

## **NOTICIAS de TODOS** News from TODOS: Mathematics for ALL

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## Spring 2009, Volume 5, Number 1

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The mission of TODOS : Mathematics for ALL is to advocate for an equitable and high quality mathematics education for all students —in particular, Hispanic/Latino students — by increasing the equity awareness of educators and their ability to foster students' proficiency in rigorous and coherent mathematics.

### Supporting Students and Teachers Yields Education Success for the Brownsville Texas Independent School District

By Joyce Fischer

On Tuesday, October 14, 2008, the Brownsville (Texas) Independent School District (BISD) was notified that it had won the Eli and Edythe Broad Foundation Prize for Urban Education, one of the most respected awards in education in the U.S. The \$1 million award has been given each fall, since 2002, as college scholarships for graduating seniors in the following spring. One factor in this accomplishment was that BISD, according to Mr. Broad, "has smartly focused all resources on directly supporting students and teachers." During the award ceremony, Eli Broad referred to Brownsville as "the best kept secret in America" and added, "other school districts can learn a great deal from Brownsville's success."

During the award ceremony, Eli Broad referred to Brownsville as the "best kept secret in America." As a researcher and college professor who has worked and collected extensive qualitative and quantitative research samples about such topics as student and teacher content knowledge, attitudes, beliefs, and self-efficacy, in that region for the past eight years, I can say that the award validates my own research results in Brownsville. Here are just a few of the factors in my research supported by quantitative and qualitative research findings that I feel make up the Brownsville dynamic model: the administrators, the teachers, the students, the citizens, the curriculum, and respect.

Administrators from BISD have always been aware of the importance of trying innovative projects and of instilling respect for research among their personnel. Some of the many federal and state research projects that they embraced during my tenure there include after school and summer programs such as: NSF grants, Teacher Quality Grants, English as a Second Language Academies, Critical Campuses Project, Texas State Math Camps, Gear Up, Project Grad, and President Bush's Mathematics Initiative for Texas (Specific Strand for English Language Learners) funded through the Texas Education Agency (TEA)—the Texas State University System Mathematics for English Language Learners (TSUSMELL) Initiative.

Qualitative data collected in my research through teacher interviews and multiple personal classroom observations demonstrate that teachers from BISD respect and care about their students (see videos at <u>tsusmell.org</u>). Most of the teachers were English language learners who spoke and even now still speak Spanish at home. They are willing to try anything to help their students. Time after time, Brownsville teachers would report to me (or I would directly observe), for instance, how they were asked to help

#### Fischer, continued

evaluate a new student from México for grade level placement or how they stayed extra hours at school because a student needed special tutoring outside of class. Research from workshops, teacher-share projects, summer programs, and graduate classes for teachers at all grade levels revealed serious mathematics content deficiencies for teachers and students. However, teachers and students were willing to attend after school, summer, and Saturday classes to improve their knowledge of various content levels (see Figure 1).

Figure 1: Teachers at a Saturday mathematics workshop.



A quantitative example of one group of teachers' improvement in content knowledge can be found in prepost test gains stemming from a summer camp session. In a paired-differences *t*-test analysis, the mean on the pre-test was 22.4 (43%). The mean of their post-test scores was 36.4 (70%) (p < .02). The mathematics content treatment given to these teachers was classroom instruction using a hands-on active learning approach for 3 hours per day for 12 days in a summer camp environment taught by university professors who were math

## How do we start and maintain conversations about equity?

What's your story? As educators, part of our role is to reach out to our peers and help them gain insights into meeting the needs of all learners. How do you initiate these conversations with your colleagues? What have you learned through these relationships? And what advice might you offer to other educators seeking to reach out to their colleagues?

Share your stories of success or frustration to help us enrich our conversations here. Send your thoughts to Anita Bright at

<u>AnitaLBright@gmail.com</u> to add your voice to the discussion. We will publish results in the next *Noticias*.

educators (see <u>http://www.txstate.edu/mathworks/</u> for in-depth descriptions of sample math summer camps), with the same number of hours devoted to curriculum delivery by master teachers.

Students from BISD respect and care about their own education. They are willing to attend summer and afterschool camps to improve their content knowledge. In recent summers, data for students on paired-differences t-tests based on pre and post Orleans-Hanna Algebra Prognosis tests, has shown statistically significant mathematical content gains (see Table 1).

Table 1: Students' scores on the Orleans-Hanna Algebra Prognosis Test in a summer mathematics content class.

	N	Pre-	Post-	Differ-	Р-
		Test	Test	ence	Value
Level 1	213	9.63	12.99	3.35	0.00
Level 2	41	22.95	24.88	1.93	0.02

The treatment given to these students was for 3 hours per day for 8 days in a summer camp environment (see Figure 2).

Figure 2: Students in a summer mathematics class.



Citizens of Brownsville respect and care about education as a gateway to success in the everyday world. They support students and encourage them to excel and continue in school. Time and time again in interviews, students mentioned a group of community, family, friends, and colleagues who helped them be successful in school while overcoming challenging language barriers.

The Brownsville education community is constantly looking for new and better curriculum that reflects the

objectives outlined by TEA, is contextual in nature, and motivates as well as challenges their students. To this end, administrators perform quantitative analyses on the standardized state test questions to see which questions are most frequently missed and why, while teachers independently study the test questions and report why certain ones are not appropriate for their students. The results of this research are reported directly to TEA for further review and evaluation.

As can be seen from these abbreviated examples from my qualitative and quantitative research and my own personal observations, BISD is making a serious commitment to ensure that education for poor and minority students is successful in this Rio Grande Valley region. Many lessons learned from Brownsville, the MELL, and other sponsored projects have been extended through national and international level papers, conferences, and other professional venues and are currently being used as best practice models. An additional extension of this research in Texas is the ongoing TEMA (TEMA Matemático- Texas Empowering Mexican Achievement) META (META Matemática-México Empowering Texas Achievement) Collaborative Project with public and private schools and universities in México. This project is yielding data that promises to further strengthen mathematics achievement for struggling Hispanic ELL students.

#### References

Editors' Note (All links accessed February 2009). Broad Foundation Award: http://www.broadprize.org/about/overview.html Broad Award 2008 winner: http://www.broadprize.org/about/2008\_winner.html Eli & Edythe Broad: http://broadeducation.org/thebroads.html Orleans-Hanna Algebra Prognosis Test: http://pearsonassess.ca/hai/Images/pdf/brochures/Orlea nsHanna.pdf Texas State University-San Marcos Mathworks Summer Camps: http://www.txstate.edu/mathworks/ Texas State University System Mathematics for English Lan-

guage Learners videos: <u>tsusmell.org</u> Dr. Joyce Fischer teaches in the Department of Mathematics at Texas State University-San Marcos. She works with in-service and pre-service teachers, predominantly in the Texas Rio Grande Valley, actively researching and integrating learning theory, language theory, and topics in the field of Mathematics Education involving English Language Learners.

## Watch for the following upcoming presentations by TODOS members:

- <u>NCSM 2009</u>: Major Speakers include Marta Civil, Carole Greenes, Timothy Kanold and Henry Kepner.
- <u>NCTM 2009</u>: Miriam Leiva, Henry (Hank) Kepner, Francis (Skip) Fennell, James Rubillo, & Carol Malloy.will be featured speakers. TODOS strand presenters will be Roberto Castañeda, Debra Coggins, Elmano Costa, Kelly Costner, Anthony Fernandes, Sharon Bryant Hoffert, William Jasper, and Carl Lager.
- <u>Conference for the Advancement of Mathematics Teaching (CAMT) 2009:</u> Miriam Leiva and Nora Ramirez will be featured speakers. The TODOS strand speakers will be Brian Burns, Joyce Fischer & Robert Perez, Bill Jasper, Noemi Lopez, Bob McDonald, Barba Patton & Linda Vasquez, Robert Perez & Joyce Fischer, Warren Roane, and Sylvia Taube & Julie Marko.

## TODOS has received the following special contributions in the last 12 months:

Cynthia Anhalt, Susanna Davidenko, Carol A. Edwards, Catherine Franklin, Shirley Frye, Susie Håkansson, Bill Jasper, Della Leavitt, Miriam Leiva, A. Robinson.

All contributions in honor/memory of should be sent to TODOS Mathematics for ALL, P.O. BOX 25482, Tempe AZ 85285-5482, attention Miriam Leiva. All special memberships should be sent to Bob McDonald at the same address. TODOS is a 501(c)(3) charitable organization and donations are tax deductible.

#### NOTICIAS de TODOS

*Spring 2009 Vol. 5, No. 1 Editors:* Larry Lesser, Michael Matthews, Cynthia Anhalt, Anita Bright, and Jeanne White

**Contributors:** Joyce Fischer, Anita Bright, Nora Ramirez, Ed Dickey, Cindy Chapman, Carol A. Edwards, William (Bill) Jasper, and Susie Håkansson.

**Please send news items** to: Michael Matthews at <u>michaelmatthews@unomaha.edu</u>

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#### President's Corner: *Those Kids*! By Nora Ramirez

When I hear "Those kids" it is often followed by "can't" or "won't." Who are those kids? Thev are children who in the minds of the speaker are different or do not fit the They mold. are children of poverty. first and second generation Americans, children who



speak little or no English, children who have different religious beliefs, and children who have special needs or disabilities.

#### A few stories about those kids.

One day I was listening to NPR and heard a story\* by Amy Silverman. She shared some school instances of her kindergarten daughter, Sophie, who has Down syndrome. Sophie's teacher had been her sister's kindergarten teacher and Amy knew she wanted her to be Sophie's teacher. The teacher often called home with good and bad news. One day, the teacher reported that 1-1 testing revealed that Sophie knew all her sounds. Amy asked if Sophie had been the last student to learn her sounds and the teacher replied, "No, she was the first." Before deciding to put Sophie in a regular classroom, an occupational therapist told Amy that Sophie would never be able to write her name. She would only be able to make an "X". Later that year, Amy received a phone call from Sophie's teacher. "She did it! She did it! Sophie wrote her name".

Another Arizona story that also brings tears to my eyes is the story\*\* of a robotics team from Carl Hayden High School, an urban Phoenix school with a student body that is 93% Hispanic. The school is situated in a community where the average yearly income is about \$9000 and where the average adult never finished high school. In 2004 the robotics team consisting of four young men, all undocumented immigrants, entered their robot, Stinky, in a robotics contest competing against universities and colleges. The team won first place, beating MIT. A team of inner city young undocumented high school students beat MIT, the top technical university in the nation!

#### **Results of the 2009 TODOS Election**

The Nominations and Elections Committee is pleased to report that **José Franco** has been elected to serve as **President-Elect**. Mr. Franco previously served TODOS as Vice-President (2006-2008) and is the Director of the EQUALS program at the Lawrence Hall of Science, University of California-Berkeley. He will assume the duties of TODOS President in 2010.

**Don Balka** was elected to serve in the office of **Memberat-Large** over the next 3 years. He fills the office currently held by Susie Håkansson who completes her term. Dr. Balka is a Professor Emeritus of mathematics at St. Mary's College in Notre Dame, IN, and a longstanding advocate for equity and high-quality education for all students. He was a Board member for NCTM where he was responsible for the position statements on Equity and English Language Learners.

We are fortunate to have these two outstanding professionals with distinguished careers in mathematics education and strong commitments to equity as leaders. Each individual will assume office on April 22, 2009, at the TODOS Board of Directors meeting in Washington, DC.

The Nominations and Elections Committee thanks members for reviewing the candidates and voting.

On behalf of all TODOS members we offer a sincere thanks to the outstanding candidates who agreed to run for office as well as to the members who contributed to this important process by sending in nominations and voting. In 2009, TODOS will elect a new Vice-President and another Member-at-Large so later this year the committee will place a call for nominees. Please consider offering your own name or suggesting others who you believe will serve TODOS well.

Ed Dickey, Chair of Elections Committee

So, how did this happen? How did Sophie learn to write her name and Carl Hayden High School beat MIT? Behind both of these stories was a teacher, a teacher who not only respected students but also believed that they could learn and gave them opportunities to learn, opportunities to learn what others might have thought they were incapable of learning. Rather than saying, "Those kids can't", they said, "Those kids will."

What we know is that *those kids* can learn. What we have yet to figure out is how to ensure that they do learn and that

what they learn is meaningful and powerful mathematics, the overarching goal of TODOS. Let us all continue to embrace the mission of TODOS as we strive for equity in our classrooms, our schools and our world.

\*Listen to the entire story at <u>http://kjzz.org/news/arizona/</u> <u>archives/200812/Silverman</u> \*\*A colloquium presentation which includes video clips of student interviews can be found at <u>http://vmsstreamer1.fnal.gov/VMS\_Site\_03/Lectures/</u> <u>Colloquium/060315Cameron/vf001.htm</u>

#### **ICME and TODOS report**

By Cindy Chapman

The International Congress of Mathematics Education (ICME) is held every 4 years under the auspices of the International Commission on Mathematical Instruction (ICMI). The Congress is a forum for mathematics educators from all over the world to exchange ideas, information and viewpoints and develop productive dialog with their peers. (ICME 11 website: <a href="https://www.icmell.org">www.icmell.org</a>). Held in Monterrey, México, over 2000 educators from more than 90 countries attended the July 6-13 event.

NCTM obtained a travel grant from NSF to help fund travel to the Congress for United States mathematics educators. Teams of grantees were formed to focus on specific areas of interest, meet together during the conference, and report back to their peers on what they learned.

The "Educating Children of Diverse Cultures" team and individual areas for concentration consisted of: Rita Barger bargerr@umkc.edu (creativity and motivation), Ed Dickey ed.dickey@sc.edu (technology and equity), Saul Duarte sxd9939@lausd.net (special education and research), Guillermo Mendieta pictorialmath@yahoo.com (student effort and access to quality mathematics education), Jill Newton janewton@purdue.edu (communication), Hoa Nguyen hnguye4@tulane.edu (technology for teaching and learning calculus), Jennifer Weisbart jennifer.weisbart@cgu.edu (multilingual multicultural environment), and Cindy Chapman harrisb609@aol.com (perspectives, team leader). Each of us looked through the lens of our focus to explore important aspects of the mathematical education of children whose backgrounds, cultures, and home languages differ from the mainstream. We found that most countries do, indeed, deal with the issue of diversity and its impact on teaching and learning mathematics. Barger, Newton, and Weisbart have developed bibliographies in their focus areas they're willing to share with you.

#### TODOS BOARD MEMBERS

President: Nora Ramirez, Arizona State University, AZ Vice-President: Tod Shockey, University of Maine, ME Members at Large: Susie Håkansson, UCLA, CA; Noemi R. Lopez, Harris County Dept of Education, TX; Luis Ortiz-Franco, Chapman University, CA Secretary: Christina Lopez, Frank Borman Middle

School, Phoenix, AZ

Treasurer: **Deby Valadez**, Holiday Park School, AZ <u>TODOS COMMITTEE CHAIRS</u>

Awards: **William A. Jasper**, Sam Houston State University, TX

Conferences: **Carol A. Edwards**, Chandler Gilbert Community College, AZ

Elections: **Ed Dickey**, University of South Carolina, SC Finance: **Susie Håkansson**, UCLA, CA

Research & Publications: **Richard Kitchen**, University of New Mexico, NM

Member Services: **Bob McDonald**, Atkinson Middle School, AZ

Study Groups, and Discussion Groups where the team was able to explore our theme. Common to our philosophies and found throughout the sessions we attended was the strongly held belief in the importance of respect and dignity for all students and the conviction that diversity may be challenging, but that the richness diversity offers more than makes up for its difficulties. One plenary and one regular lecture particularly held the interest of the group. Bill Atweh (Australia) moderated the plenary panel discussion on "Equal Access to Quality Mathematics Instruction" and Ubiratan D'Ambrosio (Brazil) spoke in a regular lecture on "How Mathematics Education Can Help in Shaping a Better World".

Atweh spoke about the difficulty of achieving both quality and equal access simultaneously. Quality mathematics without attention to equity leads to elitism where as equitable education without quality mathematics leads to watered-down curriculum. So, 'equity in mediocrity' is easy to achieve, while 'equity with quality' is quite difficult.

D'Ambrosio spoke eloquently about the fact that quality doesn't simply mean doing better what we are doing now. To achieve quality we need to consider ideas of social justice in our teaching of mathematics. Respect, solidarity, and cooperation are essential and we must be sure

ICME sessions consist of plenaries, regular lectures, Topic

#### (Chapman, continued)

that students' cultural roots are honored. D'Ambrosio also spoke of the importance of recalling the contributions of the common man toward the evolution of ideas.

D'Ambrosio spoke about Ethnomathematics and its ability to contribute to achieving social justice and peace with dignity for all through promoting dialogues that endure and allowing communication between the educational institutions and local cultural communities. Examples of this came from the Topic Study Group on Mathematics Education in a Multilingual and Multicultural Environment. Participants learned of a textbook development project in China that focused on food, architecture, and farm work of a minority population in the Xinjiang region. A project involving two schools in Turkey and one school in Rhode Island used Turkish rugs to study fractions, patterns, and geometry concepts.

Respecting and understanding diversity includes recognizing and addressing the difficulties that language can bring to children of diverse cultures. The Topic Study Group on Language and Communication in Mathematics Education looked at issues of mathematics as its own language and problems that occur when words and symbols used in mathematics also have other meanings in the mainstream language. The significant role of gesture as complementary rather than merely supportive to speech in communication was considered. This can be an area of difficulty for students when they come from a different culture or language group from that of the teacher. In order to ensure quality mathematics instruction, teachers of students of diverse cultures need to be mindful not only of language differences but of gestures as well.

Issues of student attitudes toward learning mathematics intrigued our team. Michele Artigue (France), current President of ICME, discussed the differences between eastern and western cultures and these were emphasized in China's national presentation, a Japanese lesson study session, and Topic Study Group on Primary Education presentation on problem-solving in Japanese primary schools. Japanese educators talked about how students enjoy and expect to engage in challenging problems, even ones that might be beyond their skill level. Chinese educators talked about the work ethic of Chinese students and teachers and the Chinese saying that illustrates this: "Unpolished jade will never shine. To teach without severity is a dereliction of duty." For the Chinese, extensive and continued practice is a critical part of learning, although the country's educational leaders are very concerned about the narrow goal of exam-focused education.

In some western countries, educators lament the unwill-

ingness of students to take risks or to work hard to learn math. Members of our team felt there was a definite difference in what they heard about student attitudes and effort in other countries from what they experience in their own classrooms in the United States. Rosetta Zan (Italy) presented a longitudinal study which investigated a multi-dimensional way of looking at student attitudes. From 1<sup>st</sup> to 13<sup>th</sup> grades students themselves narrated their own 'stories' with mathematics. These stories tended to revolve around students' emotions (I like/don't like math), self-efficacy (I can/can't do math), and vision of math (math is skills/abilities vs math is problem solving/creative). One finding was that positive attitudes towards math (I like math and/or can do math) were more often included in stories where students' vision of math is that math is problem solving and creative.

Team members were enthusiastic about the opportunities afforded to them by attending the Congress. They've made many exciting plans based on their experiences. Some will be exploring areas new to them, such as psychology of mathematics education or the use of visualization software for calculus (<u>www.geogebra.org</u>). NCTM's annual meeting in Washington, DC this spring will include several ICME participant-lead sessions where you can learn more. Meanwhile, feel free to contact team members for more information.

Cindy Chapman is a founding member of TODOS. She is a retired elementary classroom teacher and instructional and mathematics coach. She has served on the Boards of Directors of TODOS and NCTM and recently was NCTM's International Representative.

#### **Continued Demand for TODOS Speakers at Conferences** By Carol A. Edwards

The TODOS Conferences Committee continues to organize strands of speakers and to recommend TODOS speakers for a number of conferences. The members of the committee are Carol A. Edwards (chair), Elmano Costa, Harriet Haynes, Mari Muri, Richard Sgarlotti, and Carmen Whitman who review proposals, and William (Bill) Jasper, Jean Krusi and Odalys Herrera who review Speaker Fund applications. Speakers address the mission and goals of the organization. Requests for proposals for conferences are sent via the TODOS member listserv emails.

The Conferences Committee's major functions include:

reviewing proposals submitted to it for TODOS

strands at specific conferences.

- suggesting ways to strengthen proposal titles and descriptions to make them more focused, more specific and/or more engaging, and better aligned with TO-DOS goals.
- providing feedback for proposals that are not accepted for a strand at a particular conference.
- sending a letter of thanks to each TODOS strand speaker soon after a conference.

Since the Fall 2007 report in *Noticias*, TODOS has had and will have strands or speakers for the following conferences:

- Conference for the Advancement of Mathematics Teaching (CAMT), Dallas, TX, July 9-11, 2008.
- NCTM Regional Conference, Oklahoma City, OK, October 2-3, 2008.
- Northwest Mathematics Conference, Portland, OR, October 9-11, 2008.
- NCTM Regional Conference, Cleveland, OH, October 17-18, 2008.
- NCTM Regional Conference, Reno, NV, November 6-8, 2008.
- California Mathematics Council-South, Palm Springs, November 7-8, 2008.
- California Mathematics Council-North, Asilomar, December 4-7, 2008.
- Greater San Diego Mathematics Council, Mission Bay, San Diego, CA, February 6-7, 2009.
- NCSM Annual Conference, Washington, DC, April 20-22, 2009.
- NCTM Annual Meeting and Exposition, Washington, DC, April 22-25, 2009.
- Conference for the Advancement of Mathematics Teaching (CAMT), Houston, TX, July 15-17, 2009.

A special thanks to the following TODOS members who spoke at the above conferences through February 2009:

Rajee Amarasinghe, Harold Asturias, Cheryl Avalos, Jim Barta, Jennie Bennett, John Bernard, Robert Berry, Grace Davila Coates, Debra Coggins, Elmano Costa, Francis (Skip) Fennell, José Franco Anna Marie de la Fuente, Linda Fulmore, Carole Greenes, Linda Gojak, Susie Håkansson, Teri Hirsch, William (Bill) Jasper Henry (Hank) Kepner, Cathy Kinzer, Steven Leinwand, Miriam Leiva, Vena Long, Bob McDonald, Lois Moseley, Carolyn Moore, Beatrice Moore - Luchin, Mark Oursland, Gregorio Ponce, Nora Ramirez, Olga Ramirez, Jeanne Ramos Margaret Smith, Cristina Villalobos, John Wright, and Janie Zimmer.

#### 2009 Duke Energy Foundation Travel Scholarship Award Winners Announced By William (Bill) Jasper

Thanks to the special generosity of the Duke Energy Foundation, five winners have been selected to attend NCSM and/or NCTM in Washington, DC in April. The winners are:

- Gloria Brown-Brooks, a mathematics teacher at Santa Ana Opportunity School in Hollister, CA.
- Anthony Contreras, a mathematics coach and teacher at Center Middle School in Azusa, CA.
- Saul Duarte, an 8<sup>th</sup> grade special education teacher at Mount Gleason Middle School in Tujunga, CA.
- Josh Franklin, a 7<sup>th</sup>, 9<sup>th</sup>, and 10<sup>th</sup> grade mathematics teacher at Global Leadership Academy in Denver, CO.
- Isabel Newman, a curriculum specialist at Holiday Park Elementary School in Phoenix, AZ

The selection committee was chaired by Lisa Mesple (CO), with committee members Julie Arcement (NY), Cindy Chapman (NM), Richard Gardner (CA), Lynne Ipina (WY), and Richard Sgarlotti (MI).

Congratulations to these highly deserving educators!

#### Watch for the new TODOS Poster Booklet! By Susie Håkansson

This booklet contains lessons covering three grade spans (K-3, 4-8, 9-12) that accompany the TODOS Poster Set—Math of the Americas--from Key Curriculum Press and will be distributed to those attending NCSM. Look for them in the NCSM bags. TODOS members will have access to the booklet at the TODOS members' webpage. The writing team includes Dr. Jim Barta, professor at Utah State Univ., Silvia Llamas-Flores, graduate student at Arizona State Univ., and Lenie Galima, teacher at Schurr High School in Montebello, CA. As the writing team states, "Throughout our study of these indigenous cultures, our respect grew for the mathematics by which these people of the Americas are so often defined. We hope that our efforts allow teachers to more effectively use the poster set to enhance the instruction they provide their students and help students see the beauty of mathematics when experienced in its many cultural forms in the Americas and throughout our world."



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