Illinois Mathematics and Science Academy

Report of the Emeriti
Dr. David Barr, Dr. Stephanie Pace Marshall, Dr. David Workman

“…continuing to advance IMSA in significant ways…”

January 21, 2009

Prepared by
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Illinois Mathematics and Science Academy

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Illinois Mathematics and Science Academy

Emeritus Report for Dr. David Barr

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

NOTE: Dr. Barr’s report covers work during the 12 month period from January 2007-2008. Subsequent reports will span six-month periods (January-June and July-December).

During 2008, Dr. Barr served on IMSA’s planning, development and implementation team for the Illinois Innovation Talent Pilot Project (ILIT). The Illinois Innovation Talent Pilot Project (ILIT) is a partnership of participants from the public and private sectors dedicated to promoting innovation-centered education and to increasing student achievement in math, science and engineering in Illinois. The ILIT project is focused on creating a unique learning environment in Illinois schools in which students work in teams alongside industry, government and community experts to solve real-world problems. The program is designed to promote career awareness and better prepare students with the skills they need to remain competitive in today’s innovation and technology-based economy.

IMSA is working with participating Illinois high schools and private partners to design and implement a problem-based curriculum that develops the critical skills needed before students enter the workforce. The program engages teachers and students in activities focused on imagination and inquiry that are closely aligned with IMSA’s mission and goals.

During the 2008-2009 school year, 30 Illinois high schools and 29 professional organizations from across the state are participating in the project. The ILIT steering committee and advisory board is developing plans and seeking funding to expand the program in coming years.

Innovation Talent’s advisory board includes the Chicagoland Chamber of Commerce, iBio, American Electronics Association (AeA), Motorola Foundation, DePaul University, University of Illinois, Golden Apple Foundation, and Chicago LEADS. Government partners include Illinois Department of Commerce and Economic Opportunity (DCEO), Illinois State Board of Education (ISBE), Illinois Mathematics and Science Academy (IMSA), Illinois Community College Board (ICCB), and the Illinois Board of Higher Education (IBHE).

During the spring Dr. Barr will be collaborating with Dr. Tod Treat from the College of Education at the University of Illinois Champaign/Urbana to gather and analyze information to help IMSA and the steering committee evaluate the success of this year’s activities and to plan for the next phase. The National Educational Technology Standards (NETS) for Students with its focus on innovation, creativity, collaboration and problem-solving are an essential part of the criteria being used to measure the achievements of the participants.
1. **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*).

2. **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 as well as discussions with other stakeholders. These interactions provide opportunities for bringing IMSA’s voice to the table and for exploring and advancing potential partnerships.

3. **Presentations**


4. **Publications (print/nonprint)**


5. **Networks, Policy and Advisory Boards (state, national, international)**
   - Accreditation and Standards Committee, International Society for Technology in Education

6. **Continuing Memberships**
   - International Society for Technology in Education

7. **Participation In and Support of IMSA—Alumni, Students and Staff**
   **IMSA’s Strategic Plan:** Dr. Barr served for 6 months as a member of the action planning team that reworked the action steps for Strategy III (“We will develop IMSA as a laboratory”) of IMSA’s Strategic Plan (Nov 2007-May 2008).

   **IMSA’s STEM Innovation Hub:** He has also served as a member of the advisory team for the planning and development of the proto-type STEM Hub described in Strategy III.
NOTE: To provide context for his work, Dr. Workman’s report represents a 12 month period from January 2007-2008. Subsequent reports will span six-month periods (January-June and July-December).

During the 2007-2008 IMSA school year, Dr. David Workman supervised 10 IMSA students in independent studies in the areas of Advanced Mechanics, Quantum Mechanics, Thermodynamics, and Relativity. In addition, Dr. Workman served on a special committee to make recommendations for action steps in Strategy III (we will operate IMSA as a laboratory) of the new IMSA Strategic Plan.

Dr. Workman spent six months between April and October 2008, in Thailand, where he demonstrated IMSA’s inquiry and problem-based methods to the premier math/science school in Thailand, Mahidol Wittayanusorn School (MWITS)**. He worked with eight Thai science teachers and taught a demonstration class of 23 students a course titled “Scientific Inquires and the Nature of Science” (SINOS). Evaluation of the results of the class indicated that the students showed a significant increase in confidence and positive attitudes towards learning science when compared with students in the standard core science courses. The results were so positive that Dr. Workman has been invited to extend his work with the school, a joint collaboration between IMSA and MWITS that is expected to have national implications for education in Thailand.

Dr. Workman will host four Thai teachers at IMSA during March and April 2009. Their joint task will be to design an inquiry course that will prepare MWITS students to conduct individual projects in research and inquiry. This course will be taught to all incoming 10th grade students at Mahidol Wittayanusorn. Dr. Workman will be the lead teacher for the first half of this course for each of the two semesters next year at the school. This will require him to be in Thailand for two three-month periods during 2009.

If this further demonstration of IMSA methods is successful, the methods will be extended to the twelve sister schools of MWITS (the Princess Chulaporn Schools), and then to schools throughout Thailand. Thus, there is the potential for IMSA methods to be integrated throughout the educational system of Thailand. This partnership could give IMSA an international impact that may be beneficial in enhancing IMSA’s impact within Illinois and the nation.

**Mahidol Wittayanusorn School endeavors to provide world class education at the upper secondary level (Grade 10 - 12) for exceptionally gifted and talented students in mathematics, science, and technology, so that they will have the essential qualities to become active lifetime learners, researchers and innovators. It is also the purpose of the school to induce in each student good health as well as the inspiration of good moral and ethical values. Being proud of their Thai identity, the students will be dedicated to national development and environmental protection while at the same time having positive attitudes towards others both in Thailand and the world at large.**
1. **Seeding, Advancing and/or Creating Strategic Partnerships (state, national, international): Opening Doors for IMSA’s “presence and voice at the table”**
   Dr. Workman worked with teachers and administrators of Thailand’s Mahidol Wittayanusorn School (MWITS) to demonstrate IMSA inquiry and problem-based methods (15 Apr-12 Oct 2008).

2. **Presentations: International**


   “Education for the 21st Century.” **New Directions Needed in Education**
   Presentation to 80 Teachers and Administrative Staff in Thailand. Thailand. 21 June 2007.

3. **Publications (print/nonprint)**

4. **Continuing Memberships**
   - Sigma Xi, The Scientific Research Society
   - AAPT, The American Association of Physics Teachers

5. **Participation In and Support of IMSA—Alumni, Students and Staff**
   **IMSA’s Strategic Planning Team:** Dr. Workman served for 6 months as a member of a special action committee that reworked the action steps for Strategy III (“We will develop IMSA as a laboratory”) of IMSA’s Strategic Plan (Nov 2007-May 2008).

   IMSA’s Independent Study Program: For 9 months, Dr. Workman supervised 10 IMSA students in the following independent study courses: Advanced Mechanics, Quantum Mechanics, Thermodynamics, and Relativity (Sept 7-May 2008).
Founding President and President Emerita Report for Dr. Stephanie Pace Marshall

“…continuing to advance IMSA in significant ways…”

NOTE: This report represents an 18 month period from July 2007 through December 2008. Subsequent reports will span six-month periods (January-June and July-December). Quarterly reports to the Board Chairman, President and Vice President for Strategy and Innovation will continue.

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.”

1. **Promoting and Expanding Awareness and Knowledge of IMSA**

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

- **Michael Stevenson**, Vice President For Global Education, Cisco Corporation (invited Cathy Veal, Scott Swanson, Jim Gerry and Kristin Ciesemier);
- **Dr. Robert Fefferman**, Dean of Physical Sciences, University of Chicago (invited Eric McLaren and Janice Krouse);
- **Dr. Robert Wolcott**, Co-founder of the Kellogg Innovation Network at Northwestern University (as a result of our meeting, I was invited to write a web-based article on innovation at IMSA for the Knowledge Innovation Network);
- **Dr. Checker Finn**, President, Fordham Foundation;
- **Dr. Jim Garrison**, President, State of the World Forum and Wisdom University;
- **John Kao**, Author of *Innovation Nation* and President, Kao and Company;
- **Victor Chan**, Executive Director, Dali Lama Center for Peace and Education, Vancouver, British Columbia;
- **Congressman Bill Foster**, US House of Representatives;
- **Dr. Walter Isaacson**, President, Aspen Institute;
- **Richard Longworth**, Senior Fellow, Chicago Council on Global Affairs, author of *Caught In the Middle: America’s Heartland in the Age of Globalization* (as a result of my presentation to Mr. Longworth’s meeting of Midwest journalists, IMSA was cited in his book);
- **Chris Coonley**, President, Gravity Tank;
- **Dr. Kurt Fischer**, Founding President of the International Mind Brain Education Society, Harvard University (as a result of our conversation, I was invited to be a keynote speaker at the Harvard/MIT Learning and the Brain Conference).
2. Seeding, Advancing and/or Creating Strategic Partnerships (state, national, international): Opening Doors for IMSA’s “presence and voice at the table”

-STATE-

Chicagoland Chamber of Commerce and Innovate Now

Through alumnus Dr. Jay Budzik (now an IMSA Trustee), Cathy Veal, Jennifer Speuhler and Dr. Marshall were introduced to Chamber President, Jerry Roeper, and Chamber Foundation President, Dr. Lance Pressl. This conversation led to an invitation for Dr. Marshall to serve on a panel at Innovate Now’s Innovation Summit in June 2007. As a result of Dr. Marshall’s comments, Jerry Roeper and Lance Pressl invited her into subsequent conversations with the Department of Commerce and Economic Opportunity, World Business Chicago and the Chicago Entrepreneurial Center.

This relationship has resulted in the following:

- Leveraging a leadership position for IMSA in the Chamber’s October 25, 2007 Summit by securing Steve Chen to address the Summit and conduct an “off the record” conversation with key Chicago leaders, including Mayor Daley (Cathy Veal secured Steve Chen’s attendance);
- Solidifying Dr. Marshall’s and the IMSA team’s role as a thinking partner in advancing the Chamber’s Innovation agenda;
- IMSA’s statewide leadership in and design of the Illinois Innovation Talent Project (“a public private partnership” to work with Illinois High Schools to promote innovation centered education and increase student achievement in mathematics, science and engineering.”) Cathy Veal, Jim Gerry, Carl Heine, Debra Gerdes and David Barr are the IMSA staff helping to design and lead this initiative grounded in IMSA’s PBL model and the NETS standards;
- Dr. Marshall’s invitation to participate in a daylong “deep dive dialogue” with John Kao in San Francisco, along with Jerry Roeper, Lance Pressl, Bob Sheets (DCEO), David Weinstein (CEC) and a senior VP of Microsoft. The purpose of this session was to brainstorm the design of a future strategy session for key business, academic and entrepreneurial leaders in Chicago; the initial strategy meeting was held in spring 2008;
- Dr. Marshall’s invitation to write an article for the Innovate Now website; article was titled Beyond Competition: Innovation for a Sustainable Future http://www.innovatenow.us/wdkm in/wcm/content/home/home_page.jsp;
- Dr. Marshall’s invitation to become a charter member of the Chicagoland Innovation Council.

-NATIONAL-

American Psychological Association (Dr. Rena Subotnik) and the National Science Foundation

Prior to stepping down as President, Dr. Marshall initiated and approved IMSA’s leadership and participation in a national research project designed to study the impact of specialized public high schools in mathematics, science and technology. Phase I of the study began, and IMSA is the pilot site (Max McGee, Eric McLaren and Chris Kolar are now providing institutional leadership and Paula Olszewski-Kubilius (as Director of the Northwestern University’s Talent Search Program) is serving as the lead in creating a comparative cohort group against which to assess the responses of the pilot group of IMSA alumni).

At the invitation of Dr. Rena Subotnik, Dr. Marshall is serving as a member of the pilot advisory group. This study will provide data on the impact of specialized schools that does not currently
exist and will make a significant contribution to national STEM policy dialogue. IMSA’s role in this project is significant.

-INTERNATIONAL-

Clinton Global Initiative

In 2007, Dr. Marshall was invited by President Clinton to join the Clinton Global Initiative. She sought to connect IMSA students with her CGI Commitment to Action—seeking to enhance the students’ leadership in “enhancing the human condition” (The IMSA staff working with her on this partnership are Laurie Sutherland, Bob Hernandez, Kazi Joshua and Adrienne Coleman.)

As a result of Dr. Marshall’s CGI membership, IMSA is now a partner with CGI and Free The Children to help build, equip and eventually provide materials and instruction for a residential secondary school for girls in the Masai Mara in Kenya. This project is an initiative of Free The Children and is called “Adopt-A-Village Program.” IMSA has worked with Free The Children as part of its leadership development program for many years and is re-establishing a connection.

In August, Dr. Marshall visited the future school site in the Masai Mara, Kenya.

In September 2008, Dr. Marshall’s Commitment to Action was showcased at the Clinton Global Initiative’s annual meeting for members in New York. Only 10 projects were selected for this level of recognition. The caption on the banner read: “Globally, there are still 300 million children who are deprived of their basic right to an education. In 2007, Free The Children, along with its partner, the Illinois Mathematics & Science Academy, committed to help provide underserved & vulnerable children with access to a quality education enriched by innovative learning experiences in mathematics, science & technology. To date, through this CGI member commitment, the secondary school in Kenya, along with the school & water project in Ecuador, are under construction with the help of community leaders. Moreover, this commitment has helped improve the lives of 1,620 individuals, of which 1,042 are female.”

Mark Kielberger, Co-Founder of Free The Children, will visit IMSA this spring to meet with Dr. Marshall, students and staff, and to discuss both this project and our students’ work in leadership development with Free The Children and the Me To We movement.

Free The Children

Dr. Marshall secured an invitation for four IMSA students and two IMSA staff members to attend the national Me To We Day conference in Toronto on October 17, 2008. It was attended by 8,000 Canadian students. In addition, she met with IMSA students on January 6 and 12, 2008 to discuss their work with Free The Children.

Pictured left to right: Bob Hernandez, Jesse Fitzpatrick, Kristen Lee, Luis Carbajal, Dr. Marshall, Vashi Aguilar, Adrienne Coleman
Cisco
In spring 2007, Dr. Marshall met with John Chambers, CEO of Cisco, at the Clinton Global Initiative in New York and asked him if Cisco would be willing to partner with IMSA as we design IMSA as the “world’s leading teaching and learning laboratory for imagination and inquiry.” Mr. Chambers connected Dr. Marshall to Michael Stevenson, VP for Global Education in Cisco’s Department for Transformative Education and skill development. Dr. Marshall met Mr. Stevenson in Washington, D.C. and subsequently held a conference call with him, Cathy Veal, Jim Gerry, Scott Swanson and Kristin Ciesemier to introduce Mr. Stevenson to IMSA, to discuss IMSA’s potential connections with Cisco and a possible collaboration around 21st Century education, technology and transformation. The result of this and other conversations IMSA was invited to co-sponsor an invitation-only conversation in Chicago around Cisco’s new educational transformation initiative. Dr. Marshall was also asked to serve as a member of this panel on April 15, 2008.

Our relationship with Cisco is still in its nascient stages; however, it holds promise. Serendipitously Padmasree Warrior, former CTO of Motorola, is now CTO of Cisco. In addition, Ms. Warrior’s son is a student at IMSA. Ms. Warrior and Dr. Marshall have a longstanding relationship and there is reason to believe that she will help seed a more durable partnership. Although this is still an emerging relationship, the relationships are strong and promising.

3. Attracting/Securing Financial and Human Resources
Dr. Marshall was elected to the IMSA Fund Board of Directors in July 2007; she currently serves on the Fund Board’s Policy Committee and helped to write guidelines for gifts and investments. According to Fund records, Dr. Marshall solicited and secured in excess of $280,000 in gifts from foundations and individual donors since July 2007.

As Vice President of the Fry Foundation, she annually directs $25,000 (unrestricted) to the IMSA Fund. Dr. Marshall continues to work with Dr. McGee, Suzyn Price and Jennifer Speuhler to introduce and connect long-standing donors and relationships (i.e., Bob Malott and Bob Galvin).

4. Presentations

-TRANSFORMATIONAL LEADERSHIP-


-DESIGN OF 21ST CENTURY STEM TEACHING AND LEARNING-


-LEARNING, INNOVATION AND TALENT DEVELOPMENT-


5. **Publications (print/nonprint) and Recordings**

Marshall, Stephanie Pace and Barbara McAfee. CD. **No One Else Can Sing Your Song: A Song and A Poem for the Child Within Us All.** Big Bug Records: 2008.


6. **Networks, Policy and Advisory Boards (state, national, international)**

**STATE-**

**Innovation Council Chicagoland Region**—**Charter Member**

Created by the Chicagoland Chamber and Innovate Now and supported by the Department of Commerce and Economic Opportunity, World Business Chicago and the Chicago Entrepreneurial Center. The Council consists of academic, educational, scientific, technological, corporate and entrepreneurial thought leaders. The goal is to develop the Chicagoland region as a national center for innovation, creativity and entrepreneurship.

**Higher Education Committee of CMAP**—**“Go To 2040”—Committee Member**

“Go To 2040” is an initiative of the Chicago Metropolitan Agency for Planning (CMAP) designed to create a new blueprint to the Chicagoland Region for 2040 grounded in innovation and sustainability. Focus is on education, transportation, housing and quality of life in an urban setting.

**Center for Teaching Excellence, Golden Apple Foundation**—**Advisor**

**NATIONAL-**

**Society for Science and the Public** (formerly Science Service)—**Member, Board of Trustees**

SSP is located in Washington, D.C. and is one of our nation’s oldest (1921) and most prestigious not-for-profit organizations dedicated to advancing the public's understanding and appreciation of science and their engagement in science education and scientific research. SSP also publishes *Science News* and runs the **INTEL Science Talent Search** and the **INTEL International Science and Engineering Fair**. SSP is chaired by Nobel Laureate, Dr. Dudley Herschbach.

**Member of the National Peer Advisory Panel to review a study conducted by the Fordham Foundation and the Templeton Foundation**

The study examines the impact of the No Child Left Behind era on high achieving students (the study was published in spring 2008 and was very well received).

**Future Minds: Transforming American School Systems**, an initiative of the Association for Educational Communications and Technology (AECT)—**Advisor**

**The Thornberg Center for Space Exploration**—**Advisor**

**Gaylaird Christopher Architecture, Inc.—“Dream Team” Member**

The firm designs learning environments and schools that nurture “natural learning.” Their designs are grounded in the principles advanced by the Neuroscience In Architecture Institute.

**The Cambridge Institute**—**Advisor** (National Center for 21st Century Leadership: Dallas, Texas)

**INTERNATIONAL-**

**Clinton Global Initiative**—**Member**

“a nonpartisan cadre of the world’s most influential leaders committed to strengthening the capacity of people throughout the world to meet the challenges of global interdependencies”

**Global Knowledge Innovation Network**—**Summer Conference Delegate** (Global KIN)
KIN is an initiative of the Kellogg School of Management (Northwestern University) and their Center for Research in Technology Innovation. It is an “international forum for selected executives and innovation managers.”

**The Dali Lama Center for Peace and Education**—*Design Team Member* (Vancouver, British Columbia): September 2009


**NSF Joint US-UK Bilateral Conference**—*US Delegate*  
“*The National Value of Science*”

7. **Continuing Memberships**
   - Association for Supervision and Curriculum Development  
   - American Association of School Administrators  
   - Innovation Council, Chicago  
   - Commercial Club, Chicago  
   - Economic Club, Chicago  
   - The Chicago Network  
   - The Executive Club, Chicago

8. **Participation In and Support of IMSA—Alumni, Students and Staff**
   **IMSA’s Strategic Planning Team**: Dr. Marshall serves as a member of IMSA’s Strategic Planning Team (2006-present); served as a member of the Design Team for Strategy III (“We will develop IMSA as a laboratory.”) and Dr. McGee’s committee on creating indicators and metrics for strategic plan objectives.

   **STEM Innovation Hub**: Partnered with Cathy Veal, Jim Gerry, Carl Heine, Scott Swanson and Jane St. Pierre on the design and messaging of the STEM Innovation Hub. As a member of the Tellabs Foundation Board, Dr. Marshall also provided counsel on the Tellabs STEM Innovation Hub proposal.

   **Illinois Innovation Talent Project**: As a member of the Innovation Council of Chicago, Dr. Marshall partnered with Cathy Veal, Jim Gerry, Kristin Ciesemeier, David Barr and Debra Gerdes on the Illinois Innovation Talent Project.

   **IMSA Intersession and SIR/Mentorship Projects**: Dr. Marshall served as a mentor to two IMSA students on their SIR and Mentorship Projects (Neuroscience and Learning and Leadership) and as a speaker for the 2008 and 2009 Intersessions on social justice.

   **Attendee**: Board of Trustees meetings (most!), Graduation, Convocation, Alumni Recognition Dinner, Community Learning Days, Scholarship Awards Luncheon (McEachern, VanVerst, Knight scholarships), IMSAloquium, Employee Appreciation Day, and Alumni Day.