

Focus Group #1 - Implementing 21st Century Learning Skills

Leader - Donna Daly

Facilitator - Mary Lightbody

Overview of Topic:

In today's world, most of our students function in a high-speed input environment. Surrounded by and using computers, videogames, digital music players, cell phones and other devices today's, students think and process information fundamentally different from their predecessors. Therefore it is important for us as educators to understand these students and move forward in providing methods, skills, experiences and technologies that will enhance and improve the learning that is taking place in our schools. We must explore and embrace ways in which we may change our teaching with and acceptance of these 21st century technologies in the classroom. Teachers provide classroom experiences that link 21st century skills to the world market place, industry and job skills.

Guiding Questions and Issues to Consider

- *Analog teachers and digital students, how do we level the playing field?*
- *What is the digital child?*
- *What are 21st Century Skills?*
- *How do we use technology to teach 21st century skills?*
- *What skills are needed for teaching the "Digital Child"?*
- *How do we move toward acceptance of 21st century technologies in teaching?*

Readings:

- <http://www.nsta.org/about/positions/induction.aspx>
- Remarks by Secretary Spellings at National Association of Manufacturers Meeting in DC, (Education in an Ever-Flattening World) Sept. 28, 2005. Retrieved on April 13, 2007 from <http://www.ed.gov/news/pressreleases/2005/09/09282005.html>
- Salpeter, J. (2003, October 15). 21st century skills: Will our students be prepared? Retrieved on April 13, 2007 from <http://www.techlearning.com/showArticle.php?articleID=15202090> or <http://www.techlearning.com/shared/printableArticle.php?articleID=15202090>
- Layton, T. (2000, September). Digital learning. Retrieved on April 13, 2007 from: www.electronic-school.com/2000/09/0900f1.html
- Prensky, M. (2001). Digital natives, digital immigrants. Retrieved on April 13, 2007 from <http://www.marcprensky.com/writing/Pnresky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf>
- Prensky, M. (2001). Digital natives, digital immigrants, part II: Do they really think differently. Retrieved on April 13, 2007 from <http://www.twitchspeed.com/site/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part2.htm>

Focus Group 2: Retaining and Renewing Teachers of Science

Co-leaders - Heidi Kellar

Co-facilitators Jack Wheatley

Mary McDougall

Overview of Topic:

As thousands of teachers leave the profession each year, they take with them knowledge and experience. This creates a shortage of qualified teachers. In this focus group we will discuss the reasons teachers leave the profession and ways to support teachers throughout their careers. We will also discuss ways that CAGS and NSTA can take the lead in providing this valuable support.

Guiding Questions and Issues to Consider

- *What are the major factors that contribute to the shortage of qualified teachers of science K-12?*
- *What professional development opportunities would be appropriate for retaining and renewing science teachers?*
- *What role can professional organizations play in retaining and renewing science teachers, including providing professional development opportunities?*

Readings:

- NSTA Position statement on mentoring. <http://www.nsta.org/position>

References:

- Ingersoll, R. M. (2003). Turnover and shortage among science and mathematics teachers in the United States. In Jack Rhoton & Patricia Bowers, (Eds), *Science Teacher Retention: Mentoring and Renewal, (Issues in Science Education)* Arlington, VA. National Science Education Leadership Association and NSTA Press. [NSTA Stock Number: PB127X4]

Focus Group #3 Anchoring Science Content to the National Standards

Leader – Adrienne Elder

Co-facilitators – Linda Schott

Overview of Topic:

Many high profile science and education groups are calling for development of national standards. The National Research Council in its recent report *Taking Science to School; Learning and Teaching Science in Grades K-8* states “Today’s standards are too broad resulting in superficial coverage of science that fails to link concepts or develop them over successive grades.” The report concludes that science standards at the national and state level should be centered on a few core ideas. Furthermore, Education Week’s *Quality Counts Report 2007* recognizes that most states in the union have science standards yet they vary widely from state to state making it difficult to track student progress as they transition from stages of their education to the workforce. *Additionally* As the nation begins to seriously consider the development of national science standards we as science education leaders need to be well versed in this discourse and be fully prepared to provide strong guidance in this endeavor.

Guiding Questions and Issues to Consider

- *How should NSES and quality science education standards be packaged promoted and disseminated in the year of science?*
- *What are the areas of “commonality” of quality indicators and national standards?*
- *What are barriers associated with identifying and articulating anchor standards for K-12 science?*
- *How well do current NSES address the 21st century skills?*

Readings

- White paper produced by NSTA on the topic of Science Anchors. Retrieved on April 13, 2007 from <http://science.nsta.org/enewsletter/anchors.pdf>
- Olson, L. (2006, October 18). As states feel pressed to revisit standards, calls are being renewed to tighten them. Retrieved on April 13, 2007 from <http://www.edweek.org/ew/articles/2006/10/18/08focus.h26.html?qs=science+education> (Requires free registration.)
- Cavanagh, S. (2007, February 26). NSTA to provide “anchors” to winnow topics. Retrieved on April 13, 2007 from <http://www.edweek.org/ew/articles/2007/02/26/25nsta.h26.html>
- Science and Engineering Indicators. (2006). Retrieved on April 13, 2007 from <http://www.nsf.gov/statistics/seind06/c1/c1s1.htm>
- Gross, P. R. (2005). The state of state science standards 2005. Published by the Thomas Fordham Foundation. Retrieved on April 13, 2007 from <http://www.edexcellence.net/doc/Science%20Standards.FinalFinal.pdf> Individual state information is found at: <http://www.edexcellence.net/foundation/publication/publication.cfm?id=352&pubsubid=1178#1178>

- Quality Counts Report 2007. (2007, January 4). *Education Week* 26(17). Retrieved on April 24, 2007 from <http://www.edweek.org/ew/toc/2007/01/04/index.html> (Requires free registration)
- Getting to the core of science standards. (2007, April 4). NSTA Reports. Retrieved on April 24, 2007 from http://www.nsta.org/main/news/stories/nsta_story.php?news_story_ID=53706

References:

- Mervis, J. (2006, December 1). SCIENCE EDUCATION: Doing more with less. *Science* 314(5804), 1374-1376.
- Duschl, R. A., Schweingruber, H. A., & Shouse, A. W. (Eds). (2007). *Taking science to school; Learning and teaching science in grades k-8*. Washington, DC: National Academies Press.

Focus Group #4 Analyzing Data to Design Research Based Instruction

Leader – Don Kline

Facilitator – Christine Royce

Overview of Topic:

In today's climate of NCLB, accountability, adequate yearly performance and school improvement, many districts are turning to Data Based Decision Making (DBDM) or Data-Driven Decision Making (DDDM) as a means to reach the desired level of improvement in a given year and for future years. As mandated science assessments start to make their way into the testing sequence, results for local districts will begin to appear right alongside their math and reading counterparts. International and national scores such as TIMSS and NAEP are already splashed across newspapers, compared with other countries, and resultant conclusions are incorporated into national reports such as "Rising Above the Gathering Storm" and "Tapping America's Potential." Therefore, it is important for science educators to stay ahead of the assessment curve and begin to examine the relationships between existing data and curriculum. Additionally, we need to begin to analyze data to examine how it can influence research based instruction as we move toward the Year of Science.

Guiding Questions and Issues to Consider

- *What data/research is available for use in planning?*
- *How can districts/schools/teachers examine the data?*
- *How can the use of data improve instruction and why should we utilize it?*
- *What will research designed instruction look like in the future?*

Readings

- Marsh, J. A., Pane, J. F., & Hamilton, L. S. (2006). Making sense of data-driven decision making in education. *Rand Education*. Retrieved on April 13, 2007 from http://www.rand.org/pubs/occasional_papers/2006/RAND_OP170.pdf
- McREL (2003). Sustaining school improvement: Data-driven decision making. Denver, CO. Retrieved on April 13, 2007 from: http://www.mcrel.org/PDF/LeadershipOrganizationDevelopment/5031TG_datafolio.pdf

References:

- Jones, A. (2006). The myths that drive data-driven schools. *Education Digest* 71(5), 13-17.
- Love, N. (2002). *Using data/getting results: A practical guide for school improvement in mathematics and science*. Norwood, MA: Christopher-Gordon.
- Petrides, L. A. (2006). Using data to support school reform. *THE Journal* 33(8), 38-41.
- Popham, J. W. (1987). The merits of measurement-driven instruction. *Phi Delta Kappan* 68(9), 679-682.
- NAEP Science Results (2005). Retrieved on April 13, 2007 from <http://nces.ed.gov/nationsreportcard/science/>

Focus Group #5 Developing Student STEM Skills and Attributes

Leader – Jim Redmond

Facilitator - Vanessa Westbrook

Overview of Topic:

This focus group will discuss the recent emphasis and political initiatives dealing with STEM (Science, Technology, Engineering and Mathematics) Education. It is our hope to find a way that CAGS and NSTA can help teachers better prepare their students for participation in an increasingly complex, technological, and globally competitive world. We will look at the work of organizations promoting STEM Education to see what help they can be in setting the course to be followed by science classroom teachers

Guiding Questions and Issues to Consider

- *What is STEM Education and how can CAGS help K-12 science teachers promote this initiative?*
- *What are the first steps CAGS leaders should be taking in furthering STEM Education in our science classrooms?*
- *What are the common issues and goals shared between STEM Education and our K-12 science classrooms?*
- *How might CAGS leaders highlight the "S" in STEM Education in the 2009 - Year of Science?*
- *What barriers or obstacles exist to the implementation of STEM Education strategies? What partnerships are needed to advance the STEM focus in schools' programs and with students*

Readings:

- The Task Force on the Future of American Innovation (2006). Measuring the moment: Innovation, national security and economic competitiveness. Retrieved on April 13, 2007 from http://futureofinnovation.org/PDF/BII-FINAL-HighRes-11-14-06_nocover.pdf
- Iversen, E.(2006). ASEE K-12 Engineering Education Workshop Program and Sample Proceedings. Retrieved on April 13, 2007 from <http://www.engineeringk12.org/k12workshop2006/>
- Prensky, M. (2005, December). Adopt and adapt: 21st-century schools need 21st-century technology. Retrieved on April 13, 2007 from <http://www.edutopia.org/adopt-and-adapt>
- Journal of STEM Education. Retrieved on April 13, 2007 from www.auburn.edu/research/litee/jstem/
- Stem Ed Coalition. Retrieved on April 13, 2007 from <http://www.stemedcoalition.org/join.aspx> (Requires free registration)
- Sclafani, S. (nd). Current state of mathematics and science education in the United States. Retrieved on April 13, 2007 from <http://www.stemedcoalition.org/documents/StateOfMathScience.pdf>

References:

- Vasquez-Mireles, S. & West, S. (2007). Mix it up: Suggestions for correlating science and mathematics. *The Science Teacher* 74(2), 47-49. (Article has an extensive bibliography).