

Although my Excel skills were strong when I arrived at the workshop, I considered myself a relative PowerPoint novice. The SSAC team, especially Dr. Vacher’s top notch graduate students, was especially supportive in helping workshop participants acquire the necessary software skills to succeed in creating a quality module. The experience of interacting with other faculty members with an interest in teaching and learning was also quite rewarding, and many valuable teaching tips were shared.

I returned home very pleased with my creation, and eager to test it with my Principles of Chemistry II students (mostly college freshmen) in spring 2006. Unfortunately, my students were close to mutiny when I asked them to complete the spreadsheet activity. It became clear that most of them lacked basic Excel skills, and they struggled so much with the mechanics of the activity that they did not really engage with either the QL skills or the chemistry content embedded in the activity. I was convinced that the process was sound, and decide to create a simpler module to address my students’ lack of computer skills.

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REFLECTIONS ON THE QL AND SOCIOLOGY CONFERENCE

ANDY MILLER, BELMONT UNIVERSITY

SIGMAA-QL/NNN held workshops and panels at the Midwest Sociological Society conference in April 2007. Since the summer of 2006, I've been developing materials for mathematics general education courses that focus on applications of mathematics to social justice issues. My initial focus has been on looking at the mathematics of measuring income inequality and models that try to explain rising income inequality. Hoping to get some insight into these topics from a sociology standpoint, I decided to attend the SIGMAA-QL/NNN workshops and panels at the Midwest Sociological Society conference in April 2007. I expected that I would benefit from at least two aspects of the meeting: First, the focus of many of the workshops was on connecting quantitative literacy to sociology. Second, in working on the course materials, I have often wanted real-world data and analysis of the social issues to provide context for the mathematics, and I was confident that the sociology sessions would be helpful in this regard.

At the conference, I attended most of the Quantitative Literacy sessions and found that each was valuable in some way. I'll comment on each in turn, then comment on the non-QL-specific sessions I attended, and close with a summary reflection.

It was clear that the organizers of the initial workshop (Models of QL Across the Sociology Curriculum) had put a lot of time into their presentations and in gathering materials. For me, the most valuable information from that workshop is found in the several pages of QL resources and references that I received. These resources and references will help me fit the mathematical and economic ideas connected to social justice issues into a broader context. I also appreciated the presentation of specific examples of modules and course activities; in addition to being good ideas to "borrow" for my own use, they were good models of module development.

In the workshop on Visual Representation of Data, I learned a lot of "nuts and bolts" type of information: examples of web sites, software tools, types of graphs and charts, and new aspects of familiar software (namely, Ex-

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DIFFERENTIAL EQUATIONS AND CIVIC ENGAGEMENT

VICTOR J. DONNAY, BRYN MAWR COLLEGE

"What are some problems facing the world today?" This provocative question has become the standard opening gambit in my math teaching. Students responses include: climate change, terrorism, HIV/AIDS, Asian flu, energy dependence, over population, animal extinctions and pollution. I go on to explain that a major goal of our course will be to see how mathematics can be used to address these important societal issues.

In his book *What the Best College Teachers Do*, Ken Bain observes that highly successful teachers often start out their courses by painting the broadest possible picture of the importance of what they are going to teach so as to stimulate student interest and motivation. As their courses progress, they continue to show the broader implications of what they are teaching. Many Quantitative Literacy courses incorporate this best practices approach by teaching mathematics in the context of meaningful real-world problems. Here I describe ways that I make such real-world linkages in more advanced courses: calculus and particularly differential equations. In these efforts, I make use of the book *Collapse: How Societies Choose to Fail or Succeed* by Jared Diamond. The book examines human societies throughout history that have died out, what factors led to their collapses, and what lessons we might learn to prevent a collapse of our present day global society.

The differential equations course is taught to sophomore, junior and senior math and science majors, with an enrollment of 15 to 20 students. I use the text *Differential Equations* by Blanchard, Devaney and Hall. Over the past several years I have been focusing the course more on mathematical modeling than on physics and engineering applications. Since Bryn Mawr is a liberal arts college without an engineering program and our physics department teaches its own mathematical methods course, I have the freedom to replace some traditional topics with material on modeling.

The first time I used Diamond's book, I had students read and respond to each chapter in the book, writing a page-long reaction paper that responded to the prompt:

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QL CASE STUDIES PUBLISHED BY MAA

MAURA MAST, UNIVERSITY OF MASSACHUSETTS BOSTON

In Fall 2006, the MAA published *Current Practices in Quantitative Literacy*, a set of case studies edited by Rick Gillman. This book presents over 25 essays about quantitative literacy and is an excellent companion to the 1996 MAA publication *Quantitative Reasoning for College Students: A Complement to the Standards*. Gillman's book begins with a set of historical reflections that set the context for the development of the QL movement in the U.S. The book then organizes the essays into three sections. Essays in the first section describe a wide range of quantitative literacy programs; in the second section, the essays outline courses that have been specifically designed to satisfy a QL requirement; the essays in the last section focus on related issues such as placement, advising and assessment. The essays in the book were written by faculty at a variety of schools, including community colleges, liberal arts colleges, and large state universities. They are fairly short, easy to read, and provide a solid set of ideas and practices reflecting current quantitative literacy teaching and learning. This book is a worthwhile investment for any individual or department interested in quantitative literacy.

ELECTRONIC RESOURCES

SIGMAA-QL members can use the SIGMAA-QL list-serve by mailing messages to <sigmaa-ql@enterprise.maa.org>. All members should have been signed up for this service when they became SIGMAA-QL members, but if you are not able to access the list-serve, please contact the current Secretary-Treasurer.

Anyone can access the SIGMAA-QL web site at <<http://www.maa.org/sigmaa/ql/>>. It contains news and resources associated with QL. Please send news, announcements, resources, photographs, and anything else related to Quantitative Literacy to the current Webmaster for inclusion on the web site. If you have trouble accessing the web site, please let the current Webmaster know. You can find our email addresses on page 4 under CURRENT OFFICERS.

DIFFERENTIAL EQUATIONS

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“how does the mathematics we have been learning relate to the topics discussed in the book?” While students were able to find connections for every chapter in the book, they felt reading the entire book was too demanding an assignment. This past year I had the students read a few select chapters that had particularly strong links with important topics in the course; specifically various aspects of population modeling.

Our first model involves the exponential function. To help students appreciate that even this simple model can have dramatic implications, they read the chapter “Malthus in Africa: Rwanda’s Genocide” in which Diamond argues that an important contributing factor to the genocide was overpopulation. Using data from the chapter and from international population web sites, students are asked to calculate for Rwanda the growth rate of population in the decades before the genocide and the population doubling time, and then predict what the population will be in later years. For the years after the genocide, they find that their predications significantly overestimate the actual population and are asked to account for the discrepancy. They realize that their overestimates are due to the deaths of hundreds of thousands of people during the genocide period and face the sobering fact that numbers arising from mathematical calculations can have a very human dimension. I do this exercise both with my differential equations students and with my calculus students. The materials for the exercise were developed with the assistance of Wen Gao, a Bryn Mawr math major, and were inspired by our participation at the 2006 Mathematics of Social Justice conference at Lafayette College.

A topic that I have made a particular focus of my differential equations course is modeling population growth with harvesting. This model involves a logistic differential equation with harvesting term $dP/dt = kP(1 - P/N) - \lambda$, where $P(t)$ is the population, k is the growth rate, N is the carrying capacity and λ is the harvesting level. Such a model can be used to study fish populations subject to yearly fishing (harvesting). The mathematics involved is the elegant and fairly advanced topic of bifurcation theory which shows that there is a critical harvesting level. Below this critical level, the population sustains itself at a healthy level. However if the fishing level increases every so

slightly above this critical level, then the population will crash towards extinction. There are numerous examples in the world of fisheries that have been over-fished leading to a precipitous decline in the fish stock. Such situations continue today and are regularly in the news. To prepare my students to appreciate the amazing ability of mathematics to explain and predict the over-harvesting effect, I want them to first experience for themselves how seemingly reasonable human behavior can lead to over-harvesting, which has close connections to the so-called “tragedy of the commons” phenomena.

The students read the chapter “Twilight at Easter” that examines the collapse of the society on Easter Island, home to the famous stone statues. They learn that a major factor in the collapse was the complete deforestation of the island and are left to wonder how a society could be so short sighted as to cut down all of its trees. Did no one notice that the tree population was drastically diminishing? Why did no one take steps to address the issue? They feel, a bit smugly, that they would be smarter than the Easter Islanders.

We then have a special three hour evening meeting of the class in which we play the simulation game Fishing Banks, Ltd created by Dennis Meadows. In this game, teams of students manage their own fishing fleets with the goal of maximizing profit. Over time, what invariably happens is that the teams build up large fishing fleets to maximize their short-term profit, over-harvest the fish population and cause the fish stock to crash to extinction. At this point, with no more fish to catch, the fish companies go bankrupt and hence fail to meet their goal of maximizing profit. The population crash happens even though the teams get feedback after each round on the amount of fish they have caught. By the time they notice that the stocks are decreasing, the corrections they make are too little and too late to stop the extinction. As we debrief this experience, the students realize that they have fallen into the same trap as the Easter Islanders: by over-harvesting a valuable resource, they have driven it to extinction.

Now that the students have a visceral understanding of the over-harvesting phenomena, I introduce the logistic growth model with harvesting and undertake its mathematical analysis. Students learn that mathematical modeling can be used to predict and explain the population crash phenomena and can thereby serve as a counter-

weight to the many pressures encouraging over-harvesting of resources.

We finish the unit with a discussion of the interplay between mathematical modeling and government and business policy making. Why is it that even though modeling can predict negative consequences, as with over-fishing or climate change, it is so hard to get society to take preventative action? Society might better be served by leaders with a firm understanding of mathematics in the context of policy making. By including in our math courses components that link mathematics to issues of social relevance, we can prepare and inspire our students to become these future leaders.

Further information about Donnay’s differential equations course can be found at his web site: www.brynmawr.edu/math/people/donnay.

CREDITS

Maura Mast went out and collected the information for this Newsletter and sent the items to Aaron Montgomery who used Adobe’s InDesign to lay out the material. The photograph was taken by Semra Kilic-Bahi. The fonts used are 10 point Times for the regular text and 12 point Charlemagne for the titles. And now, I’m just adding some text so this page doesn’t have a large empty white space in the middle of this column. It’s funny how you never end up with just the right amount of text for a newsletter. If you have too much material, you add a page, but the extra material never fills the page exactly. It always leaves little gaps in the text that look funny when you view the newsletter from afar. That’s why blurbs like this are written.

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LETTER

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ated. I also want to thank the MAA, and Michael Pearson in particular, for their help and their patient responses to my many questions.

It has been a very busy year of quantitative literacy activities, publications, and projects. Last fall, the MAA published the book *Current Practices in Quantitative Literacy*, edited by the original SIGMAA-QL Past-Chair Rick Gillman. Many of the essays are from SIGMAA-QL members and the book itself is a great addition to the QL literature. The National Numeracy Network is launching an online QL journal entitled *Numeracy*. Look for the first issue to appear in January. SIGMAA-QL and NNN joined forces to plan a series of workshops and panel discussions at the Midwest Sociological Society's annual meeting in Chicago this past April. You can read about the events elsewhere in this newsletter. It was fascinating to be at a sociology meeting (quite different from a mathematics meeting!) and to hear a very different perspective on the importance of QL teaching and learning. At the Joint Mathematics Meetings in New Orleans last January, there were several QL-oriented events. Our Secretary-treasurer Semra Kilic-Bahi co-organized a minicourse on the topic of "A Tool to Implement Quantitative Literacy: Spreadsheets Across the Curriculum," SIGMAA-QL sponsored a panel discussion on "Current Practices in Quantitative

Literacy: An Interdisciplinary Approach," and Rick Gillman organized a panel discussion on "Calculus, Liberal Arts and Quantitative Literacy." We also had our business meeting and reception. And at Mathfest in August, in San Jose, SIGMAA-QL sponsored the panel "QL, Mathematics, and Civic Engagement: Teaching the Importance of QL for a Healthy Democracy". SIGMAA-QL members and friends enjoyed a great lunch, eating outside next to the San Jose Museum of Art.

There were other QL-related meetings during the past year. In April the Northeast Consortium for Quantitative Literacy had their annual meeting at Vassar College, while on the same weekend the Radical Math conference took place in New York City. In June I attended the MAA PREP workshop run by Kay Somers and Alicia Seville, which focused how to teach QL from an activity-based learning approach. I also attended the second Course Development Workshop on the Mathematics of Social Justice, at Middlebury College in Vermont. Participants from this workshop are developing teaching modules that incorporate social justice questions, and much of this work fits naturally with quantitative literacy. There were also two Mathematics Across the Community College Curriculum Workshops this past year, with another planned for January, and a Spreadsheets Across the Curriculum workshop. For many of these conferences and workshops, you can find summaries, resources and other information on the

web. A good starting point is the SIGMAA-QL web site, which lists all of these QL activities under the News link.

In the midst of this incredible activity, the planning for future events continues. At the Joint Math Meetings this January, SIGMAA-QL will cosponsor a Contributed Paper Session on Assessment of Student Learning in Undergraduate Mathematics. This session will feature a very interesting mix of approaches to assessment, and will include some papers that directly address assessment in the QL classroom. SIGMAA-QL will also hold its annual business meeting and reception on January 7, from 5:45 – 6:45. All are welcome to attend!

We are always looking for new ways to involve the membership in this SIGMAA. We would like to see more SIGMAA-QL events at MAA regional meetings, and encourage our members to consider organizing this type of event. If you are looking for a speaker to talk about QL, feel free to ask for recommendations. Please do not hesitate to contact any of us on the Executive Committee if you want help with this, or have ideas for publications, speakers, conferences, panels, links for the web site, or anything else QL-related. And remember that our list-serv is a great forum for your QL questions and ideas.

In the meantime, enjoy the articles and information in this newsletter!

REFLECTIONS

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cel). Since I don't do a lot with charts, graphs, and data right now, this will not be as immediately useful, but it was nevertheless valuable information. In addition to this, I was fascinated to learn of Judith Moran's course on graphical literacy, which gives math distribution credit at Trinity College. What an intriguing idea! It spurred me to think more about how I could incorporate the idea of graphical literacy into my courses.

Since I do not (yet) teach statistics courses, the panel on Teaching Statistics for the Social Sciences was not directly related to any of my current teaching needs. However, as with other sessions, I was exposed to a wealth of sources for good material to use to enrich my courses, even those that do not focus on statistics. Moreover, I ap-

preciated learning from many of the speakers about how they inject contemporary news stories into their courses in order to make the material "fresh." Bill Peterson, talking about his "Chance" course (and the Chance newsletter) was especially illuminating in this regard.

The session on Teaching Quantitative Literacy: Examples from Across Disciplines was my favorite. Each speaker was very inspiring, as it was clear that each one had a vision of what quantitative literacy education means and its power to improve students' lives. As was true of other sessions, I learned of many good example activities and resources, but I also feel that the session deepened and strengthened my understanding of the definition, goals, and importance of quantitative literacy.

I also benefitted from the "pure" sociology sessions I attended. As I expected, I was able to learn more about

social inequality and related issues, and I expect to be able to use some of this material in the future. However, I did not get quite as much out of these sessions as I had hoped. Many of the presentations were too narrowly focused or too technical to be easily fit into a general education course.

In sum, I was very pleased to have attended the meeting, if for nothing else than the final "Examples from Across the Disciplines" session. Beyond the specific information gleaned from each session, it was valuable to meet many people involved in the QL mission (and strengthen ties with those whom I had already met). As mentioned above, I also feel that the meeting gave me several new ways to think about QL. These new perspectives will influence the way I design general education course materials and, I believe, make me a better QL "evangelist."

SOCIOLOGY

Continued from page 1 and sociology. The discussions were very vibrant and it was great to see a diverse group of people brought together by their common interest in quantitative literacy.

Here are some of the highlights from this conference including some new ideas we learned and exciting resources already available:

- Sociology faculty want their students to be quantitatively literate! We heard many perspectives on this and examples of how people have used quantitative information in their classrooms. The sociologists viewed this as both a general education activity and an important part of advanced courses in the sociology major. Some quotes from participants that illustrated their commitment to QL were “we need to fight our students’ tendency toward being DRID (Data Rich Information Poor)”, “numeracy is not depersonalizing but empowering”, “numbers are the principle language of public argument”; “the real world is not like textbook exercises and we need to stop treating classrooms as if they were divorced from life”; “numbers are being used to recognize social problems and our world is being understood by these numbers”; “teaching quantitative literacy is everyone’s responsibility.”
- The journal *Teaching Sociology* had a special issue on “Cultivating Quantitative Literacy”. This issue, published in January 2006, features several articles about how quantitative literacy fits within the sociology curriculum.
- Carla Howerly from the American Sociological Association (ASA) described the Integrating Data Analysis (IDA) Project that the ASA led to support sociology faculty in introducing sociology students to data analysis early in the curriculum, and to build on that introduction in subsequent courses. A crucial element of the project design was to locate it at departmental level. The project organizers argued that without department-wide support the projects could not be sustained over time. The IDA Project built on the work of the Social Science Data Analysis Network (SSDAN),

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QL FROM WSU

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participating faculty member attended a one week workshop to learn more about QL and design two projects. Each faculty member incorporated more projects than requested due to their realization of the natural fit and importance with their classes. Two years later all participating faculty are still using QL projects in their classes and there is a small spread to other classes.

As folks recognize how QL is already being used in their classes the work to formally create projects becomes easier. The Assistant Director of Composition, Beth Buyer, was part of this program and collaborated with Kimberly on several QL project with future teachers of Mathematics and English. Each project had a focus on analyzing data and making inferences. One project was to calculate reading rates three different ways, analyze reading rates, and then make inferences about what would cause slight or drastic variations in the data. Kimberly and Beth are currently designing projects for composition writing classes to improve students’ ability to interpret data and make inferences in their reporting and research writing. Meanwhile at the Vancouver branch campus of WSU, Peter Ritson received a grant to improve instruction in science classes at the branch campus. The science faculty chose a pedagogical focus of inquiry learning and a content focus of QL. Kimberly worked with them in two half day workshops during summer 2007. Many of the faculty wanted to deal with graphing of quantitative data or dimensional analysis and other measurement issues. The faculty worked through various QL inquiry-based tasks and then began work on designing their own tasks. They are using the tasks they designed in their classes in fall 2007.

VOTE!

The Chair-Elect and Webmaster positions are up for election this year. The Chair-Elect is a one-year term, but converts to a Chair position for one year, followed by a Past-Chair position for one year (three years total). The Webmaster position is a three-year term. You can cast your votes online through the MAA web site, a link will be provided from the SIGMAA-QL web site. If you cannot or do not wish to vote electronically, contact Nathan Ray (NRay@maa.org) at the MAA to request a paper ballot.

SSAC PARTICIPANT

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I returned to the SSAC workshop in the summer of 2006 with a large cohort of my fellow faculty members from Colby-Sawyer College. Previous participants shared their experiences, and many faculty who teach freshmen and sophomores also noted the students’ struggles with Excel basics. My next module, “Is It Hot in Here?”, was designed to provide students with fundamental Excel skills, including creating equations and graphs, while simultaneously reviewing unit conversion, scientific notation, and the metric system. I piloted this module in the fall of 2006, with a much better outcome. My students were able to complete this simpler module without undue difficulty, were provided an active learning experience through which to review and relearn the rather tedious but necessary skill of unit conversion in the metric system, and acquired computer and QL skills as well. When I used the chemical equilibrium module with this group of students in the spring, they successfully completed it with solid mastery of the underlying chemistry concepts. This is due in part, I believe, to the emphasis that faculty at Colby-Sawyer have placed on ensuring that our students are exposed to these QL fundamentals across the curriculum. Many of my students had completed several SSAC modules in math and/or biology as well as the first module in chemistry before they attempted the equilibrium module in the spring of 2007.

My colleagues continue to revise, develop, assess, and use these modules in a variety of classes. Most of us are now SSAC disciples and are most grateful to Dr. Vacher and the SSAC team for introducing us to this creative and powerful learning tool.

JOIN US AT THE JOINT MEETINGS

SIGMAA-QL is sponsoring a session on Assessment of Student Learning in Undergraduate Mathematics from 7:30 until 10:55 on Sunday January 7 2008 and from 1:00 until 4:10 on Monday January 8. The SIGMAA-QL Reception and Business Meeting will be held from 5:45–6:45. The Business Meeting and Reception are a good place to meet other people interested in SIGMAA-QL and to discuss what is going to happen in the up coming year.

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a federally funded project to create classroom guides to using U.S. Census data. The SSDAN web site, at <http://www.ssdan.net>, is worthwhile to explore. It links to CensusScope.org, a tool developed by SSDAN to investigate data from the 2000 Census. The SSDAN web site features links to course modules and other resources, and also links to the Data Counts web site which contains modules (primarily geared to social science topics) using Census data sets and graphs.

- Carleton College's Quantitative Inquiry, Reasoning and Knowledge (Quirk) Initiative offers many online resources about QL. Neil Lutsky, the Director of Quirk, talked about how he gets his students to write about numbers, both articulately and correctly. The web site is <http://apps.carleton.edu/collab/quirk/>
- Conference participants talked a lot about QL assessment and how to make it both meaningful and manageable. One suggestion was that the assessment should be a departmental activity. While it takes time initially, the results from assessment can allow faculty to be targeted and analytic about what is working.
- Panelists in the Visual Displays of Data panel talked about Edward Tufte (<http://www.edwardtufte.com>) and his views on information design. Not only do we see a lot of quantitative information in daily life, but much of it is in graphical form. The panelists talked about how being critical about constructing and interpreting graphs is an important component of being quantitatively literate.
- Two other web sites that came out of the Visual Displays of Data panel were: <http://www.socialexplorer.com> and <http://factfinder.census.gov>. The former displays select Census data back to 1940. Access is free for some parts of the site, but a subscription is needed for full access. The American Fact Finder site lets the user focus in on very specific information from the Census Bureau.
- The conversation on teaching statistics was enlightening as both mathematicians/statisticians

and sociologists realized that their best practices were more similar than different. Both groups described the importance of giving students hands-on experiences and time to work with real data. Two books, *Social Statistics: Syllabi and Instructional Materials*, edited by R. Macdonald (available from the ASA) and *Innovations in Teaching Statistics*, edited by J. Garfield (available from the MAA) give specific examples of such statistics courses. Through the conversation, we realized that both groups strongly promoted QL in their courses and that further discussions between groups should be encouraged. For example, it was noted that different disciplines have their own names for statistical methods and have preference for certain methodologies. So, collaborating might make the language gap between statistics courses and disciplinary courses easier for our students.

- Some other resources that were mentioned during the panels: the National Assessment of Adult Literacy (<http://nces.ed.gov/naal>), a survey conducted in 2003, measured quantitative literacy skills among American adults (aged 16 and older); the American Institutes for Research surveyed the literacy of America's college students and released a report in 2006 (see <http://www.air.org/>); the resource site <http://www.beyondcrossroads.com/QLindex.html>, sponsored by AMATYC. Some books that were discussed: *What the Numbers Say: A Field Guide to Mastering Our Numerical World*, by Derrick Niederman and David Boyum; *Rethinking Mathematics: Teaching Social Justice by the Numbers*, edited by Eric Gutstein and Bob Peterson.

CONFERENCE ORGANIZERS:

- Maura Mast & Semra Kilic-Bahi, SIGMAA-QL
- Cinnamon Hillyard & Rebecca Hartzler & Bernard Madison, NNN
- Carla Howery, ASA

QL WORKSHOPS

- **Panel: Quantitative Literacy: Mathematicians, Statisticians, and Sociologists Share**

What Works

Joel Best, University of Delaware

Bernard L. Madison, University of Arkansas

- **Workshop: Assessment of Quantitative Literacy in Sociology Courses and Related Fields**

Peter Meiksins, Cleveland State University

Sue Mente, Alverno College

Diane Pike, Augsburg College

- **Workshop: Visual Representation of Data:**

John Callewaert, Queens College-CUNY "Mapping Tools for the Display and Analysis of Demographic Data"

Judith Moran, Trinity College "Graphical Literacy"

Mary Ann Allen, Colby-Sawyer College, "Organizing Data to Extract Information"

- **Panel: Teaching Statistics for the Social Sciences: A Conversation between Sociology & Mathematics**

Tricia M. Davis, University of Wisconsin - River Falls

Julia McQuillan, University of Nebraska - Lincoln

William P. Peterson, Middlebury College

Milo Schield, Augsburg College

- **Paper Session: Teaching Quantitative Literacy: Examples from Across the Disciplines**

Eric Gaze, Alfred University "Rethinking Mathematics: Teaching Social Justice by the Numbers"

Semra Kilic-Bahi, Colby-Sawyer College "Spreadsheets as a Tool to Implement QL"

Maura Mast, University of Massachusetts - Boston "Quantitative Literacy Issues for Informed Citizens: Voting and Social Choice"

Rob Root, Lafayette College "Quantitative Literacy as a Means to Understand and Enhance Social Justice: A First-Year Seminar"

Milo Schield, Augsburg College "Statistical Literacy and Sociology for Citizenship"

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