



# GRADUATION FOR ALL

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## Spotlight on STEM • [www.idra.org](http://www.idra.org) • September 2012

### Field Notes

Throughout the past year, IDRA has been partnering with teachers, principals, parents and students across states and school districts to improve teaching and learning. Work to address access, equity and achievement gaps in STEM (science, technology, engineering and math) have been focal points of this work. In these areas, joint efforts are bringing the excitement of science learning to bilingual preK classrooms, building K-12 teaching capacity; strengthening science instruction for English language learners; and introducing STEM career options to students who are under-represented in these fields. With the 2012 school year now in full swing, this issue of *Graduation for All* offers a “field notes” guide to our collective progress, sharing with you an array of new materials, resources, and stories from teachers. We wish you a great school year and, as always, welcome your comments, questions and suggestions at [gradforall@idra.org](mailto:gradforall@idra.org)

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## Schools and Communities in Action

### An Integrated Action Framework

Consistent with IDRA's [Quality Schools Action Framework](#)™, an empirically-based model for strengthening schools, we are focusing on intensive work on STEM at the classroom level that strengthens teaching quality, curriculum quality, family involvement and student engagement--and at the school level, that is informed by actionable data; promotes effective leadership; and engages school, family and community partners. Drawing on the framework, our approach is to work on STEM subjects, not in a vacuum or as stand-alone strategies, but via powerful linkages across curricula and among educators, families, and community members. Here are some examples of the work that is underway, with resources to support your work.



### Effective Classroom Strategies

IDRA's recently-published [Science Instructional Strategies for English Learners ~ A Guide for Elementary and Secondary Grades](#) captures and distills research and our experience with elementary and secondary teachers, who are determined to meet the needs of the diverse populations of students they serve. Designed as a practical resource to teachers, the guide presents seven research-based strategies for instruction of English learners in science. It is divided into four sections - teaching learning premises (theoretical underpinnings for each strategy); research support; essential teacher competencies (pedagogical skills necessary for effective implementation of each strategy); steps for strategy implementation - along with a matrix of techniques for implementation.

**Rubber, meet road:** to see how these instructional practices are impacting K-12 classrooms, visit these IDRA Classnotes podcasts:

- [Data and Vocabulary in Math and Science – March 9, 2012](#)
- [Science for English Learners #1 – March 30, 2012](#)
- [How Does it All Add Up? – May 31, 2012](#)
- [Visual Literacy in Math and Science – August 29, 2012](#)

You may also want to visit:

- [Visual Interpretation in Science – Strategies for English Language Learners](#), an article by Paula Johnson, M.A., and Veronica Betancourt, M.A.

- [Stellar Science Strategy – #1 Building on English Learners Proficiency for Effective Science Instruction](#), an article by Kristin Grayson, M.Ed.

## Creating a STEM-focused School

*Successful K-12 STEM Education*, a [recent report](#) by the National Research Council examines what schools, districts and policymakers can do to support effective K-12 instruction. It recommends that school districts devote adequate instructional time to science in grades K-5, ensure that STEM curricula are focused on the most important topics in each discipline, are rigorous and articulated as a sequence, enhance the capacity of K-12 teachers, and provide instructional leaders with professional development to create contexts that are conducive to all students' learning. The findings are consonant with IDRA's work with school leaders and teachers, captured in a series of recent articles and resources on creating STEM-focused preK-12 schools. (For example, see: [The Need for Minority High Schools with a STEM Focus](#) by Nilka Avilés, Ed.D.) and a four-part Classnotes podcast series featuring conversations with the chemistry, physics, English and career and technology teachers who are inspiring change at their schools.

### Teacher Leadership: Creating a STEM Focused School, four-part series hosted by IDRA's Dr. Nilka Avilés:

- Part 1: Rodolfo Andres Urby is a high school physics teacher and robotics club coach at his high poverty school, who is helping to throw a spotlight on STEM. [Creating a STEM Focused School Part 1 – April 13, 2012](#)
- Part 2: Robert Dingenary, a ninth grade English teacher in a low-wealth, high minority school, volunteered to lead a STEM club when no one else wanted to take it on. With strong administrative support, his ninth-graders built a model solar airplane. [Creating a STEM Focused School Part 2 – May 14, 2012](#)
- Part 3: Carole Henry is a Pre-AP chemistry teacher on a mission to assure that her students know about STEM careers and have the preparation they need to follow their passion. [Creating a STEM Focused School Part 3 – June 15, 2012](#)
- Part 4: David C. Boggio, who directs career and technology education for a low-wealth high minority school district, helped his district set up 12 STEM-related clubs—helping transform his school to a focus on success in STEM. [Creating a STEM Focused School Part 4 – August 20, 2012](#)

## Opportunity Matters

Seeking to expand opportunities for under-represented students in STEM in your school? Visit: [Diversifying the STEM Pool – Revisiting the Recruitment of Underrepresented Students in STEM Careers](#) by Paula Martin Johnson, M.A.

Through our Transitions to Teaching Projects, funded by the U.S. Department of Education, and in partnership with over 20 K-12 schools and university partners across Texas, IDRA is helping to recruit, prepare, train and place hundreds of skilled, effective, bilingual teachers to work in high need schools across Texas. STEM preparation is a key part of our most recent Teachers for Today and Tomorrow (T3) project, which uses a “grow your own model” to prepare teachers in bilingual/ESL and STEM subjects. [To learn more about T3.](#)

## Toolbox

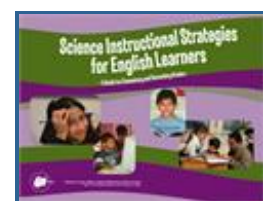
### Recent IDRA Publications on STEM Teaching and Learning for Your Classroom, Campus or District

[Science Instructional Strategies for English Learners ~ A Guide for Elementary and Secondary Grades](#)

[Helping Your Child Discover Science](#)

[Minority Women in Science: Forging the Way](#)

[Semillitas de Aprendizaje Preschool Math Books](#)



**Quick fact:** According to NCES, just [three out of five](#) U.S. 12th graders score at or above basic achievement levels in science.

## Youth Voices

*“When I was in lower grades, it was pretty fun to do activities in science. When I got to sixth*

*grade, we just had to do book work and questions. Science wasn't my favorite anymore."* – pre-teen girl, Wilmington, Delaware

*"I love science and I like seeing how things work. I think I did a lot of engineering on my own when I was little. I love to take things apart and see if I can get them back together. I always try to figure out how things work."* – pre-teen girl, Austin, Texas



These quotes are from [Generation STEM, What Girls Say about Science, Technology Engineering and Math](#), a 2012 report from the Girls Scout Research Institute that points out that even as women are faring better academically than before, women still account for "only about 20 percent of the bachelor's degrees in engineering, computer science, and physics." Outdated as they may be, negative stereotypes about girls' success in STEM, persist and are still holding girls back, the report finds; it's high time that they were debunked and discarded.

Thanks for reading!

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