



The
BEACON
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The Coalition for Excellence in Science and Math Education

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IN THIS ISSUE: PRESIDENT'S MESSAGE—Kim Johnson, **Toon by Thomas**—Dave Thomas, **MOST CHILDREN AND SCHOOLS LEFT BEHIND**—Marshall Berman, **INSTRUCTIONAL COACHING AND ME**—Cindy Chapman, **SEGREGATION IN NEW MEXICO SCHOOLS**—Walt Murfin, **ANNUAL MEETING**

PRESIDENT'S MESSAGE

It's annual meeting time again. On Sunday, June 11, we will hold our 10th annual meeting—8th as a 501(c)3 corporation. We have accomplished a lot and should be proud. We will discuss that at the meeting and also discuss what we want to be when we grow up. Those two items will be on the agenda.

Our speaker for the meeting will be Nick Matzke of the National Center for Science Education. Nick was the technical brains behind the Dover, PA, trial in which intelligent design (ID) creationism, itself, was on trial. ID creationism lost in a very big way, and the ID creationists are still reeling from it. The decision was very broad and very much against the introduction of any type of creationism, be it "alternate theories" or ID, into the public school science classroom. Although this ruling applied to only one federal district, it is so thorough and so well written, that any other federal judge in the nation who thinks they may be faced with a similar situation has probably read and memorized this 139-page decision. That is not just my opinion, but a summary of the many lawyers whose correspondence I have read. The only question left is "Who will play the part of Nick in the movie; maybe "Inherit the Wind Part II? He was the *sine qua non* of the outcome. (Test your Latin skills.)

On the home front, we have been involved in our own battle with the creationists, again – Rio Rancho Public Schools. As most of you are probably aware, a policy (#401) was passed at the beginning of the 2005/2006 school year (September 2005). The policy was brought to the school board without any science teacher input. None. Zilch. Nada. Yet it dictated that science teachers should

act according to the following original draft

“1. Rio Rancho Public Schools will take measures to guarantee academic freedom and intellectual integrity as essential elements, not dogma or religious orthodoxy, when biological evolution and theories of origins are taught.

2. In compliance with NMSCSBPS [NM Science Standards ...], and in conjunction with RRRPS Policy 430 (Controversial Materials, Methods, and Issues), the Rio Rancho Board of Education also directs that teachers will not avoid controversial topics such as biological evolution or alternative interpretations of scientific evidence just because these theories or interpretations of scientific evidence may have implications that conflict with their own religious or philosophical beliefs or those of their students.

3. The Rio Rancho Board further directs that teachers:

a) will lead students in an open inquiry of the full range of scientific views (including consideration, discussion, and debate of all data and scientific explanations);

b) will conduct an objective and impartial evaluation of the evidence: and

c) will teach critical thinking skills, a crucial aspect of students' academic work”

—Continued on page 2

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Continued from page 1

It seems that the legal counsel changed a few minds about this, and the policy was revised to read, in part:

“...discussions about issues that are of interest to both science and individual religious and philosophical beliefs will acknowledge that reasonable people may disagree about the meaning and interpretation of data.”

Of course, this deviated from the NM State Science Standards that say “Understand that *reasonable people may disagree about some issues that are of interest to both science and religion* (e.g., the origin of life on Earth, the cause of the Big Bang, the future of Earth).” This deviation was a straightforward effort to interject a directed curriculum change on the basis that scientists actually disagree about data interpretation concerning whether evolution is a theory in crisis, to coin part of a book title. Sure scientists disagree about details of mechanisms. But, they do so openly. There is no substantive, open disagreement about the veracity of evolution. On the five-member Rio Rancho school board, the two who are evangelical pastors and one evangelical member (all of whom admitted that they had no experience in science) voted for this inane policy.

A number of things happened between August of 2005 and April 2006. The most important was the leadership exhibited by the Rio Rancho High School Science Chair and his refusal to change science curriculum to include any deviation from naturalistic causality. Then the Dover, PA, decision was handed down. In the end, the board amended the policy to simply restate the NM State Science Standards. The two pastors on the board apologized for not asking teachers for input on the original policy (there was plenty – all negative) and then proceeded to ignore the current teacher input, which was to rescind the policy. It is not clear that all of the voting board members understand that this action changing the original 401 policy to repeat the state standards still does not allow the teaching of ideology in place of science. But, it is clear that

Continued on page 3

Continued from page 2

clear that the teachers can go ahead and teach science as the Standards require. Of course they will be respectful of religious beliefs. But they must also teach to the standards. They must leave religious ideology out of the science classroom. Of course there are many details of the history of Rio Rancho Policy 401 not covered in this short summary. Hear more at the annual meeting.

This issue of the Beacon addresses two more related topics. (1) We include a reprint of an article written in June, 2004 by Marshall Berman, and reprinted in the September '04 Beacon. The article addresses the No Child Left Behind (NCLB) act, passed by a large, bi-partisan vote in Congress. It is a classic, and should be read by all who are interested in the direction of education in our nation.

(2) One of the many developments that validate Marshall's 2004 article was an Associated Press release that appeared in the May 13, 2006, Albuquerque Tribune. The two paragraphs below are an excerpt from this "breaking" news story.

**"No state meets goals of No Child Left Behind
By Associated Press**

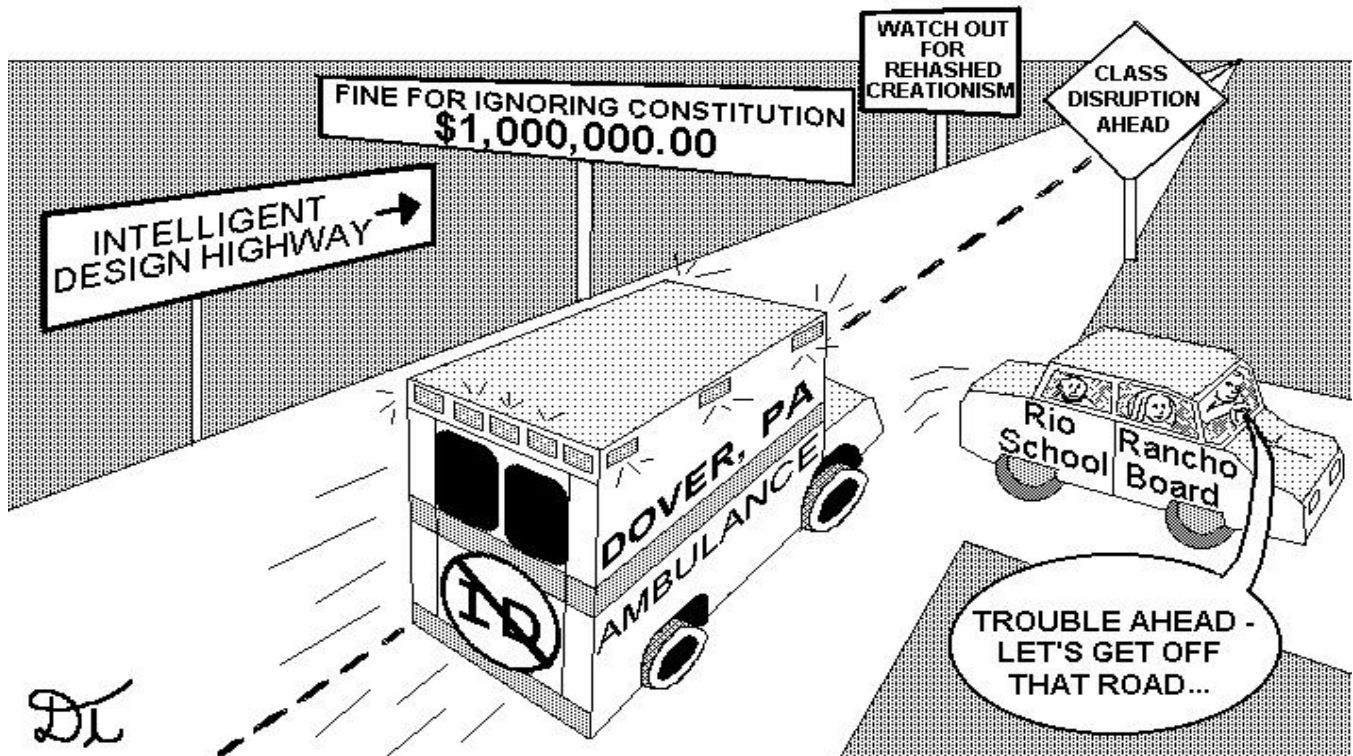
WASHINGTON - Not a single state will have a highly qualified teacher in every core class this school year as promised by President Bush's education law. Nine states along with the District of Columbia and Puerto Rico face penalties.

The Education Department on Friday ordered every state to explain how it will have 100 percent of its core teachers qualified—belatedly—in the 2006-07 school year."

Cindy Chapman gives us a description of her position as a coach for teachers.

Finally, Walt Murfin, our marvelous statistician, has a discussion about segregation in New Mexico schools and its effect on student performance. You will want to read this. It does not deal with the classical issue of purposeful segregation, but rather some practical aspects that are integral to the state of New Mexico.

**Kim Johnson
CESE President**



Toon by Thomas

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Introduction From its inception in 2001, it was very apparent that the NCLB law was illogical and full of inconsistencies, despite its obvious good intentions. These flaws were pointed out in the first few years of the law's application. Now, as forecast by many analysts both within and outside the education profession, it is very clear that the law is not being uniformly applied to all states, districts, and schools, is not closing the racial, ethnic, language, and family-income gaps among students, and is not succeeding in either raising academic standards or student achievement, especially when US students are compared against other countries in the TIMSS and PISA tests. This article reprinted in the September 2004 Beacon and here restates what has been obvious from the beginning: the law needs to be drastically changed.

Note: Pertinent phrases are in bold. Reference URLs may be found in the June 04 Beacon.

NCLB- Most Children and Schools Left Behind

by **Marshall Berman**

Published in **Crosswinds Weekly**

July 15, 2004

Allow me to relate a fable for our time: Imagine that the US Congress has decided that this nation faces a crisis in physical education. Obesity, diabetes, and just plain sloth are pandemic. The problem clearly begins in the public schools. So Congress has overwhelmingly passed the NCLB-2 law by a bipartisan majority of 87 to 10 in the Senate and 381 to 41 in the House. The president, to much fanfare, has signed the law into effect. A summary of the law's 1000 pages follows:

Mission of NCLB-2

- Physical Education Achievement

In order to address the enormous health problems faced by Americans, and to redress the group inequities in physical achievement, this law will ensure that students reach adulthood physically fit, trim, and prepared to lead healthy and productive lives. Our goal is to set very high standards and ensure that they are met by all students.

Accountability

In the first year, this law will apply to all students in grades 4, 8 and 11. In subsequent years, all students in grades 3 through 8, and 11 will be subject to the following assessments:

Every state will test students in the high jump. They will set the initial bar height as high as "reasonable." States that set the bar too low will be yelled at.

In the first year, students will be required to jump the bar. The fraction that cannot clear the bar will be deemed "below proficient." The schools must then achieve Adequate Yearly Progress (AYP) in their goal of reaching 100% proficiency by the year 2014 (ten years hence). For example, if 40% of the students cannot clear the bar, then the school must increase "proficiency" by 4% per year until reaching 100%. Those students that can clear the bar already will have no effect on AYP. They will be mostly ignored for the rest of their public school career.

Schools must disaggregate (separate) students according to the following groups: obese, excessively skinny, lung challenged (e.g., asthmatics), disabled (paraplegics, blind, etc.; quadriplegics will be excused from testing), and poor. Physically-challenged (special ed) students may be provided accommodations; e.g., ramps can be used for wheel-chair bound students. 95% of all students must be tested each year.

If a school does not achieve AYP in two years for all groups, an accelerating set of sanctions will be applied. Students can switch to other schools with better coaches and facilities.

fied, which means having degrees in physical education.

In the second year, for a broader measure of physical education, assessments in short (100 meters) and long (6000 meters) races will begin in the same fashion. Minimum race speeds will be determined by the state and all students will achieve or surpass this minimum by 2014.

Schools that continue to fail AYP will be subject to ever more severe sanctions, until ultimately the school is taken over, closed, or all federal funding is eliminated.

Complaints by basketball, football, baseball and other coaches will be ignored. Students must master the basics before they take on more complex tasks like team sports.

Does this sound ridiculous to you? Of course. Even so, every part of this analogy applies to the current NCLB law except for the replacement of the words "Physical Education Achievement" with "Academic Achievement" and "bar height" with "minimum passing test score (proficiency)." "Team sports" is a parody for other subjects like history, government, economics, literature, ethics, etc.

It is clear that AYP and 100% proficiency will NOT be achieved by the 2014 deadline, or for that matter, ANY deadline. So it is a

certain that the vast majority of schools in the nation are destined to fail. A recent Forbes article reads: “[NCLB] states, insanely, that by 2014 all American students must be “proficient” in reading and math. Any school at which this doesn’t happen will suffer severe penalties, up to and including a takeover by the state. Yet the shape of the bell curve guarantees that most schools will fail. No amount of accountability, incentives and superduper teaching can possibly get all the kids in any sizable school up to 100% proficiency by 2014....”

Furthermore, since NCLB requires Criterion Referenced Tests (CRTs) and a simple pass/fail system of proficient or not proficient, a tiny fraction, or even a single non-proficient student in any subgroup can cause an entire school to ‘fail.’ Similarly, since high standards and the number of students attaining proficiency are inversely proportional to each other (if one goes up, the other goes down), the current NCLB requirements will encourage states to lower their standards in order to increase the number of students who can become proficient (and many have already done that:

All coaches must be highly quali
Hence, **NCLB contains internal contradictions** between high standards, accountability and closing the achievement gap. **It is likely to increase cheating. The system will also reduce efforts to support proficient and more advanced students, because those higher achieving students have no impact at all on AYP.** These aspects of the law must be changed to a reasonable system that recognizes the normal individual (not group) variations in student ability. **As currently written and implemented, NCLB is likely to do much more harm than good.**

Like so many efforts to “reform” education, NCLB Like so many efforts to “reform” education, NCLB was well intentioned. Its worthy goals were to introduce strong accountability measures, raise standards, and close the achievement gaps between whites and Asians on one hand, and Blacks, Hispanics and Indians on the other. But it totally confuses equal opportunities with equal outcomes. **Reducing the achievement gap means that it should no longer be possible to see gaps between different groups.** But **it will always be possible to see individual variations among people.** The achievement of students should depend exclusively on their ability, motivation, hard work, and equal high-quality education opportunities—and not on which group they belong to.

When the obvious statements in this article are discussed with NCLB believers, their responses are often similar to “we want all children to be able to read and write.” This is a desirable qualitative goal, but NCLB requires concrete measurements using CRTs. A CRT in NCLB is a simple pass/fail assessment defined by a certain number of correct answers on a test. Getting fewer answers than a specified number means the test-taker is NOT proficient. On the other hand, a Norm Referenced Test (NRT) compares student performance against the average performance of a national sample. Any test can be treated as both an NRT and a CRT. The huge gaps among various groups (by race, ethnicity, poverty, or English proficiency) were determined long before NCLB, and we should continue to provide such measurements in a more realistic way than the simple minimum-standard, pass/fail concepts of NCLB-promoted CRTs.

Rep. John Boehner (R-OH) and Sen. Ted Kennedy (D-MA) were key players in NCLB de-

velopment. In Sep. 2003, Rep. Boehner’s view was discussed in the Washington Post: “Assume for a moment that Congress had decided instead to set a goal of 95 percent of all students being proficient in reading and math, said Rep. John A. Boehner (R-Ohio), chairman of the House Education and Workforce Committee. “Okay, so let’s throw 5 percent of the kids overboard,” he said. “It wouldn’t be my kid or your kid, but it will be somebody’s child. Don’t they count?”

This statement represents an **extreme confusion of goals and outcomes**, and the real danger of using an impossible name for a law such as “No Child Left Behind”

“Welcome to Lake Wobegon, where the women are strong, the men are good looking, and all the children are above average.”
-Garrison Keillor.

No single percentage, not 100% or 80% or any number, is appropriate; rather, **we should use quantitative measures** of the means and standard deviations in group achievement levels, apply efforts to reduce them, and then make comparisons against the higher group achievers (like Whites and Asians); ultimately we want to benchmark our students against the student achievement levels in other countries to keep American education competitive and world-class [e.g., TIMSS in science and math or PIRLS in literacy)]. **The only numerical goal should be that differences due to variations other than individual ability (such as race, ethnicity, school and teacher quality, poverty, etc.) should no longer be statistically significant.**

Marshall Berman

Instructional Coaching and Me

When you think of a coach, the first image that comes to mind might be that of a wise, knowledgeable teacher-type person putting his sports team through exercises and practices geared to help that team coalesce and do well in competition. You might envision the coach on one knee talking earnestly to a discouraged player giving her pointers about what she's doing wrong so that she can become more skilled and accomplished. What you probably don't think about is a stagecoach—a means of conveying valued people from where they are to where they wish to be. When I became an instructional coach, I was given the second metaphor to help me understand what really was my job.

Five years ago Albuquerque Public Schools began a new professional development program based on the most important principles of successful efforts—that professional development be sustained, embedded, and respectful of individual needs. This effort is the instructional coaching program of which I've been a part for four years. Each elementary school has at least one coach and there are coaches in middle schools and high schools as well.

Having supervised student teachers and served as a cooperating teacher for many years, I felt well-qualified for this position. I was considered a good teacher and I was active nationally in mathematics education. I had lots of great ideas and resources that I could bring to show teachers what they ought and ought not to be doing. I was ready to be the coach who was wise and knowing and would tell and show teachers how they could improve.

In the end, my job turned out to be quite a bit different—and much more wonderful—than I had imagined. Navajo Elementary School, in the South Valley, asked me to be their coach and I happily accepted. I had actually begun my career at Navajo, completing my second semester of student teaching there just a

short 30+ years before. Navajo is a year-round school, so I started my coaching position before I had received any training, or indeed any real inkling, of what the instructional coach's job was to be. I worked for two weeks doing all the nice things I thought I was supposed to do—helping teachers get their rooms set up, bringing them materials, scheduling myself in to do model lessons, advising teachers on behavior management issues, etc. These were all good things and I'm glad I did them.

But when my training in cognitive coaching began I began to see my job in a whole different light. John Dyer, of the Center for Cognitive Coaching, worked with my cohort over 7 days throughout my first year of coaching. I learned that my job runs along a continuum from consultant (which was what I was doing) to collaborator (an equal, a colleague—the teacher-next-door sort) to coach. The coach end of the continuum is where teachers find help to solve their own problems in their own ways. An excerpt from *Cognitive Coaching: A Foundation for Renaissance Schools*, Costa and Garmon, explains this:

Cognitive Coaches are committed to learning. They continually resist complacency, and they share both the humility and the pride of admitting that there is more to learn. They dedicate themselves to serving others, and they set aside their ego needs, devoting their energies to enhancing others' resourcefulness. They commit their time and energies to make a difference by enhancing interdependence, illuminating situations from varied perspectives, and striving to bring consciousness to intentions, thoughts, feelings, and behaviors and their effect on others and the environment.

When I coach, my needs and opinions and ideas necessarily take a backseat and I listen to what teachers want and need. Sometimes teachers ask me to collect data for them on things they want to know about their class—what are those kids over at that table really doing while I'm teaching a reading group?

Who really is engaged in my whole group lesson? How is my wait time? Which students am I calling on? Does this classroom arrangement work as well as I think it does to encourage students to help each other? Does this group of students work well together or is one person doing all the work? These questions come from the teachers, not from me, and my job is to collect the data they ask for exactly as they wish it to be collected and reported.

Sometimes teachers just want someone to listen—really listen—to a problem and then they move on, ready to tackle the problem on their own. Sometimes they appreciate just having another adult to talk to! Being asked in to a class and being allowed to participate in the genius and talent of such gifted teachers is the most wonderful part of my job.

Coaches are not assistant principals. They don't evaluate or supervise. When a principal, for whatever reason, wants the coach to work with a teacher, the principal tells the *teacher*, not the coach. Coaches don't report back to the principal about what teachers are doing. Last school year, APS' Research, Development, and Accountability office conducted a district-wide survey on how the coaching program was being received. The program was strongly appreciated and supported by teachers and principals, even more so in schools where the coach did the *least* amount of administrative-type duties such serving as test representative (a huge job nowadays).

Our former Instructional Coaching Coordinator, Janet Dunham, brought great passion and expertise to this program, setting it up from the outset so that coaches receive the same sustained support and training they hope to provide. The district now imparts most of its vision and direction to the schools through coaches. And coaches, who meet regularly at both the cluster and district level, network and work

together throughout the year. We coach each other and get great ideas from other schools' solutions to common problems. My job isn't for everyone, but for those of us who are madly in love with the profession and its practitioners, it is a joy and a privilege.

Cindy Chapman



Segregation in New Mexico Schools

We know that all groups — ethnic minorities, English learners, and economically disadvantaged students — tend to perform less well in schools with high fractions of other disadvantaged students. It is important to know whether there is a strong tendency for disadvantaged students to be in schools in which most other students are also disadvantaged. Severe segregation with respect to advantage/disadvantage might explain at least part of the gap between affluent Anglo students and poor, minority, and limited English students.

For this study I examined the fractions of ethnic groups and economically disadvantaged students in New Mexico high schools in 2005. I studied 110 schools with 35,408 students in 9th and 11th grades. Charter and alternative schools were excluded. Overall, 34% of the students were Anglos, 50% were Hispanics, 12.5% were Native Americans, and 3.5% were either black or Asian. Approximately 52% were economically disadvantaged.

The first question to be answered is the degree to which members of each ethnic group are segregated by the school minority fraction. Figure 1 shows the cumulative fraction of members of each ethnic group as a function of the minority fraction in their school. Segregation is indicated if the curves for disadvantaged groups lie to the right of the curve for the advantaged group. It is obvious that Anglo students are much less likely to attend schools with high minority fractions. Hispanics and especially Indians are more likely to attend high minority schools. Approximately 48% of Anglos, 83% of Hispanics, and 90% of Native Americans attend schools that have 50% or more minority students. Only 3% of Anglos, but 25% of Hispanics and 50% of Indians attend schools with 90% or more minority students. 23% of Indian students attend schools that are 100% minority.

Figure 2 shows the segregation of each ethnic group with respect to the fraction of economi-

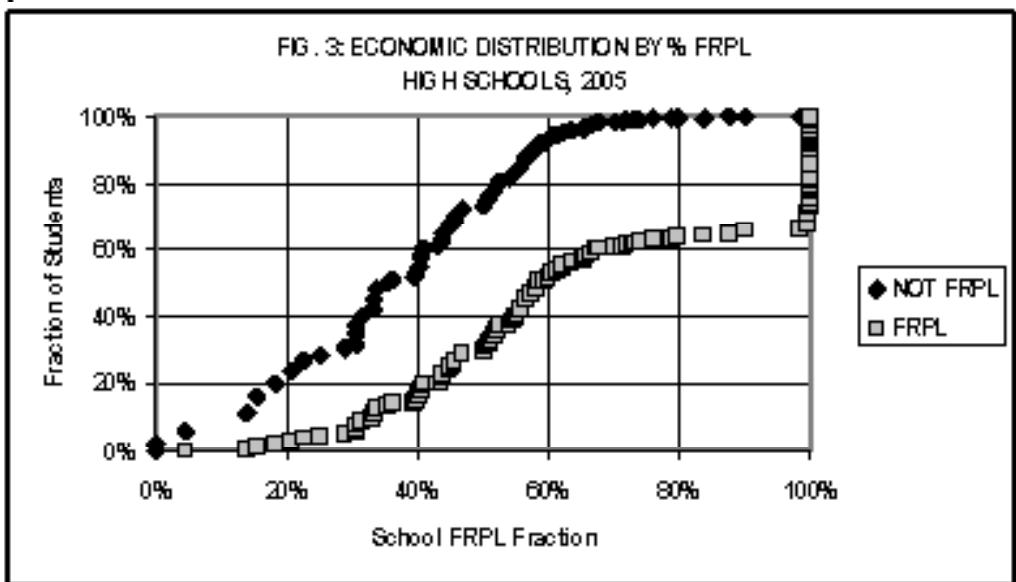
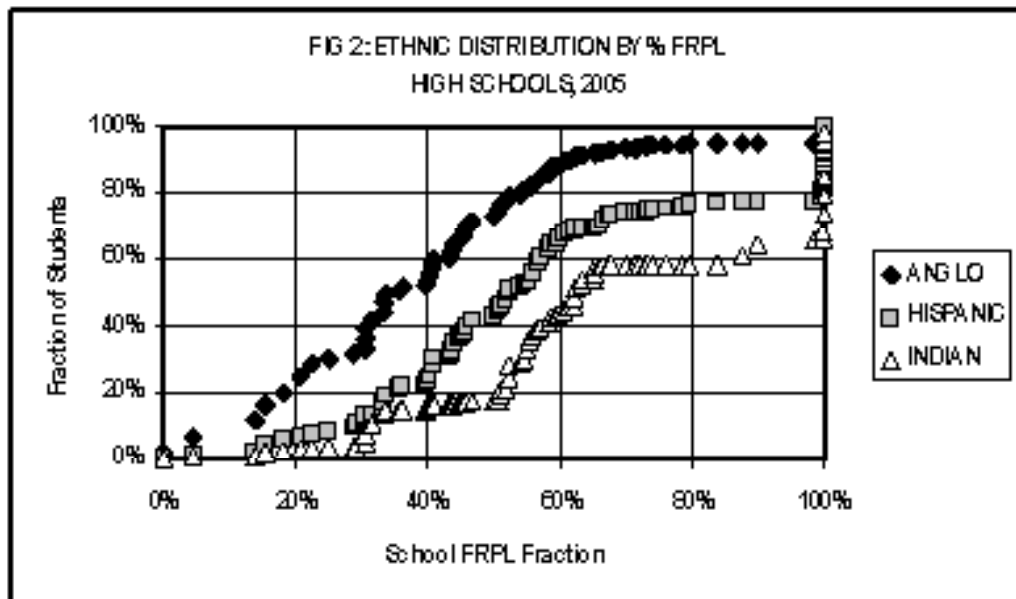
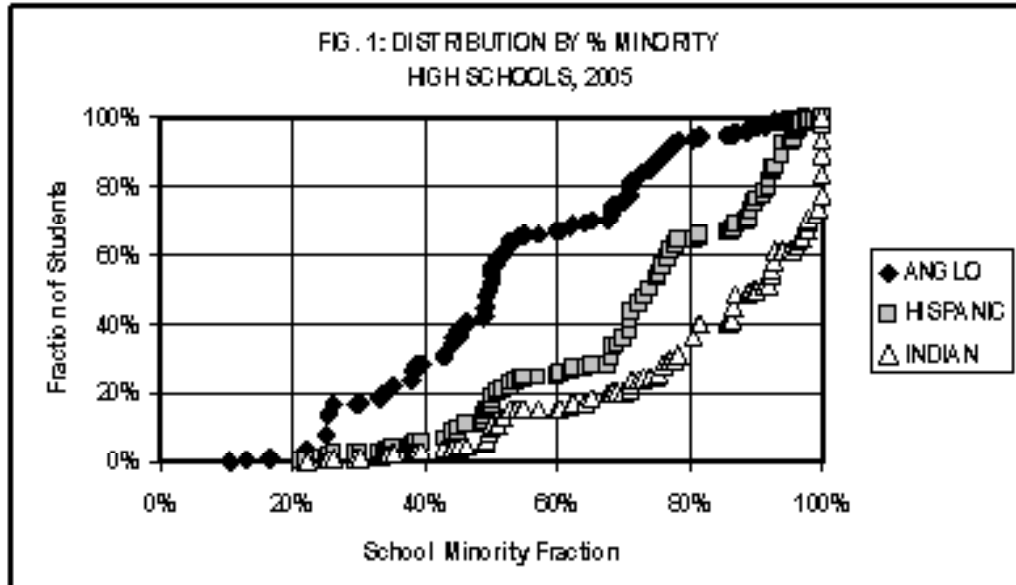
cally disadvantaged students in their school. 30% of Anglos, 9% of Hispanics, and only 4% of Indians are in schools with 25% or less poverty. 23% of Anglos, 57% of Hispanics, and 83% of Indians are in schools with 50% or higher poverty. Only 5% of Anglos, but 23% of Hispanics and 36% of Indians are in schools with 90% or higher poverty. About one-third of Indian students attend schools with 100% poverty. The median Anglo student is in a school with 36% poverty and 50% minorities. The median Hispanic student is in a school with 52% poverty and 74% minorities. The median Indian student is in a school with 62% poverty and 90% minorities.

Figure 3 shows the tendency for economically disadvantaged students to be in schools in which most other students are also economically disadvantaged. About one third of economically disadvantaged students attend schools with 100% poverty. Segregation can also be seen for limited English students, both with respect to ethnicity and economic status.

New Mexico schools are quite strongly segregated by any measure. This is probably an artifact of geography. Schools located on or near Indian reservations naturally have high Native American fractions. Schools in predominantly Hispanic districts naturally have high Hispanic fractions. Segregation by ethnic group is a significant negative predictor of student proficiency, comparable to the effects of economic status and ethnicity. However, the rural and sparsely inhabited nature of most New Mexico districts makes desegregation completely impractical for most schools.

There are only a few examples of disadvantaged schools that could be materially helped by desegregation. For the overwhelming majority, the best we can do is to improve the education of disadvantaged groups. The schools cannot carry this out by themselves.

Walt Murfin
CESE Statistician



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CESE ANNUAL MEETING The Story Behind the Dover Trial

Please join us on Sunday, June 11 at the Maxwell Museum located on the UNM campus for our annual meeting. Our very special guest speaker will be Nick Matzke of the National Center for Science Education. Most of you have not heard of Nick, but without him, it is not clear that the Dover, PA “Trial of the 21st Century” would have been as successful as it was. Nick provided the basic technical direction and expertise to the plaintiffs’ lawyers. The only remaining question is “Who will play Nick in the movie?”

This will also be a regular business meeting. Any who may be interested in being on the board of directors, please contact Kim Johnson at 897-3364 or e-mail him at kimber@comcast.net

The Maxwell museum is numbered “11” on the map. We will use the lecture hall on the north side of the building. The parking lot just to the north (Lot C) will be available for parking. (As usual, north is towards the top of the page.)

To join CESE, see <http://www.cesame-nm.org>

