

California Online Mathematics Education Times (COMET)

Vol. 16, No. 3 - 3.14.15

Happy Pi Day!

Editor: Carol Fry Bohlin - carolb@csufresno.edu

COMET Archives (2000-2015): <http://comet.cmpso.org>

California Mathematics Project: <http://www.cmpso.org>

California Online Mathematics Education Times (COMET) is an electronic news bulletin providing STEM-related news from California and across the nation, as well as information about professional events and opportunities, current educational issues, and online resources.

.....

Issue Overview (3.14.15):

California Focus:

- (1) The Ultimate Pi Day (and Time)!
- (1a) "Pi Day 2015: Meet the Man Who Invented π "
- (1b) "William Jones and his Circle: The Man Who Invented Pi"
- (2) Exhibition Honoring the Life of Jaime Escalante Opens on the Campus of Pasadena City College
- (3) California's New Era of Student Assessment
- (3a) "State Board of Education Suspends API for Another Year"
- (3b) "Hand Scorers Sought for Online Common Core Tests"
- (4) Webinar Series: The Keys of Success in K-6 NGSS Implementation
- (4a) NGSS NOW Newsletter

National Focus:

- (1) Teacher Bias Favoring Boys in Mathematics and Science May Negatively Impact Enrollment of Girls in Advanced-Level Courses
 - (2) New Report: "The ABC of Gender Equality in Education: Aptitude, Behaviour, Confidence"
 - (3) NCEES releases Report on Gender Differences in STEM Interest, Credits Earned, and NAEP Performance in the 12th Grade
-

ARTICLES & ANNOUNCEMENTS (CALIFORNIA FOCUS)

(1) The Ultimate Pi Day (and Time)!

Math aficionados are celebrating the "Pi Day of the Century" today! The website Time.is has a special tab for Pi Day this year. "One day every century, the numbers of the current month, day, year, hour, minute, and second line up to match the first 10 digits of the mathematical constant pi: 3.14.15 9:26:53. On this page

(http://time.is/pi_day), you can watch this rare event occur in real time... The clock digits change color when they match with pi." If desired, the time zone, font, and colors may be changed.

.....

Related articles:

(a) "Pi Day 2015: Meet the Man Who Invented π " by Gareth Ffowc Roberts

Source: *The Guardian* – 14 March 2015

URL: www.theguardian.com/science/alexs-adventures-in-numberland/2015/mar/14/pi-day-2015-william-jones-the-welshman-who-invented-pi

In 1706, William Jones--a self-taught mathematician [from Anglesey in the UK]... published his seminal work, *Synopsis palmariorum matheseos*, roughly translated as *A summary of achievements in mathematics*.

It is a work of great historical interest because it is where the symbol π appears for the first time in scientific literature to denote the ratio of a circle's circumference to its diameter.

Jones realized that the decimal 3.141592 ... never ends and that it cannot be expressed precisely. "The exact proportion between the diameter and the circumference can never be expressed in numbers," he wrote...

The symbol π was popularized in 1737 by the Swiss mathematician Leonhard Euler (1707–83), but it wasn't until as late as 1934 that the symbol was adopted universally...

For more on this topic, please visit the website above and the websites below:

(b) "William Jones and his Circle: The Man Who Invented Pi" by Patricia Rothman

Source: *History Today*

URL: www.historytoday.com/patricia-rothman/william-jones-and-his-circle-man-who-invented-pi

(2) Exhibition Honoring the Life of Jaime Escalante Opens on the Campus of Pasadena City College

URL (PCC): www.pasadena.edu/news/newsitem.cfm?id=5888

URL (PSN): www.pasadenastarnews.com/social-affairs/20150309/jaime-escalante-exhibit-at-pcc-opens-with-former-students-son-in-attendance

URL (Pulse): <http://pulse.pasadena.edu/2015/02/jaime-escalante-a-life-con-ganas-an-exhibition-that-honors-his-life-opens-march-5/>

Former students, friends, the community, and the son of the late Jaime Escalante were present at Pasadena City College's (PCC's) Circadian on March 5 to celebrate the opening of the exhibition, "Jaime Escalante: A Life Con Ganas." The exhibit, which

honors one of the college's most famous alumni (Class of 1969), runs Monday-Friday, 10 a.m.-5 p.m., through 10 April 2015 (1570 E. Colorado Blvd., Pasadena, CA).

The recipients of the first annual Jaime Escalante Legacy Scholarship--PCC students Antonio Salazar and Edward Ramirez--were also announced at the event. Both will be transferring to Cal State Los Angeles as engineering majors and plan to teach some day.

The *Pasadena Star-News* reports the following: The show features photos, awards, plaques, teaching tools and videos of the accomplished educator, who died in 2010. Escalante's teaching methods gained national attention after his 1982 math class at Garfield High School in East Los Angeles was the impetus for the Oscar-nominated 1988 movie "**Stand and Deliver**," starring Edward James Olmos.

"To me, this is a dream come true," said son Jaime Escalante of the tribute. "All the work he did, it's being paid forward. I think it's important it carries on"...

Curator Reina Prado borrowed personal artifacts from the family to show the personal side of Escalante's life, including his beginnings in La Paz, Bolivia...

The show's title came about because Escalante was known for telling his students that all it takes to succeed at anything is ganas -- which translates to "desire."

"As an educator, he showed us how impactful our jobs are," said former Garfield High student Elsa Bolado, who became a teacher herself and now runs her own consulting firm. Both she and [Aili Tapio] Gardea were part of Garfield's class of 1982.

"Math is problem solving, that's what he taught us," recalled Gardea. "His passion, all the silly things he used to do -- that you take with you the rest of your life"...

.....

An article in PCC's *Pulse* includes the following:

"The PCC community has come together to honor the legacy of a man who dedicated his life to education," said Dr. Cynthia Olivo, PCC associate vice president of Student Services. "The results of his work revealed that every student is capable of learning the most complex math concepts. The art of teaching, a celebration of learning, and a commitment to social justice are the underlying sentiments of this exhibit for Jaime Escalante."

Other activities scheduled to run concurrently with the free exhibition include:

- Reading of the play, *Stand and Deliver*, on March 19 at 6 p.m. in PCC's Creveling Lounge;
- Presentation by Jay Mathews, noted journalist from the *Washington Post*, who will share his experience writing the biography *Escalante: The Best Teacher in America* on March 20, from 10 to 11:30 a.m. in PCC's Westerbeck Recital Hall;
- Presentation by Luis Torres, journalist and author of *His Students: Escalante's Living Legacy*, who will share his work on March 24, from 12 to 1:30 p.m. in PCC's Creveling Lounge; and

-- Screening of the film, *Stand and Deliver* on April 2 at 6 p.m. in the Campus Center WiFi Lounge.

To read more about the exhibition, please visit the websites above. Pictures from the opening event are available at

<https://www.flickr.com/photos/pcclancer/sets/72157651212991635/>

(3) California's New Era of Student Assessment

Source: California Department of Education

URL: www.cde.ca.gov/nr/ne/yr15/yr15rel19.asp

This past Tuesday (March 10), State Superintendent of Public Instruction Tom Torlakson launched a new era of student testing--the California Assessment of Student Performance and Progress (CAASPP). California is among 21 states nationwide participating in the Smarter Balanced Assessment Consortium (SBAC), which developed new assessments aligned to the Common Core State Standards (CCSS).

Students in grades 3-8 and grade 11 will begin taking the first statewide administration of these new online tests which replace the paper-based tests comprising the Standardized Testing and Reporting (STAR) program. Testing dates for each school are determined by a school's calendar and local officials.

Torlakson cautioned parents and the public against comparing the results of the new assessments with the old STAR exams, and acknowledged that many schools and students will need more time to become attuned to the state's standards and the new assessments.

"The new tests are too different from the old exams to make reliable comparisons between old scores and new," Torlakson said. "This year's test results will establish a baseline for the progress we expect students to make over time."

Concern over the SBAC tests has been raised (e.g., www.mathedconsulting.com/). Sacramento City Unified School District Superintendent José L. Banda, however, said he is optimistic about the future. "Change is never easy," he said. "But I truly believe the shift in our classrooms toward more critical thinking, more problem solving, and a more integrated use of technology will lift a generation of students to higher levels of achievement."

Banda said he is "proud of our hard-working teachers, students, parents, and staff that are managing the transition to new standards and new tests with grace and persistence."

Torlakson said the new testing system was developed to help teachers. Since the assessments use computer-adaptive technology, they provide more accurate information about individual student performance and convey the information to teachers, schools, and school districts on a more timely basis.

In addition to the CAASP exams in English language arts/literacy and mathematics, schools will also be administering other exams throughout the spring, including the California Alternate Assessment for students with significant cognitive disabilities, the Standards-based Tests in Spanish, and (for students in grades 5, 8, and 10) the California Standards Test (CST), the California Modified Assessment (CMA), or the California Alternate Performance Assessment (CAPA) for Science.

.....

Related articles:

(a) "State Board of Education Suspends API for Another Year" by John Fensterwald

Source: EdSource - 11 March 2015

URL: <http://edsource.org/2015/state-board-of-education-suspends-api-for-another-year/76316>

The State Board of Education suspended the Academic Performance Index for a second year on Wednesday (3/11), moving one step closer to the 15-year-old accountability system's expected demise.

State board President Michael Kirst and other members have made it clear that they intend to replace the API, which calculates a three-digit number based primarily on a school's or district's standardized test scores, with a new system in which test scores would be just one of many measures of student achievement and school performance. The extra year will give the board time to figure out what that system should look like and to discuss statutory changes needed to make the transformation happen.

In adopting the Local Control Funding Formula, the Legislature established eight priorities that districts must address. The priorities, which will be core to a new accountability system, include school climate, student engagement, access to courses leading to college and careers and the implementation of new academic standards, such as the Common Core State Standards, as well as measures of student achievement.

By a unanimous vote, the board adopted the recommendations of an advisory committee, which had struggled with attempts to integrate non-test factors, like graduation rates, into the API. The Public Schools Accountability Advisory Act committee decided instead to urge the board to abandon a single index and launch a new accountability system no earlier than the fall of 2016. ...[Visit the website above to read more.]

(b) "Hand Scorers Sought for Online Common Core Tests" by Laurie Udesky

Source: *EdSource* – 8 March 2015

URL: <http://edsource.org/2015/hand-scorers-sought-for-online-common-core-tests>

As millions of students prepare, for the first time, to take a battery of assessments aligned with the Common Core using computers, at least portions of the tests will have to be scored the old-fashioned way: by humans.

That's because the Smarter Balanced tests, aligned with the Common Core State Standards, include essay questions designed to measure critical thinking skills. Even the math tests require students to explain how they reach their answers. And unlike the old multiple-choice California Standards Tests that students took every year until the spring of 2013, those more complex portions of the Smarter Balanced tests can't be easily scored by machine...

(4) Webinar Series: The Keys of Success in K-6 NGSS Implementation

Contact: Joan Bissell (jbissell@calstate.edu), California State University Chancellor's Office

URL: <http://teachingcommons.cdl.edu/ngss/>

California State University (CSU) collaborated with *Schools Moving Up* (WestEd) to produce a three-part webinar series on Next Generation Science Standards (NGSS) implementation. The presentation slides and archived webinars are available through links from the website above. Brief descriptions of the webinars follow below

I. Two Exemplary Models from the CSU NGSS Undergraduate Reform Project

This webinar featured two outstanding programs for preparing future elementary teachers in science and engineering: Next Generation Physics and Everyday Thinking (NextGenPET; <http://nextgenpet.sdsu.edu>) and Engineering is Elementary (EiE; www.eie.org).

II: Crosscutting Concepts and CCSS Alignment

Examples are presented of successful teaching approaches and activities that advance understanding of the NGSS crosscutting concepts as well as the integration of the NGSS with the Common Core State Standards (CCSS) for Mathematics and CCSS-English/Language Arts.

III: Exemplars of Learning through Scientific and Engineering Practices

The NGSS Science and Engineering Practices focus on the central practices used in the field, including asking questions and defining problems, modeling, investigating, analyzing and interpreting data, using mathematics, developing explanations, engaging in augmentation, and evaluating information. In this webinar, presenters describe approaches for preparing current and prospective teachers to advance their students' understanding of these practices through a variety of engaging experiences.

.....

Relate Resource:

NGSS NOW Newsletter

The Next Generation Science Standards (NGSS) website includes a form to register for the "NGSS NOW" newsletter, an informative monthly publication that includes useful resources, Q&A, news links, and the "standard of the month." See www.nextgenscience.org/newsletter-signup

The March 2015 issue of NGSS NOW can be downloaded from www.nextgenscience.org/sites/ngss/files/March2015NGSSNOW.pdf

ARTICLES & ANNOUNCEMENTS (NATIONAL FOCUS)

(1) Teacher Bias Favoring Boys in Mathematics and Science May Negatively Impact Enrollment of Girls in Advanced-Level Courses

Source: American Friends of Tel Aviv University - 26 February 2015

URL: <https://www.aftau.org/news-page-arts--culture?=&storyid4698=2168&ncs4698=3>

Women remain underrepresented in STEM fields despite generally higher course grades and equal access to higher education. A number of factors have been offered as possible reasons for this discrepancy. New research published by the National Bureau of Economic Research suggests that elementary school teachers' unconscious biases significantly influence female students' academic choices later on.

According to researchers Dr. Edith Sand, an economist at the Bank of Israel and an instructor at TAU's Berglas School of Economics, and Prof. Victor Lavy, a professor at Hebrew University and University of Warwick in England, the classroom teacher's unintentional prejudice is a key factor explaining the divergence of boys' and girls' academic preferences.

"It isn't an issue of discrimination but of unconscious discouragement," said Dr. Sand. "This discouragement, however, has implications. The track to computer science and engineering fields, which report some of the highest salaries, tapers off in elementary school."

The research was carried out on three groups of students in Israel from sixth grade through the end of high school. The students were given two exams, the first graded by objective scorers who did not know their names and the second by instructors who did know them. In math, the girls outscored the boys in the test that was scored anonymously, but when graded by teachers who were familiar with their names, the boys outscored the girls. The effect was not the same for tests in non-math or non-science-related subjects.

The researchers concluded that, in math and science, the teachers overestimated the boys' skills and underestimated the girls' abilities, and that this had long-term implications for students' attitudes toward these subjects.

"When the same students reached junior high and high school, we examined their performances in matriculation exams ('Bagrut' in Hebrew)," said Dr. Sand. "The boys who had been encouraged when they were younger performed significantly better than their female counterparts, though the latter had objectively scored higher at a younger age."

The researchers also monitored the advanced math and science courses that students chose to take in high school, concluding that the girls who had been discouraged by their elementary school teachers were much less likely than the boys to opt for advanced courses.

"If teachers take into account these effects, it could lead to a reduction of the gender gap in achievement, especially in science and math," said Dr. Sand. "It is clear how important encouragement is for both boys and girls in all their subjects. Teachers play a critical role in lowering and raising the confidence levels of their students, which has serious implications for their futures."

The abstract of Lavy and Sand's paper, "On The Origins of Gender Human Capital Gaps: Short and Long Term Consequences of Teachers' Stereotypical Biases," can be found at www.nber.org/papers/w20909

(2) New Report: "The ABC of Gender Equality in Education: Aptitude, Behaviour, Confidence"

URL: www.oecd.org/pisa/aboutpisa/

URL: www.oecd.org/pisa/keyfindings/pisa-2012-results-overview.pdf

URL: www.oecd-ilibrary.org/education/the-abc-of-gender-equality-in-education_9789264229945-en

URL:

http://blogs.edweek.org/edweek/curriculum/2015/03/gender_gap_oecd_report.html

The Programme for International Student Assessment (PISA) is a triennial international survey conducted by the Organisation for Economic Co-operation and Development (OECD) that focuses on reading, mathematics, science, and problem-solving skills among 15-year-olds. It does not just ascertain whether students can reproduce what they have learned; it also examines how well they can extrapolate from what they have learned and apply that knowledge in unfamiliar settings, both in and outside of school.

The most recently published results are from the assessment in 2012, which focused on mathematics. Key findings are available at www.oecd.org/pisa/keyfindings/pisa-2012-results.htm

On March 5, new results from PISA 2012 were released in a report entitled, *The ABC of Gender Equality in Education: Aptitude, Behaviour and Confidence* (see www.oecd.org/pisa/keyfindings/pisa-2012-results-gender.htm). The report "looks at underperformance among boys; lack of self confidence among girls; and family, school, and societal influences before addressing policies to help boys and girls reach their full potential." The report is available at www.keepeek.com/Digital-Asset-

[Management/oecd/education/the-abc-of-gender-equality-in-education_9789264229945-en](https://www.oecd.org/education/the-abc-of-gender-equality-in-education_9789264229945-en)

The report tries to determine why, in the 64 countries and economies covered, 15-year-old boys are more likely than girls, on average, to be overall low achievers, and why high-performing 15-year-old girls in all participating countries underachieve in mathematics, science, and problem solving compared to high-achieving boys. The findings suggest that disparities in school performance stem from students' attitudes toward learning and their behavior in school, how they choose to spend their leisure time, and the confidence they have—or do not have—in their own abilities as students.

The report states that "girls tend to do better when they are required to work on mathematical or scientific problems that are more similar to those that are routinely encountered in school. But when required to 'think like scientists,' girls underperform considerably compared to boys... Boys also outperform girls in the ability to apply their knowledge of science to a given situation, to describe or interpret phenomena scientifically, and predict changes." These findings may be linked to girls' lower self-confidence in science and math. "When students are more self-confident, they give themselves the freedom to fail, to engage in the trial-and-error processes that are fundamental to acquiring knowledge in mathematics and science."

The findings show that fewer than 5% of the girls consider a STEM career compared to one in five boys, despite similar performance on the AECED's PISA science test.

OECD PISA surveys have shown that girls have lower self-confidence than boys in science and math, and new analysis reveals striking differences in parental encouragement that may exacerbate the problem. Parents are much more likely to expect their sons to work in STEM careers than their daughters, even if they show the same ability. Half of the parents of students assessed in Chile, Hungary, and Portugal expect their sons to work in STEM fields, but less than 20% expect the same of their daughters. In Korea, the gap is only 7 percentage points.

The new analysis also reveals that boys are much more likely to underperform in school than girls, leading to disengagement and higher dropout rates. Six out of ten low achievers in reading, math, and science in OECD PISA surveys are boys. On average, boys spend less time on homework and less time reading than girls, but more time playing video games.

The report suggests that teachers could do more to boost the mathematics performance of both boys and (especially) girls by teaching strategies that require students to explain how they solve math problems, apply what they have learned outside of the classroom, and work more independently.

For more information and findings, please visit the websites above.

(3) NCES releases Report on Gender Differences in STEM Interest, Credits Earned, and NAEP Performance in the 12th Grade

Source: National Center for Education Statistics

“Gender Differences in Science, Technology, Engineering, and Mathematics (STEM) Interest, Credits Earned, and NAEP Performance in the 12th Grade” is a recent “Statistics in Brief” report produced by the National Center for Education Statistics at the Institute of Education Sciences (U.S. Department of Education).

The report describes high school graduates’ attitudes toward STEM courses (specifically, mathematics and science), credits earned in STEM fields, and performance on the National Assessment of Educational Progress (NAEP) mathematics and science assessments in 2009. Key findings include the following:

- Compared to males, lower percentages of female high school graduates reported that they liked mathematics, liked science, that math was one of their favorite subjects, or that science was one of their favorite subjects.
- Compared to males, higher percentages of female high school graduates took algebra II, precalculus, advanced biology, chemistry, and health science/technology courses.
- Generally, among high school graduates who had earned credits in specific mathematics and science courses, males had higher average NAEP mathematics and NAEP science scale scores than females.

To view the full report please visit
<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2015075>

.....

COMET is supported by a grant from the California Mathematics Project.

.....

~ To **unsubscribe** from COMET, send the following message to
listserv@listserv.csufresno.edu: Unsubscribe COMET

~ To **subscribe** to COMET, send the following message to
listserv@listserv.csufresno.edu: Subscribe COMET [followed by your name]
Example: Subscribe COMET Albert Einstein

.....

Carol Fry Bohlin, Ph.D.
Professor and Graduate Program Coordinator (M.A. in Education-C&I)
Director, Mathematics and Science Teacher Initiative (MSTI)
Editor, *California Online Mathematics Education Times (COMET)*
California State University, Fresno
5005 N. Maple Ave. M/S ED 2
Fresno, CA 93740-8025

E-mail: carolb@csufresno.edu
COMET: <http://comet.cmpso.org/>