



# The **BEACON**

*News from The Coalition for Excellence in Science and Math Education*

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*Volume XIX, No. 1 Queries? email M. Kim Johnson (next page) Copyright © May 2016*

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**In this issue:** Editor's Message – Kim Johnson. – Read a comparison of teaching before and after the No Child Left Behind Act from our president, Lisa Durkin – How did we do on the PARCC exam this year? Some more data to digest -- Toons by Thomas -- In Memoriam: Dr. Marshall Berman -- and Announcing the CESE Annual Meeting with a very special guest speaker, Dr. Lawrence Krauss, the Director of the Arizona State University "Origins Project" —

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## **EDITOR'S MESSAGE**

### **Front and Center—What Really Has Changed in Education from a Teacher's Perspective?**

This may sound like an old refrain to everyone reading this, but the fact is, in our collective haste to change education to "catch up" with other countries beginning in earnest back in the early 1980s (some efforts starting as early as the late 1950s), it is not clear that we have actually accomplished a whole heck of a lot. In fact, efforts at "educational reform" pushed upon educators beginning after the No Child Left Behind Act of 2001 may even have caused more negative than positive changes.

Sure, our public officials take credit with headline grabbing statements that we have improved overall, and we have increased our math scores on (fill in test's name here) by a whole 4 or 5%! In New Mexico, the politicians were taking credit for over a decade of an increase in graduation rates ("higher than any other state in the nation!") without noting that we had just the year before seen a comparable decrease (i.e., that increase meant very little).

In reality, there has been only some positive change in standardized test performance—some would say minimal compared to the significant amounts of money, and resources spent, to say nothing of the really significant increase in angst caused to those we count on to handle the front line of education—teachers and first line administrators.

Perhaps worst of all, there has been and still is a significant gap in learning achievement between students from European/Asian/East Indian cultural backgrounds

in moderate to well-to-do economically situations as compared to students from Hispanic/African American/ Native American cultural backgrounds in economically poorly situated living standards.

New Mexico is the "poster-child" state that demonstrates this disparity. And we are not getting better. Not after all these years, all the money, all the changes, and particularly, all the heartbreak caused to the educators in the trenches who are actually beginning to leave the profession after the most recent changes.

But most importantly, the children who have been experiencing this deficit in learning are going on to pass on what they haven't learned to their children. (Yes – that is what I said. Please think about what it means.) The cycle continues. Perhaps it is getting worse in many respects.

College level education is leaving many students with significant debts to pay off with fewer jobs available to help them get by, much less pay off the debts. The gap between the rich and the middle class has been increasing, not growing smaller as one would hope. Of course, that may all change. But it doesn't appear that the change will be driven by an increasingly educated population of young people. In fact, it may turn just the opposite way. But that is a difficult call to make. The world is complex, and we have to live with it. As the saying goes, sometimes you get the bear and sometimes the bear gets you!

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**WEBMASTER: Dave Thomas**

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Dave Thomas  
nmsrdave@swcp.com

CESE annual dues are \$25 for individual, \$35 for family, and \$10 for students. Please see last page for membership form. Email Beacon submissions to Editor, M. Kim Johnson, [kimber@comcast.net](mailto:kimber@comcast.net).

What can we do about this? And it is important that we do act. We submit that the key to improvement is understanding. CESE has been working on this aspect of educational improvement since 1999 when our first statistician with a viewpoint different from standard politicians and university educators began looking at this problem, along with Marshall Berman, CESE's founding president. And it is necessary to point out that we do not and did not throw rocks at everyone's ideas or understanding just because they were of the old established group of people who had been trying to improve education outcomes for some time. This is a difficult problem. Very difficult and complex. We have simply brought a different approach to looking at this problem.

To clarify—we have been saying that one of the major problems with education reform is that so many people, especially those from the political arena tend to “shoot silver bullets” at the problems. They look at Kentucky, pick some curriculum that was made to work there, and say apply this to New Mexico and all our problems will be solved. That simply doesn't work! But it is so appealing that even people who know better keep doing it. I guess that is human nature, if such exists. Sure, Finland has tremendously great standardized test outcomes, and it structures its education very differently than does the US and New Mexico in particular. Are there things it does we should pay attention to that might help us? Of course. Will a transplant of Finland's method actually “fix” education in New Mexico? Of course it won't. They are culturally very, very different than we are. They value education as a culture. Many of our students' parents either are uneducated themselves, or they place education on the bottom rung of their importance ladder.

We are not Finland. Yeah - we should treat teachers as very important people. We should give youngsters plenty of time to play. We should do many things they do. But we cannot solve our students' external problems by imitating Finland. The Finnish system depends utterly on their cultural outlook toward education. Ours simply does not. There is no magic silver bullet we will find in Finland. There may be some ore we can use to make decent bullets to use here. But first we have to find out how to dig it from the ground and how to use our own resources to solve our educational problems. And perhaps, just perhaps, that is not something that can be done simply by changing things in our schools every 8 years or so. Maybe we have to take other approaches. Approaches that we have outlined before in the Beacon.

The lead article in this Beacon is from our current president who is also a teacher. She will address how education was before 2001 and what it is like now. But this is done from a slightly different perspective than we have used in the past. No quantified data are used (though some are discussed) because that isn't the point of what is said. We think you will enjoy this.

To follow, we will look at some quick analysis of the PARCC results from 2015. And don't forget the toon from Dave Thomas! Next, we will acknowledge the death of our extraordinarily special founding president, Dr. Marshall Berman. We are terribly saddened by his passing. To close, we announce an important guest speaker for this year's Annual Meeting.

<http://www.cese.org>

## Before and After the Testing Frenzy

There is no doubt that the educational world is in the midst of a testing frenzy. Politicians have won and lost campaigns over how to use tests to reform schools. According to pundits, tests are how to hold educators accountable and fix education. Whether that is true remains to be seen, but equally important is how schools have changed due to testing mandates first introduced in the No Child Left Behind (NCLB) Act and its cousin Race To The Top (RTTT), a US Department of Education set of executive mandates.

### Before No Child Left Behind (NCLB)

In 1988 I was handed an 8th grade science curriculum and a textbook along with my classroom keys and a box of chalk. It was strange that the curriculum had little in common with the textbook. When asked, the principal told me with a smile that old Mrs. B wrote that curriculum a few years before she died. "She loved rocks." Indeed, my storage room was full of rocks. That was delightful since I too loved rocks. Unfortunately, the other science teacher didn't like rocks and therefore the text was titled, "Physical Science," and that is what she taught regardless of Mrs. B's curriculum.

This was all bewildering until I realized that curriculum was merely a suggestion for what to teach, sort of like French traffic laws. As long as students were learning science, it didn't really matter how they got there.

We were given a list of science competencies from PED. They were so extensive and generalized that they encompassed Mrs. B's curriculum and the textbook because they were both science. Schrodinger could probably swing a dead cat and hit several science competencies.

My college professors insisted that we teach a "hands on" program so that kids got out of the textbook and had a more kinesthetic educational experience. I am brilliant at dreaming up labs and activities. That is, as long as they are about rocks. And I had lots of rocks (thank you Mrs. B). There were not enough textbooks for my students anyway.

It all worked out because the priority of education pre NCLB was to fix society, because society insisted on it. We fed kids, we diagnosed kids, and we doled out discipline. We were surrogate parents, counselors and policeman all rolled into one. What administrators wanted were happy students. Good teachers kept their students busy and smiling. Parents didn't complain about good teachers. Kids didn't like to do their homework, so homework was discouraged. When a student was given an "A" it was because the teacher was good. Only mean teachers gave over 10% of their students "F"s.

Oh, but what about standardized tests? New Mexico had bought a test from Connecticut and once a year we would spend three mornings giving the test from a script. The science portion could be about any science topic, so I hoped there were questions about rocks. The test had no alignment with Mrs. B's curriculum, the textbook, or the science competencies. It didn't matter because we never saw our student's results. Even if we were told how our student's performed, what did it mean? There were so many factors involved. Scores reflected the efforts of several teachers. Students could perform poorly for a myriad of reasons from attendance, home life, personal character and cognitive proclivity to a throng of social and cultural pressures. Students who couldn't read always performed poorly on the test regardless of how well they were taught. The purpose for giving the test was to help diagnose what a student needed to succeed in education.

### After NCLB

It goes without saying that we are more focused on teaching what is tested, mostly because we actually know what will be on the exam. There are specific science standards that are made into test items. It is important that we establish standards for what students need to know and understand to make wise decisions about themselves and the world that they live in. To ensure that these standards are met, they are tested. That needed to happen. Where it is true that teaching what we love makes it easier to make our kids happy, kids also need to walk out of school with something more than a smile on their face.

Curriculum continues to be inarticulate and incomprehensible. It doesn't matter because there was never a means to ensure that curriculum was well written or meaningful. Textbooks are aligned to the standards – hallelujah! Essentially, the standards are the curriculum.

The resources dedicated to testing saps schools. It's like trying to run a marathon after giving a gallon of blood. Instructional time withers. Counselors don't have time to counsel; they coordinate tests. The task of actually counseling students falls on teachers. Administrators perform their full time job of managing a facility, a staff, students, irate parents, etc. while also evaluating teachers. They must, provide teacher training and implement reform mandates and on and on. Litigation and legislation wag the dog. Our class schedule has been reconfigured every year for four years to meet new mandates. Nailing Jell-O to the wall is easier than managing a school these days. We are losing administrators as quickly as we are losing teachers.



Continued from page 3

Schools continue to focus on fixing society. Administrators still want good teachers who keep kids and their parents happy. Unhappy parents call school boards, make reports to news agencies and sue, just as much as they did before NCLB. Although, without rigor in the classroom, students won't pass all the graduation tests and when kids don't graduate, that makes everyone unhappy. Babysitting unmotivated kids until they drop out of school is not an option when graduation rates are taken into consideration.

It cannot be understated how stressful implementing NCLB mandates were to public schools. There were few funds that followed the mandates to pay for overt and hidden costs, so money was cut from the regular program. New responsibilities were distributed without the benefit of new staff. Schools had to scramble, and it gave an impression to the public that the schools were incompetent. Mrs. B's reputation would have surely suffered.

The publication of individual school test scores didn't just humiliate individual schools, demoralize the students, and undermine education as a respectable profession, it brought down home values for entire communities. Since bringing every student to proficiency was always an impossible target, even schools filled with nothing but high flyers couldn't meet Annual Yearly Progress (AYP). CESE knew that from the day the legislation was proposed.

The requirement that schools teach to the test did bring up student proficiency. Scores improved on the National Assessment of Educational Progress (NAEP). But, there were problems. NCLB legislation was designed to close the achievement gap, and it just wouldn't budge significantly. With an ever-increasing number of schools that were on double probation from NCLB, few improved under the threat of draconian consequences. Something had to change. During the Obama administration, it became clear that there had to be a means for states to obtain waivers from AYP requirements.

## And Then There Was RTTT—Race to the Top

There had to be somebody to blame, so it had to be the teacher's fault! Mrs. B would have been appalled. According to educational experts citing educational studies, a teacher is the greatest influence in a student's education. CESE will tell you that a significant number of educational studies do not meet scientific muster. We have conducted our own analysis for New Mexico students and have found that it is social demographics, like poverty and minority fraction, that explain the largest factor in student performance.

Based on this questionable research, many policy makers were convinced that if teachers were judged according to how well students performed on tests, it would ensure

kids learned the standards. Mrs. B would have started throwing her rocks. The problem is that there remain far too many factors, above and beyond teacher effort, that contribute to a student's performance. No matter how statistics are twisted, it remains resource prohibitive to tease out the teacher effect in student performance for each, single school and put a score on it. The greatest factor, social demographics, is outside a school's control. Teachers are angry about evaluations based on faulty assumptions for good reason. School grades based on magic mathematical formulas are equally disturbing. In the growing divide between "haves" and "have-nots," school grades only exacerbate the situation.

Another RTTT mandate was the implementation of new national standards for English and math called Common Core. These rigorous standards allowed comparison of students across the nation, rather than within a state, for college and career readiness. The math standards encourage a new method of instruction that supports a student's understanding of mathematics rather than the regurgitation of math functions. When parents tried to assist their children struggling to learn this new methodology, they became frustrated and irate. Derogatory remarks about Common Core, teachers and schools were more popular on Facebook than cute puppy pictures. The collective parental hand wringing resulted in boycotts of the Common Core test called PARCC that was used in New Mexico. Yes, that was just what educators needed.

PARCC is the first test taken by students on computers and it's not the only mandated test. If teachers are to be held accountable for student performance, there must be more tests. Graduation also rests on tests scores, therefore there must be alternative tests to provide a means to show competency in order to graduate. Otherwise graduation rates would be in the low 60s. Technology budgets for software, equipment and personnel are crushed by the demand. Instead of running the school, you will find administrators running from lab to lab trying to fix the significant number of computer glitches associated with giving tests.

RTTT mandates didn't improve US education results. When the proponents of RTTT became aware of a downward trend in NAEP scores, they apologized for a failed experiment and backed off many RTTT mandates. Unfortunately, New Mexico passed the ABCDF Act and introduced regulatory requirements from the Secretary of Education's office to obtain our AYP waiver. Now we're stuck with them, because the state is not changing the most egregious requirements – even though it can. The ridiculous amount of testing required to generate the data necessary to meet mandates from RTTT have a heavy impact on our schools. Not only did test time and resource demands mushroom, but the teacher evaluation burden is unnecessarily tedious, cumbersome and difficult. Results aren't even given to teachers until the next school year. My school has been short of a full retinue

of administrators more often than not. We have lost seven teachers since August. That is unprecedented, especially in one semester. Mrs. B would most certainly abandon her rocks. RTTT shook the hornet's nest, which was already cracked and crushed by the stress of societal needs, NCLB, and parental demands. Political micro-management, at all levels, has made a tangled mess.

## What's Next?

This year the federal government decided to give NCLB a new hairdo. The Every Student Succeeds Act (ESSA) still requires mandated testing, but shifts the responsibility for deciding what to do with the results over to states. States don't have to use Common Core standards, but they must have a test. All of the requirements for closing achievement gaps, constantly testing students, using test results to hold schools and teachers "accountable," and fixing failing schools are still there, but they are left to states to sort out.

There is no doubt that schools have been tossed into a pressure cooker to transform our country. Citizens have elected officials who demand that schools fix children, fix society and create an educated population that can compete in global markets. Schools are failing to do this. It is simply too much to ask, and it is the wrong way to go about it. For all of the micro-management dictated by underfunded mandates, we have only seen incremental improvement in a handful of categories. Was it worth it? Are we fixed yet? I wouldn't recommend any aspiring person who harkens the call for teaching to enter the field. It's a gristmill.

We can use test data to provide a wealth of information for schools internally. Test results can be misused as well, and so they are. Student standardized test data is a poor measure for evaluating schools or teachers. Mandates for school accountability have placed the world of education on a wild bronco ride. A paradigm shift is past due. You can count on CESE to give an unbiased analysis of the educational milieu given the kaleidoscope of change. Our only goal is to provide information to illuminate a meaningful path forward.

Oh—don't worry about me. I'll be around a little while longer, as long as they don't try and take my rocks away. They help keep me grounded.

*Lisa Durkin, the 2015/2016 president of CESE is a Science teacher at Valencia High School in the Los Lunas Public School District with over 20 years of experience. She has been with CESE since 2003, and was very active in working against pseudo-science bills in the New Mexico Legislature.*

## A Few Words on PARCC and the State of Testing in NM

The school year of 2014/2015 was the first year that the PARCC test was used as the year-end standardized test required by both federal law and state regulation. There is significant consensus that we are over-testing our students, requiring some testing every year for every grade and full testing in New Mexico for every grade. However, until significant changes occur as policy makers (hopefully) come to realize that these tests do not serve the purpose that was intended for them and that they also drain resources and energy that might better be placed into actual teaching, these tests are going to be around. Be advised that this is not a quest to stop testing altogether. We need to have some indication of how students do perform on standardized tests. But better grades 3, 8, and 11 as it used to be rather than essentially all grades as it is today.

Still, there is usable information here, and we do have to live with this. So let us look at how New Mexico students performed in 2015. The graphic on page 6 summarizes the

state average scores. Each grade tested in each subject was divided into 5 bins (vertical lines). The bins are shown, as indicated, with the first three bins (in gray shades and black) being set as percentage below proficient. The last two bins constitute the percentage of those deemed proficient or above.

First, note that there are generally many more students not ranked as proficient than there are students ranked as proficient. Second, notice that in 11<sup>th</sup> grade ELA (English Language Arts), the percentage of students exceeding proficient far exceed those in other grades. Also, ELA is clearly a subject that students do better in than math subjects. The latter is not a surprise to most people, and this clearly points out the need to continue working to help students become engaged with math. People who do not do well in math tend to believe they do not need to learn more than a few basics. We would disagree for some very sound reasons. But that is the topic for another column.

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Back to the ELA 11<sup>th</sup> grade high scores. Why? We propose an hypothesis that says since 11th grade PARCC must be passed to graduate, students simply try harder. It matters to them. Whereas, before the 11<sup>th</sup> grade, these tests mean nothing to the students. Yes, they are “high stakes” tests, as is said today. But they are only high stakes for teachers, whose evaluations have a 50% basis in the results; and for schools and districts, where schools are graded, for the most part, based on the results. And there are consequences if those grades are not high enough. (Teacher results are currently under temporary injunction against their usage until a court case is settled.) And what happened with math? It appears that some of the results are skewed, because between 15 and 20% of students take higher level math in lower grades— That plus the general problem in getting students simply involved with math.



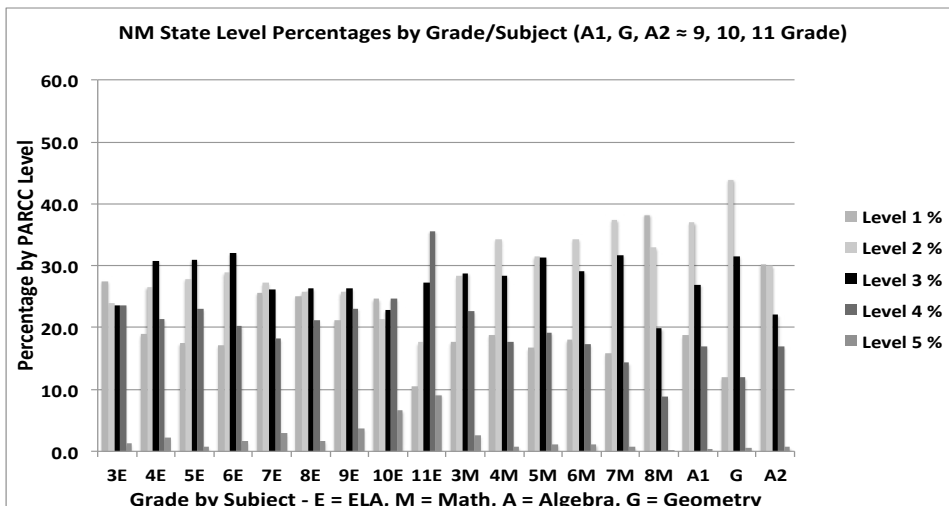
DR

In February 2016, the Discovery Institute, home of the anti-science, anti-evolution movement called "Intelligent Design," said the following in an appeal for donations for its summer indoctrination program for students:

**"Thanks to your generosity, we aren't simply waiting for our opponents to die."**

Students need to care about these tests. They need to make that sacrifice. We see they can do very much better than they are. The testing will not last forever. But as

long as we, as a state, do badly, we subject ourselves to



Note: The 2 far left gray bars (Levels 1&2) are well below expectations, the middle black bar (Level 3) is approaching expectations, and the 2 far right bars (Levels 4&5) meet or exceed expectations.

our old enemy—that vulture from the Discovery Institute in the toon by Thomas above. Students may actually learn a little more by doing better, but above all, they will be setting the stage so that when they become adults and get out into the world, they may have a chance to make it better by restructuring what we have going now in the education/test world. We who are in charge now have not fixed the problem, but you students coming out in the future have a real shot at it. You know what doesn't help you.

## Marshall Berman, Founding President—In Memoriam

Dr. Marshall Berman, CESE’s founding president, passed away on October 25, 2015 in Louisville, CO at the age of 76. Marshall devoted over 16 years of his life to CESE and related activities from 1997 onward. He was also a devoted father, scientist, educator, and leader. Marshall was a father and grandfather. He is survived by his sons Brandon and Brian Berman, his daughter Brenna Berman, and four grandchildren who he begged his children to have. He loved the little ones.

city of Michigan. He went on to receive his Ph.D. in Nuclear Physics from Wayne State University.

Marshall was born on June 16, 1939 in Detroit, MI to his parents Martin and Esther Berman. He was valedictorian of his high school class and graduated with a B.S. with Distinction in Physics from the Univer-

In 1966, Marshall married and shortly thereafter moved to Albuquerque, NM, after accepting a position at Sandia National Laboratories, where he worked for 32 years on nuclear reactor safety, managed a variety of defense research projects, and served as Executive Director of the Innovation Initiative for the U.S. Council on Competitiveness. His interests in other things were varied, but his abiding interest before he retired and after was in learning for the sake of learning, and helping to improve all of education in whatever way was required.





Coalition for Excellence in Science and Math Education  
803 Maverick Trail SE  
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## **ANNOUNCING THE 20<sup>th</sup> ANNUAL CESE MEMBERSHIP MEETING WITH SPECIAL GUEST AND INTERNATIONALLY KNOWN, AWARD WINNING SPEAKER—DR. LAWRENCE KRAUSS**

Dr. Krauss is a professor of Physics and Cosmology at the Arizona State  
University

The title of the talk will be:

### **Journey To the Beginning of Time: Gravitational Waves from the Big Bang and Beyond**

Where: The UNM Maxwell Lecture Hall

When: June 25, 2016 at 1:30 PM

Cost: FREE, please bring a friend

Directions: From Central and University, go north on University until you get to Las Lomas. Turn right, then left into the parking lot. The lecture will take place in the Anthropology Lecture Hall immediately south of the parking lot. Remember, parking is free on Saturdays. We look forward to seeing you there. We do not think you will regret taking the time for this cutting edge understanding of our universe!

