

## What's our record on academic engagement and achievement?



### Curricular Reform Math and Science

**Science Inquiry:** Low-income students performed at a level that *exceeded* the national and international benchmarks based on original test items from TIMSS and NAEP assessments.

**Science Immersion:** A comparison of immersion units with an NSF scripted design for introducing concepts in electricity found that learning in the immersion group was twice as large as in the scripted group

**Engineering Robotics:** Students design a robot for mapping a mine, investigate capabilities of an ultrasonic rangefinder to “see” inside the mine, work out a system for gathering, interpreting, and visualizing numeric feedback, and analyze and report their results.

**Math Cognitive Tutors:** In whole-year classroom studies, Cognitive Tutor Algebra students outperform students in control classes by 50-100% on targeted real world problem solving skills and by 10-25% on standardized tests.

**Math Assisment:** Providing feedback to teachers on students' strengths and weaknesses reflected in their style of solving math problems on the PSSA.

### Axiological Reform Seven Values

Black elementary school students above the median in **self-persistence, self-esteem, or self-reliance** were 5 to 8 times more likely to score at or above the 50<sup>th</sup> percentile on the math section of the Iowa Test of Basic Skills.

Black students at or above the median on **love and respect, interpersonal skills, or self-esteem** were a minimum of seven times more likely to score at or above the 50<sup>th</sup> percentile on the SAT-9 for reading.

Following one year's application of Values for Life in an all-Black public elementary school, we found evidence of academic gains that by far outpaced academic gains associated with the two years prior to intervention.

Black college students high in **self-confidence** reported significantly better study skills, higher occupational and economic aspirations, and greater utilization of academic support resources.

Black college students high in **learning orientation** reported more favorable attitudes toward taking technically demanding courses—calculus, chemistry, and biology.

### Normative Reform Community Empowerment

More than 200 public housing students with their parents, grandparents, teachers, and principal showed up at a special Sunday morning worship service at Bethel AME Methodist Church to **recognize students** who had read 25 books or more.

At Sixth Mount Zion Baptist Church, teachers and principals whose students had accelerated scores in reading and math were recognized during morning worship and following service in a fellowship hour where **school personnel were welcomed and thanked** personally by congregants.

**Distributed posters with pictures and names of achievers and gainers** in local businesses and libraries and on billboards located at prominent intersections in the community. One school took on the project of producing t-shirts and buttons in support of this initiative.

Grace Presbyterian, Wesley Center AME, Bethel AME, and Sixth Mount Zion Baptist have **adopted schools** where they offer tutoring and mentoring services to accelerate rates of math, science, and reading achievement.

# Pennsylvania CAN

accelerate the  
closure of racial  
achievement  
gaps



Contact Jerome Taylor at  
[jtaylor@cffe.org](mailto:jtaylor@cffe.org) for more information about *Pennsylvania CAN*.

## What's Our Goal?



The goal of Pennsylvania CAN is to accelerate the closure of racial achievement gaps in math and science across grades K-12.

## How does it Work?

Pennsylvania CAN uses Curricular (C), Axiological (A), and Normative (N) reforms in reaching its goal:

*Curricular*—stimulating interest and learning skills through model programs in science inquiry, immersion, and robotics as well as on-line cognitive math tutorials and structured feedback for teachers.

*Axiological*—promoting the exemplification of seven values—learning orientation, self-confidence, self-persistence, self-esteem, self-reliance, love and respect, and interpersonal skills—that are associated with accelerated rates of academic achievement and adaptive character formation.

*Normative*—establishing a communal environment that promotes and rewards academic excellence among parents, peers, neighborhoods, and school.

Pennsylvania CAN is a value-added reform which enhances without supplanting the school district's core curriculum offerings.

## Pennsylvania CAN gets *RESULTS!*

Pennsylvania CAN increases teachers' expectation of their students.

Pennsylvania CAN increases teachers' positive attitudes toward Black culture.

Pennsylvania CAN increases teachers' positive attitudes toward their Black students.

Pennsylvania CAN increases teachers' sense of instructional efficacy.

Pennsylvania CAN improves students' expectations of academic success.

Pennsylvania CAN increases students' positive attitudes toward Black culture.

Pennsylvania CAN increases students' positive attitudes toward their teachers.

Pennsylvania CAN increases students' level of academic engagement.

Pennsylvania CAN decreases disciplinary problems including violence.

Pennsylvania CAN decreases attendance problems.

Pennsylvania CAN decreases the incidence of tardiness.



*Components of Pennsylvania CAN have been developed and empirically evaluated and validated through research efforts originating in this region.*



### Student Effects

- Pennsylvania CAN equips students with knowledge of how to use their culture as a source of strength and guidance.
- Pennsylvania CAN stimulates students' imagination about prospects of a constructive future.
- Pennsylvania CAN decreases academic disengagement.

### Teacher Effects

- Pennsylvania CAN provides value-added instruction in math and science.
- Pennsylvania CAN enhances quality of instruction.
- Pennsylvania CAN increases teachers' sense of satisfaction about teaching.
- Pennsylvania CAN equips teachers with proactive and reactive methods of discipline.

### Cultural Effects

- Pennsylvania CAN helps to liberate teachers and students from racist stereotypes.
- Pennsylvania CAN helps to humanize relationships between teachers and students.

### Communal Effects

- Pennsylvania CAN mobilizes support of academic excellence in the community.
- Pennsylvania CAN engages community as guarantor of excellence in schools.