



Illinois Mathematics and Science Academy

Report of the Emeriti

July – December 2009

“...continuing to advance IMSA in significant ways...”

Prepared by
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Illinois Mathematics and Science Academy

Administrator Emeritus Report for Dr. David Barr

"...continuing to advance IMSA in significant ways..."

NOTE: Dr. Barr's report covers work during the 6 month period from July through December 2009.

During the spring the spring and summer of 2009 Dr. Barr worked with Paula Garrett, Coordinator of IMSA's Information Resource Center, to develop and present a session at the annual American Library Association Conference in Chicago. The session was designed to gather input from the field regarding ways librarians can ease the transition of high schools students into the College learning environment. The goal of the session was to investigate strategies, explore possible collaborations among librarians and develop an action plan for helping students with the transition. **Ms. Garrett co-chairs the ALA Library Instruction Round Table committee, Transitions to College, that sponsored the session.**

Prior to the conference participants read an article by David Conley titled "Rethinking College Readiness" that argued that a key problem in preparing students for the transition to college is that, "the current measures of college preparation are limited in their ability to communicate to students and to educators the true range of what students must do to be fully ready to succeed in college." The article outlines a broader, more comprehensive conception of college readiness, one built on four facets: key cognitive strategies, key content knowledge, academic behaviors, and contextual skills and knowledge.

At the session small group discussions were held on the perspectives expressed in the article to test the theories against the experience of a wide variety of professionals and to gather suggestions about ways librarians from a variety of environments could collaborate to develop and implement actions to help ease the transition of high school students.

This fall Dr. Barr has been working with IMSA to identify IMSA staff to participate in an NSF funded grant titled *Leveraging Thought Leadership for Computational Thinking in the PK-12 Curriculum*. The program is implemented jointly by the International Society for Technology in Education (ISTE) and the Computer Science Teachers Association. He is currently serving on the steering committee designing and implementing the multi-year program.

Computational Thinking is a concept that has become widely discussed recently in the public and private sectors. Briefly, computational thinking refers to "the kinds of thinking skills and approaches used by computer scientists" including "solving problems, designing systems, and understanding human behavior, by drawing on the concepts fundamental to computer science" such as "abstraction, automation and analysis." "Scientists need such training because computation has become the "third pillar" of science. More generally, college students need to acquire the thinking habits of computer scientists because they are widely applicable in the information society in which those students will live and work, regardless of their eventual profession. And ultimately, K-12th graders should be introduced to computational thinking in order to set these fundamental thinking habits firmly in the minds of the next generation." The growing importance and acceptance of the concept of Computational Thinking is indicated by

the development of a new AP course by the College Board covering the fundamental concepts of computing and computational thinking.

The project is designed to help address "critical pipeline shortages, as fewer American students and young people pursue education and careers in the STEM disciplines" as well as "the enormous responsibility of making sure that all of our students learn the concepts and skills they need in order to thrive in the global marketplace." The project is seeking to identify people in PK-12, higher education and the public and private sectors who can contribute to a dialog about how computational thinking can become more widely understood and integrated into our educational practice. A series of meetings is planned during the coming year to develop plans for continuing and broadening the dialog among STEM and other disciplines.

In addition to contacting possible participants in the meetings to develop and implement strategies, Dr. Barr met with Jim Gerry and Carl Heine to solicit their perspectives and to establish a project on IMSA's Cool Hub related to the project. We hope to use that space to interest and engage possible participants and to develop innovative ideas.

Promoting and Expanding Awareness and Knowledge of IMSA

As a member of the National Educational Technology Standards leadership team, **Dr. Barr promotes and expands awareness of IMSA with a number of governmental agencies (public schools, universities, the U.S. Department of Education, UNESCO and others) and corporate partners (Apple, Hewlett Packard, Intel, Adobe and others).**

Seeding, Advancing and/or Creating Strategic Partnerships (state, national, international): Opening Doors for IMSA's "presence and voice at the table"

The National Educational Technology Standards (NETS) are developed through an extensive consensus building process involving numerous face-to-face forums with educators across the country, collection of online data from around the world, and discussions with other numerous professional, non-profit and business organizations. The focus this year was a "refresh" of the National Educational Standards for Administrators to be published in June 2009. These interactions provide opportunities for bringing IMSA's voice to the table and for exploring and advancing potential partnerships.

Presentations

"Easing Transitions to College," Brown Bag discussion at the American Library Association Conference, July 2009.

Publications (print/nonprint)

Draft rubrics for the National Educational Technology Standards for Students, published online August 2009.

The National Educational Technology Standards for Administrators, Second Edition, 2009.
(Contributing author).

Networks, Policy and Advisory Boards (state, national, international)

- Member, Leadership Team for the National Educational Technology Standards project
- Member, development team for UNESCO's Information Communication Technologies Competency Framework for Teacher's (ICT-CFT) Endorsement program

Continuing Memberships

- International Society for Technology in Education



Illinois Mathematics and Science Academy

Faculty Emerita Report for Ms. Susan Eddins

"...continuing to advance IMSA in significant ways..."

NOTE: Ms. Eddins' report covers work during the 12 month period from January - December 2009. Subsequent reports will span six-month periods (January-June and July-December).

During the first half of 2009, **Ms. Eddins served as the lead writer for the revision of the American Diploma Project (ADP)**. Under the auspices of Achieve, Inc, a not-for-profit educational policy group in Washington, DC, 46 states are members of the American Diploma Project Consortium and had agreed to link their state standards to the ADP Benchmarks.

In June 2009, with the encouragement of the U.S. Department of Education and generous funding from the Bill and Melinda Gates Foundation, The Council of Chief State School Officers (CCSSO) and the National Governors Association (NGA) convened representatives from Achieve, the College Board and the ACT. The goal was to build upon the work Achieve had begun through the American Diploma Project to develop a set of Common Core State Standards in Mathematics and English. These standards would be available to states as they sought to meet the requirements for funding under the "Race to the Top" federal funding for educational improvement. **Ms. Eddins served as the lead writer for the development of the first stage of the Common Core State Standards (CCSS) in Mathematics. The College- and Career-Ready Standards, the first phase of the CCSS project was released in September.**

Since September, using the College- and Career-Ready Standards as the definition of what all students should know in mathematics and English when they graduate from high school, CCSSO and NGA have continued to develop learning progressions for content areas within mathematics and English, specific Grade-level expectations for grades preK-8, and topic clusters for grades 9-12. The expected completion date for this phase of the CCSS project is early 2010. **Ms. Eddins is serving as chair of the Teacher Review Group, leading and synthesizing input to documents drafted during the development process.**

In other activities, **Sue attended the 25th anniversary conference for Presidential Awardees in mathematics and science.** The conference held just outside of Washington, D.C. involved presenters from the National Science Foundation, the National Council of Teachers of Mathematics and the National Science Foundation and facilitated the discussion of several potential projects on which Presidential Awardees might collaborate. She completed a solution guide for a multi-state Algebra I test, consulted on revisions of the standards for both the Algebra I and Algebra II tests developed by Pearson for a multi-state consortium, and participated in the evaluation of items for both tests. Also, Sue was part of a team comparing the California State Standards in Mathematics to the California's Early Assessment Program for Algebra II and for High School Summative Mathematics.

Promoting and Expanding Awareness and Knowledge of IMSA

As a consultant with Achieve and through work with the Dana Center at the University of Texas, Austin, Ms. Eddins promotes and expands awareness of IMSA through her work on state standards and assessments in mathematics.

As a lead writer and reviewer on two major projects aimed at increasing and coordinating graduation expectations in mathematics, Ms. Eddins has raised the awareness of IMSA, its mission, and its programs among several constituencies (CCSSO officials, NGA representatives, other committee members including those from College Board, ACT and various universities).

Seeding, Advancing and/or Creating Strategic Partnerships (state, national, international): Opening Doors for IMSA’s “presence and voice at the table”

The development of common standards in mathematics that may be used by many states as they move toward more rigorous and more consistent graduation requirements has afforded numerous opportunities to discuss IMSA’s program with others involved in the development and implementation process. In addition to these activities, contacts with math teachers from across the United States through NCTM and CPAM meetings and listserves provide potential for exploring potential future collaboration.

Networks, Policy and Advisory Boards (state, national, international)

- Achieve, Inc.
- Writing group for the Common Core State Standards

Continuing Memberships

- National Council of Teachers of Mathematics (NCTM)
- National Council of Supervisors of Mathematics (NCSM)
- Mathematics Association of America (MAA)
- Metropolitan Mathematics Club of Chicago (MMC)
- Council of Presidential Awardees in Mathematics (CPAM)

Participation In and Support of IMSA—Alumni, Students and Staff IMSA’s Strategic Plan:

Ms. Eddins had the opportunity to meet with Sendhil Revuluri, who is currently heading up professional development in Mathematics for the Chicago Board of Education, during his attendance at a mentoring conference for the Urban Mathematics Leadership Network in Dallas. She also met with members of the IMSA math staff and IMSA alumni who are practicing mathematics teachers while attending the NCTM meeting in April. Attendance at the 20th reunion for IMSA’s Charter Class rounded out a wonderful year of reconnecting with alumni and continuing strong relationships with current and former IMSA faculty.



Illinois Mathematics and Science Academy

Faculty Emeritus Report for Dr. Ed Goebel

"...continuing to advance IMSA in significant ways..."

NOTE: Dr. Goebel's report covers work during the 6 month period from July through December 2009.

Participation In and Support of IMSA—Alumni, Students and Staff

Alumni Reunion: Dr. Goebel attended IMSA Alumni Reunion luncheon and dinner for the charter class of 1989 at the Renaissance Oak Brook Hotel (7/18/09)

CoolHub.imsa: Dr. Goebel created a user account on CoolHub.imsa after a phone conversation with Jim Gerry. Dr Goebel will be exploring the possibility of using this application as part of the Intersession he plans to lead in January of 2010. This Intersession will deal with the 2009 novel strain of the H1N1 Influenza virus.

Continuing Memberships

- American Society for Microbiology (ASM)
- Illinois Society for Microbiology (ISM)
- Sigma Xi



Illinois Mathematics and Science Academy

Faculty Emeritus Report for Dr. David Workman

"...continuing to advance IMSA in significant ways..."

NOTE: Dr. Workman's report covers work during the 6 month period from July through December 2009.

Dr. Workman has continued his work with the Mahidol Wittayanusorn School in Thailand during the past 6 months. He fulfilled his contract for this year that called for him to assist with the design and teaching of a course modeled on the Methods of Scientific Inquires (MSI) course at IMSA. Since June 2009, he completed his team teaching responsibilities for this course. The course, which is titled SINOS (*Scientific Inquiries and the Nature of Science*) was evaluated by the students at the end of the first semester in October. The results were positive, with the students showing significant gains in both positive attitudes towards learning science, and interest in conducting their own research. A copy of the evaluation was provided to IMSA.

As part of the continuing design efforts in that course, David arranged for the acquisition of cosmic ray detection equipment by MWIT from the Quarknet program at Fermilab. Also, he arranged for and participated in the presentation of a 3 day workshop that introduced the equipment to 17 teachers at the school. One of the presenters was former IMSA faculty member, Tom Jordan.



Teachers using the cosmic ray equipment



Cosmic Ray Workshop: Tom Jordan and Robert Peterson of Fermilab and David Workman

Dr. Workman promoted his work to incorporate more inquiry into Thai educational practice by giving two workshops and a lecture. The first workshop on 11-12 July 2009 was given to 33 teachers from the 12 sister Chulaporn schools of MWIT. This workshop demonstrated all of the activities that are done in the SINOS course at MWIT. The second workshop was given on 21 November 2009 to 20 MWIT and 5 teachers from Yushan Junior College of Singapore. It demonstrated specific inquiry methods and materials that Dr. Workman used in courses he taught at IMSA. The goal was to demonstrate smaller activities that could be incorporated into existing courses. An evaluation of this workshop was also provided to IMSA. The lecture, titled *"It Doesn't Matter What You Teach, It Only Matters What They Learn"*, was given to about 35 MWIT teachers and 6 educators from Yushan Junior College on 18 November 2009. The goal

of this lecture was to give a rationale and arguments for more inquiry activities in the curriculum, and a report on how effective the SINOS course has been in producing positive results in the students.

On 6-9 December 2009, Dr. Workman attended a Physics Camp with 7 MWIT teachers and approximately 35 students near Chantaburi in southeast Thailand. This camp is a feature of the MWIT curriculum that Dr. Workman prefers because it's based on the kinds of activities that he is trying to incorporate more of in the regular curriculum.

On 18 December 2009, Dr. Workman had a personal audience with Her Royal Highness Maha Chakri Sirindhorn, the daughter of the King of Thailand. We discussed education in Thailand, his work at MWIT, and his role in planning the **Princess's visit to IMSA** and the Chicago area in December 2010. Her Royal Highness is beloved in Thailand and is the most visible of the royal family, appearing on national TV almost every day.



Laos school for gifted students at the National University of Laos

Seeding, Advancing and/or Creating Strategic Partnerships (state, national, international): Opening Doors for IMSA's "presence and voice at the table"

Dr. Workman visited the National University of Laos and met with representatives of the School for Gifted Students on 25 December 2009. Possible cooperative efforts between MWIT, IMSA, and the Lao school were discussed and specially mentioned was IMSA's Cool-hub initiative as a possible means for cooperation and collaboration.

Presentations: International

- Two day workshop on the inquiry methods used in the SINOS class. 11-12 July 2009 at MWIT.
- One day workshop on inquiry methods Dr. Workman uses in his own teaching. 21 November 2009 at MWIT.
- Lecture: "It Doesn't Matter What You Teach, It Only Matters What They Learn." 18 November 2009 at MWIT.

Continuing Memberships

- American Association of Physics Teachers
- Sigma Xi

Resource Development

Inquiry unit using Cosmic ray detection equipment obtained from Fermilab, used in the SINOS class at MWIT.

IMSA Events and Provided Support of IMSA Students and Staff Initiatives:

Presented the luncheon address at the IMSA Alumni Awards ceremony on 26 September 2009.



Illinois Mathematics and Science Academy

Founding President and President Emerita Report for Dr. Stephanie Pace Marshall

"...continuing to advance IMSA in significant ways..."

NOTE: In addition to the formal Emeriti reports every six months, quarterly reports are prepared for the Board Chairman, the President and the Vice President for Strategy and Innovation. The scope and scale of Dr. Marshall's work with and on behalf of IMSA was collaboratively framed with input from Jack McEachern, Cathy Veal, Roger Spayer and Dr. Marshall. Three strategic areas were named each targeted to a dimension of "strategically advancing, positioning, and promoting IMSA's work and the work of IMSA's alumni, staff and students." In addition, the Board of Trustees requested that Dr. Marshall take "IMSA with her wherever she goes."

Promoting and Expanding Awareness and Knowledge of IMSA

Meetings, targeted conversations and/or presentations were held with influential thought and policy leaders (academic, scientific, corporate, entrepreneurial) and potential partners to expand their knowledge of IMSA's work; the focus was our strategic plan and innovation 3.0 initiatives. Leaders included:

- **Camille Alleyne**, co-founder, Brightest Stars Foundation & Space and Science Academy for Girls, Kenya
- **Juanita Brown**, co-originator, the World Café International
- **Jon Bower**, president, It's Learning
- **Michelle Buck**, associate director, Executive Education of the Kellogg School of Management
- **Victor Chan**, founding director & trustee, Dalai Lama Center
- **Diana Dummitt**, executive director, Illinois Science Teachers Association
- **Paul Epner**, entrepreneur & member, Schuler Foundation Board; member, Global Knowledge & Innovation Network, Northwestern University
- **Deborah Hockman**, program director, Benedictine University's College of Business
- **Jean Holley**, CTO, Tellabs
- **Charles Holmes**, program director, Dalai Lama Center for Peace and Education
- **Dipak Jain**, dean, Northwestern University's Kellogg School of Management
- **Bruce Mau**, chief creative officer, Bruce Mau Design
- **Terry Mazany**, president, Chicago Community Trust
- **Javed Panjwani**, business development executive, Wolframalpha.com
- **Charlie Rose**, general counsel, U.S. Dept. of Education
- **Jim Scott**, associate of Dean Kamen (water initiatives in developing countries)
- **Jouaneh Shahin**, director, Jubilee School, Amman, Jordan
- **Sanam Vaziri**, founder & CEO, Sanam Vaziri Quraishi Foundation; member, Clinton Global Initiative
- **Robin Wiszowaty**, Kenya program director, Free The Children
- **Edee Wiziecki**, K-8 science coordinator, Franklin Science Center of the Champaign Community Schools Unit District #4

Seeding, Advancing and/or Creating Strategic Partnerships: Opening Doors for IMSA's "presence and voice at the table"

-STATE-

Meeting with Jean Holley, CTO of Tellabs and IMSA Fund Board member, and Dr. Deborah Hockman, Program Director for the Benedictine University's College of Business, to discuss STEM talent development and the new Business with Science Applications major at Benedictine University. Dr. Hockman (formerly with Nalco) asked me to provide input into the design of this new program

Meeting with Terry Mazany, President of the Chicago Community Trust, to discuss the Trust's strategic thinking and plan for STEM education and STEM teacher professional development in Chicago; discussed potential IMSA collaboration

Meeting with Dean Dipak Jain, Dean of the Northwestern University's Kellogg School of Management, to discuss Kellogg's work in developing the next generation of business leaders for innovation and sustainability

Meeting with Dr. Michelle Buck, Director of Leadership Services and Associate Director of Executive Education of the Northwestern University's Kellogg School of Management, to discuss role of Kellogg School in developing next generation of educational leadership

Meeting with Innovation Council and Bruce Mau (celebrated Chicago-based international designer, to discuss his bold proposal to create a "possibility project" for Chicago to become an international center for creative discovery and innovation. Mr. Mau asked me to meet with him to discuss educational innovation.

-NATIONAL and INTERNATIONAL-

National Science Board Panel

Member of an expert panel on preparing the next generation of STEM innovators. My two page "thought piece" was included in public proceedings.

Blue Pond

Member of the leadership team for new proposal/partnership on computational chemistry—a prototype for expansion into other sciences. Team from U of I has created "Blue Pond" proposal; monthly teleconferences with: Edee Wiziecki, the K-8 Science Coordinator at the Franklin Science Center of the Champaign Community Schools Unit District #4 in Champaign; Jay Thomas, NCSSMST President; Diana Dummitt, Executive Director of the Illinois Science Teachers Association; Eric McClaren, IMSA; Eri Jakobson, and a research scientist to explore a potential collaboration focused on computational chemistry with IMSA, NCSSMST and The National Center for Supercomputing Applications at the University of Illinois (NCSA) Follow-up conversations will include others from IMSA & NCSSMST.

Gifted Child Today

Invited to write an article on the “Urban Gifted” student for a special edition of *Gifted Child Today*. Invited Max McGee, Eric McLaren and Cathy Veal to be co-authors to showcase IMSA’s work.

As the leading resource on teaching and parenting gifted children, Gifted Child Today includes regular columns by the nation’s most respected experts in the field of gifted education.



Educating World Citizens

Invited to participate in “Educating World Citizens” in Washington D.C. (8-9 October 2009) sponsored by the Mind and Life Institute. This conference was attended by world-renowned educators, scientists, and contemplatives—with the Dalai Lama presiding—to explore new avenues for science and educational practice related to the cultivation of mindful awareness, self-control, social responsibility and concern for the welfare of others among children, youth and the adults who educate them.

Clinton Global Initiative

Participated the 5th Annual meeting for members of the Clinton Global Initiative in New York (9/23/09 – 9/25/09). Met with John Kao and Kristen Peterson (CEO & Co-Founder of Inveneo). Inveneo partners with programs in developing countries to accelerate access to sustainable ICT’s around the world. Kristen Peterson has agreed to formally connect us to her Kenya partner to help create a solar computer lab for the residential girls’ high school that I and IMSA students are helping to build, design and equip with Free The Children.

Brightest Stars Foundation’s Space & Science Academy for Girls, Kenya

Dr. Leon Lederman recommended that the Director of the Brightest Stars Foundation—NASA scientist Camille Alleyne—visit IMSA and meet with me to discuss her new initiative—the creation of a STEM academy for girls in Nairobi—one of the 12 centers of excellence proposed by the government.



I invited an IMSA student and Max McGee, Jim Gerry, Michelle Kolar and Deb Gerdes to meet with her as well. There will be several opportunities, especially in PBL and Coolhub.IMSA to partner with this innovative institution. Ms. Alleyne invited Dr. Marshall to join her Board of Advisors and to accompany her to Nairobi to meet with the President of Kenya and the Minister of Education.



The Brightest Stars Foundation is a national non-profit, 501(3)(c) organization dedicated to educating, empowering and inspiring young women around the world, to be future leaders through the study of science, mathematics and technology.

Connecting For Change International Conference



Connecting for Change

VANCOUVER • BRITISH COLUMBIA • CANADA

Participated as an invited delegate to the 2009 Dalai Lama Summit and Connecting for Change Conference in Vancouver British Columbia (9/26/09 – 9/30/09)

Attracting/Securing Financial and Human Resources

Dr. Marshall continues to work with IMSA staff members to connect them to long-standing donors and relationships. Dr. Marshall IMSA Fund Board of Directors and serves on the Fund Board's Policy Committee.

- As Vice President of the Fry Foundation, she annually directs **\$25,000** (unrestricted) to the IMSA Fund. **The total of her FRY "donor directed" designated gifts is now \$220,000.**
- As a member of the Board of Directors of Sentry Insurance, Sentry matches her personal contribution of \$5,000.
- As a result of her participation in the NSB Panel, she connected with Dean Kamen and Dr. Kathryn Sullivan. Dean (the Founder of FIRST Robotics and a member of the Inventor's Hall of Fame) agreed to meet with a group of IMSA students.
- Dr. Marshall invited Dr. Sullivan, a former astronaut, member of the NS, and now Director of the Battelle Center for Mathematics and Science Education Policy of the John Glenn School of Public Affairs (Ohio State University) to IMSA on Feb. 8.
- Sent out over 80 letters of solicitation for the 2009-2010 IMSA Fund annual campaign

Presentations

Expert Panelist on Preparing the Next Generation of STEM Innovators. "Developing STEM Innovators Through the Education System." National Science Board of the National Science Foundation. Arlington, VA. 24 Aug 2009.

<http://www.nsf.gov/nsb/meetings/2009/0824/index.jsp>

"Leadership: The Power To Transform." Keynote. Chicago Archdiocese, Office of Catholic Schools. Leadership conference. Oak Brook, IL. 14 Aug 2009.

"Choosing the Story You Live and Tell: The New Work of Leaders." Keynote. Los Angeles County Office of Education. Pasadena, CA. 23 July 2009.

"Education for the Future: Vision Statement," presented to the delegates attending the KIN conference of Northwestern University (June 2009).

Marshall, Stephanie Pace, "Twenty-three Years in the Making." Intel Star Innovator Award Assembly. Aurora: Illinois Mathematics and Science Academy, 5 November 2009.

Publications

Marshall, Stephanie Pace, "Igniting and Nurturing the Next Generation of STEM Talent, Innovation and Leadership, by Design." *Background Materials*. Expert Panel Discussion on Preparing the Next Generation of STEM Innovators. Arlington: National Science Foundation, 24-25 Aug 2009.

Marshall, Stephanie Pace. "Re-Imagining Specialized STEM Academies: Igniting and Nurturing "Decidedly Different Minds," by Design." *Roeper Journal*. (Jan 2010).

Marshall, Stephanie Pace. "STEM Talent: Moving Beyond Traditional Boundaries." *Science News*. (2 January 2010) [see pages 16-17](#)

Marshall, Stephanie Pace, Glenn"Max" McGee, Eric McLaren, and Catherine Veal. "Igniting and Nurturing Diverse STEM Talent: Embracing the Opportunities and Challenges of Academically Talented Urban Youth, by Design." *Gifted Child Today*. (Mar 2010).

Networks and Policy and Advisory Boards (state, national, international)

STATE:

- Museum of Science and Industry—*member, advisory board*
- Innovation Council of Chicago—Chicagoland Chamber of Commerce & Innovate Now!—*charter member*

NATIONAL:

- Games For Change (G4C)—*member, national advisory board*
- American Psychological Association's Study of Impact of Specialized Public High Schools of Science, Mathematics & Technology—*member, pilot advisory group, National Science Foundation*
- Society for Science and the Public—*member, board of trustees*
- Future Minds: Transforming American School Systems—*advisor*
- The Thornberg Center for Space Exploration—*advisor*
- Gaylaird Christopher Architecture, Inc.— *member and advisor, "Dream Team"*
- The Cambridge Leadership Institute—*design team member*

INTERNATIONAL:

- Brightest Stars Foundation—*invited member*
- Clinton Global Initiative—*invited member*
- Global Knowledge Innovation Network—*international delegate, KIN Global Summit*
- The Dalai Lama Center for Peace and Education—*design team member*
- Royal Society for the Encouragement of Arts, Manufacturers & Commerce—*invited member*
- When I Grow Up (WIGUP)—*charter member, international advisory board*
- State of the World Forum—*invited member*

Continuing Professional Memberships

Association for Supervision and Curriculum Development (ASCD)

American Association of School Administrators
Innovation Council, Chicago

Economic Club, Chicago

Commercial Club, Chicago

The Chicago Network

The Executive Club, Chicago

Participation In and Support of IMSA—Alumni, Students and Staff

Alumni Reunion: Dr. Marshall attended IMSA Alumni Reunion luncheon and dinner for the charter class of 1989 at the Renaissance Oak Brook Hotel (7/18/09)

CoolHub.imsa: Dr. Marshall created an opportunity for Jim Gerry, Carl Heine and Cathy Veal to join her in an “audio-email” to John Kao (author of Innovation Nation and an international thought leader in innovation) to introduce him to IMSA’s innovation strategy and CoolHub.IMSA. As a member of the Innovation Council of the Chicagoland Chamber of Commerce, she worked with John Kao both in Chicago and San Francisco. Dr. Marshall participates in monthly “Innovation” and CoolHub.IMSA meetings with Cathy Veal, Jim Gerry and Carl Heine and continues to initiative opportunities for CoolHub expansion.

IMSA Oral History Project: Participated in 3rd segment of “IMSA Oral History Project” with IRC staff and Leon Lederman

Nanobusiness Alliance: Dr. Marshall worked with Sean Murdock, President of the Nanobusiness Alliance, to orchestrate an introductory meeting between Jim Gerry, 9 IMSA students and Dean Kamen during the NanoBusiness Conference at the Hyatt Regency at the McCormick Center, Chicago (8/30/09). Dean and Dr. Marshall connected during the NSB panel in Washington, D.C. Dean is the “Thomas Edison” of our generation with over 400 patents in devices that include the insulin pump, home dialysis machine and the segue.

Commercial Club: Dr. Marshall invited Patrick Furlong, Susan Price, Max McGee, Eric McLaren & Cathy Veal as her guests to attend the Commercial Club luncheon meeting with guest speaker, Illinois Governor Pat Quinn.

IMSA Assessment and Curriculum: Eric McLaren & Barbara Taylor (Assessment “Think Piece”)

Wolframalpha: Convened a meeting and demonstration by Wolframalpha to invited IMSA staff: James Gerry, Carl Heine, Michelle Kolar, Diane Hinterlong, Janice Krouse, Branson Lawrence, Namrata Pandya. Wolframalpha seeks IMSA’s input on development and dissemination.

IMSA Alum Robert Chang: Teleconference with IMSA alum and Games For Change member, Robert Chang (with Jim Gerry & Carl Heine)

Obama Documentary: Attended debut of Obama Documentary which was produced by Alicia Sams, daughter of Fund Board President, Herb Knight. The showing was an idea Dr. Marshall shared with Herb Knight when he first shared the news of his daughter’s documentary.

Attendee: Board of Trustees meetings, honorary luncheons for IMSA Great Minds Program, and Second Cups of Coffee

COMMENT:

STEM TALENT: MOVING BEYOND TRADITIONAL BOUNDARIES

By Stephanie Pace Marshall (SCIENCE NEWS: January 2nd, 2010; Vol.177 #1, p. 36)

http://www.sciencenews.org/view/generic/id/50904/title/Comment__STEM_talent_Moving_beyond_traditional_boundaries



"The nature and quality of our thinking shape who we become."

Our future belongs to a new breed of science, technology, engineering and math talent — decidedly different minds that will use the transformative power of science and technology to advance the human condition.

In this age of escalating global challenges and accelerating technologies, how our children think is the new “currency” for innovation, research and transformative global change. Shaping these habits of mind are experience and practice. When children engage in research, they learn to explore and inquire. When they identify innovative solutions to vexing global problems, they learn to ethically resolve complexity. And when they wrestle with moral dilemmas, they learn to grapple with issues of social, economic and environmental justice. They become more agile, autonomous, improvisational, failure-resilient and in control of their own minds and behavior. They assume responsibility for shaping the nature and quality of their thinking and manifesting it in action.

We know what it takes to develop expertise and to sustain the creative imagination. Yet a chasm is growing between the collaborative, exploratory, inquiry-based and problem-centered environments essential for nurturing STEM talent, and the risk-averse and prescriptive culture and conditions of schooling. Innovation happens at the edges and intersections of disciplines. It happens when irreverent questions are asked, conventional wisdom is challenged, disruptive hypotheses are explored and possibilities of “what if” capture the imagination. Innovation also happens when it’s safe to risk, tinker and venture into unexplored territory. It is a messy, unpredictable process and it requires a learning habitat that invites experimentation and discovery, rewards invention, and encourages the often playful pursuit of often absurd questions wherever they may lead.

Our students live and learn in a digital world of global networks, intelligent machines, immersive technologies and multiuser virtual environments. In this world, learning is experiential, purposeful, self-directed and on-demand.

Expertise is multigenerational; problem-solving is collaborative; knowledge is coconstructed; boundaries are often blurred; and learning, social relationships and play converge.

In a world of unprecedented connectivity and interdependence, our nation must transform STEM education and talent development to nurture a more blended generation of STEM talent, innovation and entrepreneurial leadership. This new breed of STEM innovator fluidly integrates and navigates with-in a broad spectrum of STEM disciplines, seeds and cross-pollinates ideas, and represents a synthesis of multiple STEM domains: creative scientists and researchers, innovative engineers and inventors, designers and technology creators, and social entrepreneurs and policy strategists. To develop this next generation, the learning environment and curriculum must engage students in the modes of inquiry, problem-solving, knowledge generation and application that distinguish three fundamental STEM learning communities and ways of thinking: Disciplinary and Interdisciplinary Inquiry and Research, which develops disciplinary, interdisciplinary and inquiry-based thinking; Innovation and Design, which ignites innovation and design-based thinking; and Global Leadership and Social Entrepreneurship, which nurtures change leadership and systems-based thinking.

This integrative design moves far beyond the traditional boundaries of STEM education and situates learning in diverse locations: schools, museums, universities, NGOs, research laboratories, design and production studios, and online pavilions. It engages practitioners, scientists, researchers, designers, inventors and social entrepreneurs as colearners and teachers.

Immersing students in the real work of STEM research and inquiry, innovation and global change leadership enables them to experience what is required to be successful in each domain. Simulating a

medical residency model, students spend dedicated time in each core. When ready, they focus on expanding and deepening their knowledge and practice within their preferred field of study. What is essential is that their engagement in each learning core enables them to experience and explore a range of options for contributions in STEM, and to discover what they love.

We shape the world from the inside out. The nature and quality of our thinking shape who we become, and who we become shapes the world. The future well-being, prosperity and sustainability of our nation, the global community and our planet resides in igniting and nurturing decidedly different STEM minds that can advance both the new STEM frontier and the human future. By design, we can ignite and nurture our children's inventive genius and enable it to flourish.

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