

NOTICIAS de TODOS

TODOS Newsletter: Mathematics for ALL

Spring 2016, Volume 12, Number 1

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Rely on Parents, Really!

By Virginia Nelson

Teacher at Charles F. Tigard Elementary School

Tigard, Oregon

Noticias Co-Editor

Note: The original version of this article appeared in the May/June, 2013 *The Oregon Mathematics Teacher*, an award winning journal by and for mathematics educators and included with membership to The Oregon Council of Teachers of Mathematics.

Over the last few years “how to close the gap” rhetoric has highlighted events, articles and professional development sessions. Ever since immigrant children living in poverty entered American schools, experts have been devising strategies to provide equity. Math is a good place to start. So are the primary grades. The math skills that young children must master do not rely on culture, religion, national origin, politics or sophistication. Children can put math on their desks. Students who have never seen an ocean, a museum, an opera or a telescope can participate in most well delivered primary grade math lessons. A skillfully designed math lesson will benefit these students as much as it benefits children who have been prepped for success.

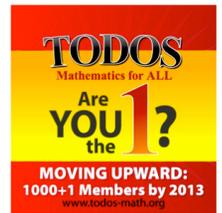
The families of our most fragile English-learning math students use math every day. Even if they never had the opportunity to attend school, *they use math*.

Families can be schools' most competent allies in providing a strong beginning for their primary grade children. School districts throughout the United States design elaborate outreach schemes with which they hope to include these parents. Their efforts occasionally succeed. Typically they succeed with the families of children who are not at the greatest risk of failure.

Obviously members of the typical public school culture tend to reach out to all families in ways with which we –

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Remember the TODOS Membership Campaign of 2012?



TODOS *has reached the goal of* having at least 1,001 members!

We don't know who “**the 1**” was but we are proud of all the educators who have joined TODOS in the past months.

The consistent, undeviating work of the Board of Directors of our so called “small” organization was the “big” driving force behind the issuing of the joint position statement from NCSM and TODOS:

Mathematics Education Through the Lens of Social Justice: Acknowledgment, Actions, and Accountability
<https://toma.memberclicks.net/socialjustice>

TODOS has envisioned a pathway towards social justice and equity in mathematics education for *all* students. We hope that the joint position paper will be the starting point towards the so needed and long awaited transformation.

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TODOS Mission Statement

The mission of *TODOS: Mathematics for ALL* is to advocate for equity and high quality mathematics education for all students —in particular, Latina/o students.

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the outreachers-- are comfortable and to which we are accustomed. These efforts include international pot luck dinners with food from around the world, flag parades to honor the nations of each student, and invitations to join parent organizations and attend school board meetings. What school has not incorporated ethnic meals into the cafeteria menu? What standardized test does not use in word problems, students' names that are clearly not Anglo-Saxon?

State agencies have developed pamphlets to assist families in creating a math-oriented home environment. And they have translated these pamphlets into students' home languages.

At the federal government's summit on English language acquisition there was "a parade of international flags...a poem read in English and Spanish...and a traditional Chinese lion dance" (<http://www.ed.gov/>). I call these efforts "pomp and print."

We teachers arrive at a meeting, and the first items we reach for are the printed agenda and several handouts. Though schools' efforts to include all families are well intentioned, our failing students from Spanish speaking homes remain on the wrong side of the gap. First, many adults in their families work two jobs; they often lack the time to attend celebratory events. Second, those adults who had the opportunity to learn the basics of literacy are too busy to devote the time necessary to read through the pamphlets. *But they do use math. They use math every day.*

Schools who reach these families effectively will be able to rely on them for assistance in closing the achievement gap. Nobody wants their children to succeed more than immigrant parents who are living in poverty. Nobody is in a better position to provide math equity for these children.

Family meetings, in which teachers and families can share information in the families' primary language, will make a difference in math outcomes. To facilitate different work schedules, meetings can be scheduled at half hour intervals from school dismissal into the evening. Telephone and in person invitations, with reminder calls the evening before the meetings, will bring the best attendance. Just like the dentist's office: a phone call from the receptionist the day before an appointment reminds clients of their appointments. Once parents have attended their first meeting they will want to attend subsequent meetings. *At these meetings, they are members of the majority culture, and they feel comfortable sharing ideas with people in the same situation.*

There are certain characteristics of adult learners. Some of them are quite important. Here are a few key components of a good exchange among parents and a classroom teacher.

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From the President

By Diane Kinch
dokinch@gmail.com



This April it was my pleasure to have taken on the mantle of President of TODOS: Mathematics for ALL.

The shoulders from which I lifted this mantle were small in size but huge in hard work, determination, belief and accomplishments. I hope to be worthy to follow Susie Håkansson.

Two Directors were elected in February out of four outstanding candidates. TODOS: Mathematics for ALL welcomes these new Directors to our Board. Dr. Alejandra Sorto, a faculty member of the Mathematics Department at Texas State University, and Dr. Kyndall Brown, Executive Director of the California Mathematics Project. In addition our new Secretary, Rocio Benedicto joined us from New Mexico State University.

TODOS is pleased and proud to announce that our joint Position Statement with NCSM - *Mathematics Education Through the Lens of Social Justice: Acknowledgment, Actions, and Accountability* - is now available for the public on the TODOS website: <https://toma.memberclicks.net/socialjustice>.

Our statement examines Social Justice in Mathematics Education by *Acknowledging* that "the current education system is unjust and grounded in a legacy of institutional discrimination based on race, ethnicity, class, and gender." Going beyond awareness, the statement suggests "multiple *Actions* to create and sustain institutional structures, policies, and practices that lead to just and equitable learning opportunities, experiences, and outcomes for children." *Actions* must be backed up by *Accountability* "for supporting and incentivizing mathematics teachers and leaders to create professional learning opportunities and accountability systems that monitor progress of the implementation of actionable items."

Social Justice in Mathematics Education is defined through four lenses.

- Eliminating deficit views of mathematics learning
- Eradicating mathematics as gatekeeper
- Engaging the sociopolitical turn of mathematic education
- Elevating the professional learning of mathematics teachers and leaders with a dual focus on mathematics and social justice.

The work of TODOS for Social Justice in Mathematics Education is ongoing. This theme permeates our June conference on *Equity and Excellence in Mathematics for ALL* the upcoming issue of our peer review journal TEEM, and in our planned work for the coming year. The TODOS Board is pursuing an NCTM MET grant to assist us in planning and carrying on professional development for teachers to further the goals of the position statement:

"Broadening participation and engagement of children in light of the varied cultural, linguistic, and mathematical competencies they bring to the classroom."

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- Put materials into “bite-size chunks” which people are able to understand.
- Make the material relevant, as close to the actual requirements of that person’s job (as parent).
- Make certain the student is equipped with enough knowledge and skill to complete the assignment, rather than setting the person up for failure. (Thoms, 2002).

Bedtime

Ask any primary grade teacher what Monday morning looks like in the classroom. Students are yawning. *Most children need more sleep than they get.* While older students and adults can drag themselves through the day and do much of what is expected, young children cannot. Parents need two pieces of information:

- Children who use an alarm clock or someone else to wake them did not get enough sleep.
- Children who get enough sleep wake up by themselves.

Dental health

Some school districts enjoy visits by volunteer dental teams. However, the amount of unhealthy mouths is greater than these dental services can treat. *Many students’ families lack dental insurance.* Parents need to know that dental health impacts mental ability (*National Maternal and Child Oral Health Resource*, 2003). When they get together and talk about the effects of sugar on teeth, parents reinforce one another’s resolve to prevent further damage to their children’s teeth.

The math-oriented home environment

Parents sometimes register surprise when they realize how much they use math. Their lack of formal education will not keep them from providing a rich, stimulating home environment in which their children can strengthen their math skills.

Referring to the adult learner characteristics, *schools should select two or three important at home activities for each meeting.* Clearly no teacher or parent effort will improve outcomes for a tired child with painful teeth. So bedtime suggestions and preventive tooth care might be two of the three topics covered at every family meeting. The parent organization or a local business might donate toothbrushes. There is probably no bigger bargain available to improve math outcomes.

Mealtime math

Families who include children in meal preparation will easily be able to add math to the meal. Children can measure how much of each item the cook is adding to the meal.

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“Imbuing mathematical experiences with opportunities to learn multiple histories of mathematics, analyze issues of fairness, and promote civic responsibility in their own communities and beyond.”

“Reflecting an explicit openness to multiple meanings of mathematics and mathematical practices that students may bring to the classroom.”

“Maximizing mathematical discourse and student contributions while minimizing status issues in the classroom.”

TODOS is working with other national math organizations to further focus attention on these issues.

Please let us know how you, as a member of TODOS would like to participate in these ventures. Collaboration and Communication have to be our norm.

I hope to see you at the TODOS conference and/or at a local, regional, or national mathematics conferences in the near future..

Have a great summer!

Diane Kinch

TODOS New President – Diane Kinch



Diane Kinch (L), current president and **Susie Håkansson**, past president celebrating at the Salsa Party, on April 15, 2016. Susie *passed the baton* to Diane on April 14, 2016 at the TODOS Business meeting.

TODOS Newly Elected Directors



Kyndall Brown
Executive Director of the California Mathematics Project (CMP)



Alejandra Sorto
Associate Professor of Mathematics
Texas State University

Where standard measuring equipment is lacking, and donations are unavailable, nonstandard measuring serves children well. Of course the parent knows that a larger quantity of pasta than salt goes into the pot. This fact is so obvious that most parents think it silly to mention. Once they realize that young learners don't know about more and less, more and fewer, they add that to the cooking conversation.

In fact, *all parents need to recognize that constant conversation about amounts is important for young listeners.*

Setting and clearing the table present opportunities for practicing numbers.

“How many people are here?” gets children counting.

“So put five plates on the table.”

Some parents have confided that they believe American children do not have chores. Some American children do not. But once parents recognize the importance of *age-appropriate chores, and how to weave math into them*, they register satisfaction in being able to contribute to their children's academic potential and discipline.

Merely telling children “Take half as much” or “Two spoonfuls will be twice as much as one” gives families the kind of conversation ideas we teachers want them to have.

Teachers who assume that families know about math talk will not include it in their discussions with parents. The results of making assumptions about what families know can be damaging to a child's future in math.

Supermarket math

The supermarket is a rich place to practice math. Once families realize that, they engage their children in math talk along every aisle. Two basic ways to begin these conversations:

- “How much do the ___ cost? What are the numbers on the sign?”
- “These grapes cost \$1.98, and these grapes cost \$1.79. We're getting the \$1.79 grapes because they cost less.”

And one game:

- I see a gallon of milk on sale for less than \$2.50. Can you find it?”

Families who have practiced these simple activities report that children find them engaging. The children no longer fight about candy or run through the supermarket aisles.

Bedtime math

Schools expect families to read with their students every evening. This can be challenging if the parents, themselves, had very little opportunity to learn to read. Moreover many schools expect families who read in

Spanish to read with their children in English. Here is where *families must practice book walking*. This is best done in meetings where a document camera is available or where there are enough copies of a single title for each family to have a book.

Important elements of literacy include *predicting* and *summarizing*. Looking at books in family meetings can follow this script, guided by the teacher.

- Children, tell your parents what you see on the front cover.
- Parents, tell your children that their ideas are correct. (Teachers tend to assume that parents know the value of encouragement.)
- Children, count the number of pages with your family.
- Tell your parent if the number is bigger or smaller than ten.
- Parents, correct your children if they are wrong. Then encourage them.
- How many ___ do you see on the cover? etc., page by page, through the book.
- Children, tell your family what you saw in this book.
- Parents, tell your child how well they reviewed that book!
- Children, tell your parents what you see on the front cover.
- Parents, tell your children that their ideas are correct. (Teachers tend to assume that parents know the value of encouragement.)
- Children, count the number of pages with your family.
- Tell your parent if the number is bigger or smaller than ten.
- Parents, correct your children if they are wrong. Then encourage them.
- How many ___ do you see on the cover? etc., page by page, through the book.
- Children, tell your family what you saw in this book.
- Parents, tell your child how well they reviewed that book!

In order to *practice activities for later use at home*, children and parents must attend meetings together. However, typical outreach efforts strive to provide childcare.

Presenters should not talk at parents lecture-style, much as presenters talk at educators during in-service training. To be effective, a family meeting must include family. These practice book walks can occur at each family meeting until children report that they are happening at home on most evenings.

Math story time

Telling math stories is a fun family activity. It can take place any time the parents decide to do it, especially at the table. Parents who have learned to tell math stories express surprise at how important they are in their children's math literacy.

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A typical math story to practice at family meetings develops the concept of subtraction.

- David had two chicken strips on his plate. He ate one. Now how many are there?

Another allows children to think about counting and dividing.

- The pizza has ten slices.
If we each get the same number of slices, and we finish the pizza, how many slices will we each get?

Parents' Assumptions

Parents make assumptions about themselves, assumptions that are inaccurate. Parents assume that their own lack of formal schooling renders them unable to be their formal schooling renders them unable to be their children's best math teachers.

They also assume that their children already know things that are obvious to adults, such as the fact that a gallon container holds more than a quart container. Teachers assume that parents know everything about creating and maintaining a rich, academic, math oriented home environment. Many teachers assume that a family who does not dedicate time and effort to math literacy, does not value it.

Schools assume that some things are too obvious to restate. For example, absences and tardiness do not benefit students. But where would a parent who never had the chance to attend school learn that? Schools can give overworked, underpaid parents, who have not acquired formal education, the confidence they need to create an academically strong home environment for their children.

Rely on parents to close the math gap. Really!

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Teaching Open-Ended Math Problems within a Context of a Social Justice Issue

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Edited by Susana Davidenko

One of the main purposes of teaching for social justice is to support students in their development of an informed voice, a strong sense of understanding mathematics, and a desire to take action to change the societal conflicts that affect them and their communities.

Contextualizing mathematics problems in situations that relate to students' experiences helps students comprehend and value the applicability of mathematics in the real world. Real-life situations with social justice themes related to students can help students feel their experiences are validated; they feel part of the classroom community as they are able to contribute to the conversation with their own knowledge. Culturally relevant teaching is an approach that supports all students' participation. Ladson-Billings (1995) claims that culturally responsive teaching wants "to promote [students'] academic success, cultural competence, and develop critical consciousness" (p. 160). She also maintains that culturally relevant teaching "requires that teachers attend to students' academic needs, not merely make them 'feel good'" and that it is imperative to have students "choose academic excellence" (p. 160).

To support an approach that promotes social justice, teachers should be informed of the issues they want to present, find appropriate data to validate factual information and create meaningful tasks for students. Teachers must be prepared to "pose questions to students to help them address and understand [sociopolitical] issues" (Gutstein, 2003, p. 3). This would encourage dialogue and discussions about social conflicts while leading students to develop mathematical literacy.

Some secondary teachers who wish to teach mathematics for social justice find it challenging to address social justice topics while tackling higher levels of mathematics content. One strategy to present students with social justice math problems is proposed by De Freitas (2008). She argued that teachers could revise and *modify* mainstream textbook problems on a daily basis by making the *context* of the problems related the students' cultural background and/or interests. The content of the mathematics problem would remain the same (or very similar) but would build on scenarios that are meaningful for students.

The following example demonstrates this approach.

Original Problem: Cost of a Camping Trip

A group of friends rented a place for a camping trip. A week before the trip 4 friends had to withdraw from the trip. The remaining participants will then have to pay \$5 more per person. Then two days before the trip 2 more friends realized they cannot make the trip and let the group know that they will not pay. As a result, the remaining friends have to pay \$3 extra each.

**How many friends went to the trip?
How much money did they pay?**

From: <http://www.rekenbetere.nl/EerdereSommen.aspx>

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**Problem within a Modified Context:
Lay Offs & Increasing Working Hours**

A company hired temporary workers to complete a building project and assigned a given number of hours to each worker. Two days before the day the project was expected to start, the manager fired 4 workers and assigned 5 more hours to each of the remaining workers. Then, the night before the job was to begin, the manager decided to fire 2 more workers and assign three more hours to the remaining ones.

**How many workers worked on the project?
How many hours did each of them work?**

Modified Problem Written by **Cecilia Lopez**

Mathematics Content and Social Justice Issues related to this problem

The teacher will introduce the topic of labor and work including hours, wages, full-time vs. part-time jobs, etc. Detailed ideas for the introduction are provided in the next section. The teacher will try to engage students in conversation and encourage them to share their own ideas experiences. However, some students *would like to keep their information private*, which should be respected.

After the introduction, the teacher will present the modified problem to the students. The students will work in groups of 2 or 3 to identify the variables that are involved in the problem, and how they are related, discuss ways to represent the problems and try to solve it *in the way it makes sense to them*. Some students who might have already learned about solving algebraic equations in one variable and systems of two linear equations might want to generate an algebraic representation and solution. Others might not see that such a modeling can be done and would try other approaches. All approaches are to be validated and acknowledged.

They should be encouraged to make some type of visual representation, including drawings, diagrams, or charts. Some students might not see the algebraic structure of the problem and might try a different approach. Others might realize they can use model the problem if they have already learn about it. All solutions should be welcomed and acknowledged.

The class will resume when the groups finish their task (or the following day). All the groups will show their approaches and solutions and the teacher will pose questions for students to see how the approaches are related. This will help highlight the main concepts underlying the problem (variables, relationship among the variables, constraints, equations, equivalent equations, methods for solving equations/systems of equations).

When this problem is solved with an algebraic approach, the CCSS for mathematics include the following standards for grades 6, 7, 8 and Algebra. They are related to *Expressions and Equations*, *Solving Equations* and *Solving Systems of Two Linear Equations*.

Note: other mathematics standards adopted by individual states would be similar and/or equivalent to the CCSS and NCTM standards.

Excerpts of some related standards are:

6.EE – 3. Apply the properties of operations to generate equivalent expressions.

7.EE – 4. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

8.EE –8. Analyze and solve pairs of simultaneous linear equations.

Algebra I – A-CED Create equations that describe numbers or relationships. [Linear, quadratic, and exponential (integer inputs only); for A.CED.3 linear only]2. Create equations in two or more variables to represent relationships between quantities. **A-REI** Understand solving equations as a process of reasoning and explain the reasoning.

At appropriate times, the teacher should encourage discussions, modeling, representations, communication and justification of statements. This will also address *thinking processes* and *mathematical practices*.

Note: To avoid influencing your thinking, we will delay the inclusion of a solution until the online Summer issue of Noticias.

Why is this topic relevant and how is it related to teaching for social justice?

Many students begin to work after school and on weekends when they reach the age 16. Students from low income households might *need* to work to help support their family. Thus, it is important for students to approach their working experience well informed about their rights and obligations. Immigrant students who are not proficient in English are particularly in need of advice and awareness of misleading or confusing information.

Once the mathematical content is explored and discussed, the teacher will continue the conversation related to the context of the problem. The teacher can promote advocacy for social justice addressing issues related to *workers rights* and engaging students in an inquiry style conversation. Students, especially , students who might not obtain this information at home, should become knowledgeable about “how the system works”, their rights, benefits, and who can defend them. Students can be supported to, ultimately, find the information for their own questions. If needed, the teachers can introduce students to *community members with more expertise* on these topics and who would advocate for the students.

Following are some questions that can be posed to students to begin and continue a conversation. The students can brainstorm about possible answers and be assigned to find out information on the internet that will be shared later on in class. Note that the vocabulary of this conversation might be new to the students, especially English Learners, so clarifications should be done throughout the lessons.

- How do companies benefit with temporary workers? What about part-time workers?
- What are the benefits for full time workers that are not provided for part-time workers?
- What are furloughs?
- If a company needs to reduce its costs and wants to do furloughs, what other options can workers present?
- Who advocates for workers?

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- What is the role of a union?
- What is the minimum wage in the students' state?
- Are men and women paid the same wage for the same work?
- What are migrant workers? What are their rights and benefits?
- How are employers applying the job safety and protections required?
- Do they notice bias in the employment process?
- Do they notice any bias related to the workers who are selected for a furlough? Or for a pay-cut? Or to be laid off?

The following sites provide answers to most of the previous questions and give further information.

<https://www.dol.gov/general/aboutdol/majorlaws>

<http://labor-employment-law.lawyers.com/furlough-or-layoff-is-there-a-difference.html>

The important task of making students informed about current events can be accomplished through questioning and discussion. For example, the teacher can share newspaper articles to the class on the following recent topics:

- Companies meet with workers to decide the best choice for them, between furloughing or cutting hours, etc. This has been quite frequent in the news in the past years.
- The *minimum wage debate has entered the 2016 presidential debate*. What is the fight for \$15?
- Working Extra Hours = Extra Pay
<https://www.whitehouse.gov/blog/2016/05/17/email-president-obama-ive-got-news-you-overtime>

Back to math: The lesson can be followed up with other lessons based on mathematics problems related to the first one.

For example:

A small factory has 30 employees, each working 40 hours per week. The owner needs to cut expenses in payroll and decided to reduce the total hours worked by 20%. What would the new situation be if the owner and workers decide to:

- *Put all workers on a furlough cutting days per week? How would this be done?*
- *Cut hours per week worked by every employee? How would this be done?*
- *Lay-off some employees? How would this be done?*
- *Other options?*

Solutions will be included in the Summer issue of Noticias.

Want to submit your/your students' solutions?

Have any questions about the problem?

Please email susana.davidenko@cortland.edu with comments and/or inquiries.



TODOS is Proud of Ed Dickey
Long time member of TODOS, Ed was the recipient of the *2016 NCTM Lifetime Achievement Award*.

“Ed Dickey's career has been spent encouraging students to become

STEM teachers, implementing instructional technology to facilitate learning, and leveraging his abilities to contribute to a multitude of professional organizations.”

For the complete announcement see:

<https://www.nctm.org/Grants-and-Awards/Lifetime-Achievement-Award/Edwin-Dickey/>

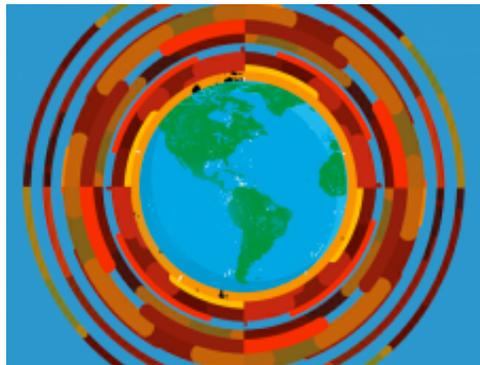


Susie Håkansson, Nora Ramirez, and Bob McDonald recruiting and advertising the Salsa Party at the TODOS Booth during the NCTM Annual Meeting.



Some TODOS members synchronized their smiles for a picture taken at the end of the TODOS business meeting on April 13, 2016.

TODOS 2016: Ensuring Equity and Excellence in Mathematics for ALL



June 23rd - June 25th
Scottsdale Plaza Resort
Phoenix, Arizona Metro Area

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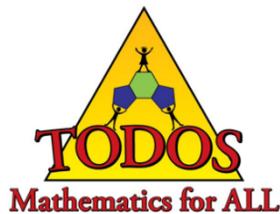
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