

IMSA360

SUMMER2011

News for Alumni and Friends of the
Illinois Mathematics and Science Academy®

IMSA's Strategic Plan: Achieving Extraordinary Purpose



FROM THE **PRESIDENT**

Dr. Glenn W. "Max" McGee
IMSA President

Just prior to becoming IMSA's second President in 2007, I served on IMSA's Strategic Planning Team. The plan we developed was big and bold, and when first presented, there was some concern that it would collapse under its own size. However, we dreamed big and intended to demonstrate that we could, to paraphrase Walt Disney, both dream it and do it! In my first year as President, I was determined that our plan would become a dynamic, actionable document that would make an enduring difference. Four years later, I am proud to say that due in large part to the commitment, perseverance and expertise of our IMSA strategy leaders and support of staff, our Strategic Plan has made tangible contributions to strengthening and expanding the IMSA community.

As we fast forward to 2011, it is clear that our mission thrives in the hearts, minds and actions of our community members. Not only are we living into our laboratory identity with innovative ventures in teaching and learning, but we are also making progress toward strategic objectives. Most importantly, not a day goes by without our students or staff members talking about "advancing the human condition." In fact, a portion of our mission statement was even part of our Junior Class shirt! Strategy action plans have assured that our bold mission, beliefs and objectives are not simply aspirational words but rather concrete services, programs and initiatives that inspire minds and impact lives.

This issue of *IMSA360* highlights tangible accomplishments of our Strategic Plan. You will learn how we have designed support systems to help all students thrive in a 24/7 residential environment and processes for personalized learning. You will see how we launched applied learning programs that nurture students' passions for creating products and services that improve the way people live, learn and work. New initiatives were created to support professional growth and encourage innovative teaching and learning practices among IMSA faculty and staff. We also have created new programs for preservice and experienced teachers in Illinois, and developed evaluation models to measure their effectiveness. Finally, to support our ambitious initiatives, new funding models will lead to flexible and reliable financing in the future.

As we enter year five of our Strategic Plan, we also recognize and celebrate IMSA's 25th Anniversary. Our celebration theme, IMSA25 – Beyond Knowledge, is a simple, yet eloquent reinforcement of our mission. We push the boundaries of human knowledge for the progress of our societies. We wish to recognize and thank all who have helped us nurture tomorrow's innovators, expand our reach to students and educators in Illinois and beyond, and both advocate and demonstrate the important role of science, technology, engineering and mathematics (STEM) in "advancing the human condition."

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Award of Excellence, the Illinois School Public Relations Association
Award of Excellence, the American Graphic Design Award and the
Hermes Creative Award.

NEWSHEADLINES

News for alumni and friends of the
Illinois Mathematics and Science Academy® (IMSA)

IMSA Receives \$137,000+ Grant From the William G. McGowan Charitable Fund for IMSA FUSION Expansion

The IMSA Fund for Advancement of Education (www.imsa.edu/giving) received a \$137,880 grant from the William G. McGowan Charitable Fund to support IMSA FUSION in four East Aurora middle schools. IMSA FUSION is an after-school enrichment program for students who are talented and interested in mathematics and science. IMSA FUSION includes ongoing professional development for teachers which emphasizes inquiry-based instruction. Teachers collaborate in a professional learning community through face-to-face and online forums throughout the academic year. Recent studies of this award-winning program indicate that the majority of participating students take advanced courses in mathematics and science in high school.

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IMSA Energy Center Receives Support From ComEd, An Exelon Company

A ComEd grant of \$25,000 to the IMSA Fund for Advancement of Education will support IMSA Energy Center initiatives. The Energy Center enables IMSA students to develop solutions for a sustainable future for all. Student projects include: developing biofuels, initiating wind/solar hybrid energy projects, conducting energy audits, hosting energy seminars and more.

IMSA Scholastic Bowl Team Wins State Championship

The IMSA Scholastic Bowl team (pictured) won first place (Class AA) in the Illinois High School Association (IHSA) Scholastic Bowl State Tournament held in Peoria. IMSA's championship Scholastic Bowl team members included: Webster Guan, Adam Kalinich, Sabrina Lato, Nolan Maloney, Eric Ordonez, Saieesh Rao, Rose Sloan and Michael Wong. In the championship match, IMSA's team defeated Rockford Auburn with a score of 388 to 262. IMSA mathematics faculty member Dr. Noah Prince coached the team.



The IMSA Scholastic Bowl team and Dr. Noah Prince (far right) showcase their championship trophy at an IMSA celebration event.

The IHSA Scholastic Bowl competition began in 1987 with IMSA currently holding the record for most state titles won with nine. More than 500 Illinois high schools currently participate in IHSA Scholastic Bowl throughout the year at matches, and regional and sectional competitions. Topics covered in the competition include: Mathematics, Science, English, Social Studies, and Other, with questions spread equally among each of the main topics. In addition, some of the questions students had to answer were interdisciplinary in nature, requiring them to apply knowledge of one discipline to another.



Diliana Dimitrova received the Knight Family IMSA Scholarship. She is pictured with IMSA Fund Director Herbert Knight and Nancy Knight.



Namkung Memorial Music Scholarship recipients Diana Xu and Emily Camras are pictured (L to R) with Fine Arts Faculty Member Mary Beth McCarthy and IMSA President Dr. Glenn W. "Max" McGee.



Jason Hempstead received the Mary Van Verst Love of Science Scholarship Award. He is joined by George Van Verst and IMSA President Dr. McGee.



Dharti Shah received the John H. McEachern, Jr. Exemplary Service Award. She is pictured with IMSA Trustee Member John McEachern, Jr., Marie McEachern and IMSA President Dr. McGee.



Seniors Honored With Scholarships and Service Award

Five seniors were honored with scholarships and a service award administered through the IMSA Fund for Advancement of Education. Scholarship recipients were: Diliana Dimitrova – Knight Family IMSA Scholarship, Emily Camras and Diana Xu – Namkung Memorial Music Scholarships, and Jason Hempstead – Mary Van Verst Love of Science Scholarship. Dharti Shah received the John H. McEachern, Jr. Exemplary Service Award.

Student Achievements Recognized in National and Global Venues

Nolan Maloney was selected to be a member of the United States Chemistry Team. Only 20 students nationally are chosen for the 2011 team from a pool of more than 1,000 nominees.

Peter Lu was selected to be a member of the United States Physics Team. Only 20 students nationally are chosen for the 2011 team from a pool of more than 3,500 nominees.

Henry Deng, Emil Khabibouline and Kiwook Lee were invited to attend the Intel International Science and Engineering Fair (Intel ISEF). Known as the largest science competition of its kind, Intel ISEF hosts more than 1,500 students from 65 countries, regions and territories.

Kevin Baker, Wesley Bradley, Grant Herrman, Michael Kobiela, Madison Rogers and Ian Walker were awarded fully funded National Security Language Initiative for Youth Scholarships to study Russian for seven weeks in Russia.

Ramya Babu, Jason Lin and David Park qualified for the American Computer Science League All-Star Competition (intermediate division) held in New Haven, Connecticut.

Jonathan Munoz, Nicole Runkle, Alexandra Smick and Nikita Veera qualified to participate in the 2011 International Future Problem Solving Conference held at the University of Wisconsin–La Crosse.

Madhav Mohandas was selected as a Regional Finalist in the Young Epidemiology Scholars (YES) Competition and presented his research at the national event in Washington, D. C.

Continued on next page

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IMSA students won top prizes in the Third Annual Great Lakes Region Chinese High School Speech Contest held at Valparaiso University. Natalie Runkle and Heidi Warning won second place in the Level I competition, and in the Level II competition, Hyun Jin Song won first place and Shari Duval won second place.

Justine Ly and Katherine Shi were co-authors of the abstract "Endothelial Cell ICAM-1-dependent Signaling Negatively Regulates MCP-1 Production" presented at Experimental Biology 2011 held in Washington D.C. (Guoquan Liu, Katherine Shi, Justine Ly, Aaron T. Place, Farnaz Bakshi and Richard D. Minshall)

Jacob Miller and Kenneth Wang are co-authors of "Metal Alkoxide Functionalization in Metal-Organic Frameworks for Enhanced Ambient-Temperature Hydrogen Storage," published in *The Journal of Physical Chemistry* © 2011 Vol. 115 No.5, pp 2066-2075. (Rachel B. Getman, Jacob H. Miller, Kenneth Wang and Randall Q. Snurr)

Lydia Matthews, Peter Purnyn and Mahi Singh presented investigations at the International Student Science Fair in Adelaide, Australia.

Nicole Runkle, Paul Yuan and Johannes Zhou presented investigations at the Eighth Annual Ritsumeikan (RITS) Super Science Fair in Kyoto, Japan.

IMSA Faculty and Staff Contribute to Their Fields

IMSA President Dr. Glenn W. "Max" McGee served on the Steering Committee of the National Research Council's Congressional Workshop on Highly Successful Schools and Programs for K-12 STEM Education in Washington, D. C. Dr. McGee moderated the session titled "Successful Education in the STEM Disciplines: An Examination of Four School Types." Dr. McGee also presented "Excellent Adventures in Global Collaboration" at Intel's Visionary Conference.

Dr. Stephanie Pace Marshall, IMSA founding president and president emerita, was a keynote speaker at the Fourth Advanced International Colloquium: 2011 Building the Scientific Mind held in Stellenbosch, South Africa, in collaboration with United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Sustainability Institute.

Jami Breslin, program director for IMSA FUSION, Debra Gerdes, program director for Problem-Based Learning, Michelle Kolar, executive director for Professional Field Services and IMSA President Dr. Glenn W. "Max" McGee presented at the Superintendents' Commission for the Study of Demographics and Diversity Annual Conference.

Mathematics Faculty Member Dr. Michael Keyton presented at the Wisconsin Mathematics Council's 43rd Annual Conference in Green Lake, Wisconsin. The topic was "One of These Doesn't Belong," an investigation into the four classic centers of a triangle.

President Dr. Glenn W. "Max" McGee and Coordinator of Student Inquiry and Research Dr. Judith Scheppeler were invited presenters at the Intel Educator Academy held in conjunction with the Intel International Science and Engineering Fair (ISEF). The Intel ISEF Educator Academy brings together a "select group of educators and government officials from around the world to explore proven, innovative methods of engaging students in the study of science and math."

AAAS Policy Fellow



Jeff Margolis '00 was named a 2010-2011 American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellow. The fellowship program enables select Ph.D. scientists and engineers to apply their

knowledge to improve policymaking while learning first-hand how federal policies are developed and deployed. Margolis works in the Office of Science and Technology Cooperation at the U.S. Department of State building global science partnerships and promoting international economic development through science and technology innovation.

Global Volunteer



Guarav Singh '08 was featured in the *Naperville Sun* article "Passion Leads 19 Year-Old to Africa" for his service work in Kenya with the Global Volunteer Network. During his winter break from studies at the University of Illinois at Chicago, Singh taught

HIV/AIDS awareness to residents of Kibera, one of the poorest regions of the country. In the article, Singh said he "wanted to go make an impact in the local community" rather than volunteering the entire time in a medical clinic. "I think working in a medical clinic the entire time would shield me from the realities of Kibera."

Leading Auto Innovation



Trisha Jung '91 was named by *Automotive News* (September 2010) as one of the "100 leading women in the North American auto industry." Jung, who has a 13-year career in the industry, is currently the overseas program director of Vehicle

Connected Services at Nissan North America and formerly the director and chief marketing manager of Nissan's Electric Vehicle Marketing and Sales Strategy team. Under her leadership, the team developed and implemented Nissan's comprehensive strategy to launch its 100% electric vehicle, the Nissan LEAF. In addition, as a member of the Nashville (TN) Emerging Leaders Class of 2011, Jung is working on a project to improve education in the city. "As business leaders and corporate citizens, we have the opportunity to use our business resources to accomplish corporate objectives and better society," Jung said. She credits her IMSA experience for giving her the skills and insights to achieve her career goals. "My career success can be clearly traced back to the education I received at IMSA – without that opportunity I wouldn't be the person and business leader that I am today and will continue to become in the future." Learn more about her endeavors at www.imsaalumni.org.



Gregory Draves '91 produced the short film *In Flanders Fields*, which was named an official selection of the San Jose Short Film Festival and premiered there in December 2010.

Jonathan Hayward '92 recently published the book *Django JavaScript Integration: AJAX and jQuery*. To see the announcement, visit www.packtpub.com/django-javascript-integration-ajax-and-jquery/book.

Jennifer Ann Clough '93 enlisted in the Army with a job in the field of Military Intelligence in January 2011. She will be entering basic combat training after completing her MA – Math for Educators, with an emphasis in Community College from Webster University.

Stacey Resetar Mowers '99 and **Mathew Mowers '98** announced the arrival of Daniel Thomas Mowers on February 14, 2011. They currently live in Peoria, IL where Matt works as an electrical engineer and Stacey is a pharmacist.

Carly Nix '04 is an associate producer at *Car Talk* on National Public Radio, a show with more than three million weekly listeners.



Jonathan Hayward's recently published book.

Contribute to Community Notes Online!

What's New in Your Life?

Let us and your fellow IMSA classmates/colleagues know about what you've been doing! Have you recently started a new job or been promoted? Are you involved in new and exciting community service projects or other activities? Have you recently been published, honored or elected? If so, please tell us about it at:

www3.imsa.edu/news/community-notes.

ALUMNICORNER

Hamster Ball Enthusiast



This has been an exciting year for alumni involvement with the Academy! More than 200 alumni representing every graduating class have volunteered for the IMSA Alumni Association (IAA) and IMSA. This is nearly a 40 percent increase over the previous year, and the figure will undoubtedly grow as IMSA continues to focus on strengthening

relationships with the alumni community and as the IAA expands its capacity.

The IAA is understandably committed to nurturing social and professional networking among alumni, but each year the IAA Cabinet must also strive to benefit current students and the Academy as a whole. Volunteers have been involved with the full range of IAA efforts, from reunion planning to regional event club coordination. The largest increase in volunteers came from our Alumni Siblings Program, pairing alumni with current IMSA students looking for a mentor. Some students have questions about college, others about careers, and others about life at IMSA in general. But all share the common IMSA bond. As with our ever-popular Career, College, Choices (CCC) Forums, alumni do not need to be present on campus to participate in the Alumni Siblings Program. The flexibility provided by a better use of technology is allowing the IAA's involvement to be truly global in scale.

In addition to IAA activities, alumni are involved with the Academy in a number of ways serving as resident counselors and teachers, and members of the IMSA Board of Trustees and IMSA Fund for Advancement of Education Board of Directors. Our experience provides unique perspectives on more targeted efforts, too, such as the Strategic Plan. Numerous alumni served on the original Strategic Planning Team and action planning teams, and Dr. Mia Markey '94 recently assisted the Strategic Plan update session earlier this year.

Observing IMSA's experience with setting clear goals and metrics has prompted the IAA Cabinet to begin discussing whether a more formal approach to our work would increase the number of individuals served and the efficacy of our programs. Several recent efforts, such as the launch of the new website and database, were designed for this purpose. Even so, I hope the conversation continues and ultimately leads to a clear vision that will clarify and structure the articulation of our efforts, as well as provide guidelines for evaluating our outcomes.

On a final note, due to the demands of a graduate program that I will be starting this fall, I will not be running for another term as IAA President. I would like to thank all of the alumni, faculty and staff who have assisted the IAA over the previous two years. As with any volunteer organization, this is a team effort and I am thrilled to see how much we have accomplished together!

Matthew Knisley '01
IMSA Alumni Association President
president@imsaalumni.org



IMSA's Strategic Plan:

Achieving Extraordinary Purpose



IMSA President Dr. Glenn W. "Max" McGee and students celebrate a victorious climb during their visit to the High School Affiliated to Renmin University of China. IMSA and students from the school are working together in the collaborative International Sustainable Alternative Energy Project.

IMSA's Beliefs

We believe that...

- All people have equal intrinsic worth.
- All people have choices and are responsible for their actions.
- Belonging to a community requires commitment to the common good.
- Diverse perspectives enrich understanding and inspire discovery and creativity.
- Honesty, trust and respect are vital for any relationship to thrive.
- Learning never ends.
- Meaning is constructed by the learner.
- No one's path in life is predetermined.
- The ability to discern and create connections is the essence of understanding.
- We are all stewards of our planet.

In 2006–07, a Strategic Planning Team and Action Teams developed a new Strategic Plan for the Illinois Mathematics and Science Academy®. The IMSA Board of Trustees approved the plan in May 2007. Since then, the five-year plan (2007–2012) has been updated several times, using the Cambridge Strategic Services model. With four years of implementation now complete, *IMSA360* asked IMSA President Dr. Glenn W. "Max" McGee to reflect on the plan's significance and progress to date.

IMSA360: How is strategic planning different from other forms of planning and why does it matter?

McGee: Organizations engage in various forms of planning for different purposes. Long-range planning focuses on predicting and responding to your environment, and comprehensive planning focuses on improving present operations, getting better at what you are and do today. In both cases, you are positioning your organization to adapt and survive in a largely externally-defined future. These and other forms of planning are necessary and important, but they are not the same as strategic planning.

Strategic planning focuses on achieving extraordinary purpose and creating your preferred future. It is a different mindset and a different discipline. A good strategic plan identifies significant gaps between what you are and do today and what you want to become and do in the future and provides a framework for bridging this gap. It should be visionary and bold, and a real stretch.

IMSA360: In 2006–07, when IMSA's Strategic Plan was developed by the Strategic Planning Team and Action Teams and approved by the Board of Trustees, IMSA was already a successful, internationally recognized leader in STEM talent development. Why did it need a new strategic plan?

McGee: I asked myself that same question when I joined the strategic planning team in 2007. Any great organization eventually reaches "plateau points" and from there either recharges and continues on an upward trajectory or stagnates and begins to decline. It is not in IMSA's DNA to stand still and rest on our laurels. Further, that would be dangerous. To remain a leader and continue to *be* IMSA, we must always be about innovation and transformation. In 2006, the Board and my predecessor, IMSA Founding President and President Emerita Dr. Stephanie Pace Marshall, recognized that the time had come for a new strategic plan. They were right – IMSA needed to stretch again.

IMSA360: That's the second time you've used the word "stretch." How is IMSA's Strategic Plan a stretch?

McGee: Much of the stretch in this plan relates to the aspirational identity we have chosen, to see ourselves as, act as and over time become "the world's leading teaching and learning laboratory for imagination and inquiry." To be "the world's leading" anything requires a global perspective and a commitment to exemplary performance, above and beyond "very good." To be a "teaching and learning laboratory for imagination and inquiry" requires a mindset, culture and practices that are different than "state agency" and "school." That's a big challenge, especially for an institution that is a state agency and that educates students of high-school age.

In addition, our Strategic Plan Objectives are a stretch. Whereas other educational institutions might choose or are mandated to measure test scores or "AYP" (adequate yearly progress under *No Child Left Behind*), we have chosen to measure how learners achieve their personal aspirations and explore their potential to contribute to the common good, how our graduates live lives of exemplary service to humanity, and how educators – those at IMSA and those we serve across Illinois – use teaching and learning strategies grounded in imagination and inquiry.

Our Strategies also are a stretch. Development of the whole person (students and staff), personalized plans of study based on integrated learning experiences and assessed on the basis of individual mastery, expansion of IMSA's products and services grounded in imagination and inquiry, generation of scholarship and transfer of knowledge, development of innovation and entrepreneurial talent and capacity, and reliable and flexible funding diversification are ambitious commitments, not for the faint of heart.

IMSA360: Too many strategic plans end up shelved in big binders gathering dust until it's time for the next planning cycle. How have you ensured that this plan matters?

McGee: Thanks to the dedicated faculty and staff leaders of our Strategies and Objectives teams, the active engagement of many members of the IMSA community and ongoing strategic review by our Board of Trustees, I am happy to say that our Strategic Plan is a dynamic, living document. There are specific measures and deliverables for each strategy and objective, clear responsibilities and timelines, which, in turn, are tied to goals and evaluations of key staff, including me. We also report frequently on our progress at Community Learning Days, IMSA Board of Trustees meetings and on other occasions.

IMSA360: IMSA is now completing year four of its five-year Strategic Plan. What tangible things exist today that did not exist four years ago? How has IMSA advanced?

McGee: I am delighted with our progress thus far, both in terms of programmatic accomplishments and in successfully building the foundation needed to execute future plans. To name just a few highlights, we:

- Designed and implemented new student support systems with greater academic-residential program synergy.
- Designed and implemented Community Learning Days focused on wellness, multicultural competency and Community Recognition Awards.
- Defined the "core" academic program and strengthened assessment of IMSA's Standards of Significant Learning.
- Revamped our student leadership development program and launched our Considerations in Ethics program.
- Developed an evaluation model for IMSA Field Offices and our professional development programs that articulates the needs of constituents in Field Office regions and evaluates PD programs as a means of meeting those needs.
- Created new programs for preservice and practicing teachers, including Teacher Candidate Institutes, Educator Energizers, and Math + Science = Success.

IMSA's Mission

The mission of the Illinois Mathematics and Science Academy®, the world's leading teaching and learning laboratory for imagination and inquiry, is to ignite and nurture creative, ethical, scientific minds that advance the human condition, through a system distinguished by profound questions, collaborative relationships, personalized experiential learning, global networking, generative use of technology and pioneering outreach.

- Launched DigitalCommons@IMSA, an online repository for sharing our publications, presentations and other forms of scholarship.
- Designed, developed and released (now in beta) **CoolHub.IMSA**, a robust online platform which supports member-driven collaborative projects and networks focused on innovation in STEM teaching and learning.
- Developed new tools and systems for grant writing, integrated budgeting, financial forecasting and consulting services.
- Developed a comprehensive alumni engagement program.
- And last, but not least, we developed ways to measure our mighty Strategic Objectives!

IMSA360: What have you learned in leading IMSA's Strategic Plan?

McGee: The first lesson is the essential, fundamental importance of full community engagement. Once our staff authentically valued our mission and shared in developing our collective beliefs, the Strategic Plan took off. Too many Strategic Plans are glorified "to do" lists, but IMSA's is different. Our mission inspires action, and our Strategy and Objective leaders have exemplified our commitment to becoming "the world's leading teaching and learning laboratory," which is so much more than simply a "great school." The second lesson learned? Empower your leaders to develop actionable plans that will result in producing specific indicators, metrics and deliverables that matter. Our leaders have excelled at transforming our grand ideas to tangible accomplishments. I am so proud of all of them and our entire community for making our bold plan work and work well.

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IMSA's Objectives

- All learners achieve their personal aspirations and explore their potential to contribute to the common good.
- Each IMSA graduate will live a life of exemplary service to humanity.
- Educators use teaching and learning strategies grounded in imagination and inquiry.

IMSA's Strategic Plan: Highlights

Strategy 1

We Will Develop the Whole Person

The "Whole Person" strategy was designed and intended to create conditions for community members to become productive, engaged and socially aware citizens.

"Ultimately, the long-term goal is to create a healthy and balanced work environment, growth opportunities that contribute to increased productivity and engagement, and a deep connection to IMSA's organizational culture and mission," said Barbara Miller, director of Enrollment and Academic Services. Strategy action plans have led to new initiatives to support staff professional growth and student achievement.

Recognizing Community Contributions

Newly established recognition awards provide an annual occasion to recognize and honor IMSA staff members who have distinguished themselves and the Academy during the year through their significant and transformative contributions to the IMSA community and beyond. The community award categories include Presidential Leadership Award, E=MC2 Award, Lederman Scholar Award, Principal's Teaching Award, Community Steward of the Planet Award and TEAMS Award.



Supporting Professional Growth

In academic year 2012, the Academy will use an automated performance enhancement system. The system will allow staff members to become an active part in their own professional development by defining a personalized growth plan that is competency based.

In addition, all IMSA staff members participate in Community Learning Days on topics important to IMSA's mission.

"Community Learning Days are opportunities for all staff members to focus on themes and issues important in a teaching and learning laboratory environment," said Miller.



Dr. Freeman Hrabowski

Dr. Freeman Hrabowski, president of the University of Maryland at Baltimore County (UMBC), was the keynote for a Community Learning Day with the theme, "Increasing the

Number of STEM

Leaders Through the Retention of Gifted and Talented Students Who May Be at Risk: What Are We Doing and Why Is It Everyone's Job?" The day's presentations and small group activities have led to a series of nurturing support programs for IMSA's at-risk students. A second Community Day focused on wellness activities as studies show that wellness in the workplace reduces absenteeism and increases engagement and productivity.

Reviewing Structures and Resources

Miller says special cross-departmental teams also were developed to enhance the IMSA student environment.

"Strategic Decision-Making Groups were created to enhance opportunities and programs to promote the academic, social and emotional success of students," Miller said. "For example, one group is reviewing how Academy office hours, student support resources, campus spaces and physical facilities are meeting students' needs on a residential campus."

Establishing a Future Focus

According to Miller, the future focus of this strategy includes enabling "staff to pursue their own passions through actions that advance the human condition" and establishing "a culture which encourages every community member to act as a good steward of the environment."

The focus also will include "building a community that fulfills employees' desires for growth, recognition and innovation and that nurtures their emotional commitment to advance IMSA as the world's leading teaching and learning laboratory."





Strategy 2

We Will Require Students to Pursue Personalized Plans of Study, Based on Integrated Learning Experiences and Assessed on the Basis of Individual Mastery

In Strategy 2, there are four themes focusing on the following:

- CORE
- Personalized Learning Plans
- Beyond the CORE
- Senior Year Experience

Ultimately, the goal is to provide students with an education that is uniquely IMSA, while affording them the opportunity to personalize their learning during their three-year experience. Specifically, IMSA uses Clarke's definition of Personalization as a guide.

"To help students assess their own talents and aspirations, plan a pathway toward their own purposes, work cooperatively with others on challenging tasks, maintain a record of their explorations and demonstrate their learning against clear standards."

- John Clarke (2003)
"Changing Systems to Personalize Learning"

CORE and Beyond CORE

What does CORE mean and why is it so important to IMSA?

IMSA Principal and Vice President for Academic Programs Dr. Eric McLaren says IMSA's CORE is essential to students and the essence of an IMSA education.

"The core curriculum at IMSA is central and mandatory for all students and helps ensure the integrity of the discipline, core competencies, standards of significant learning, nature of the residential program and our unique mission," Dr. McLaren said.

"The CORE curriculum provides a programmatic base for students as they pursue both traditional and non-traditional educational choices and personalized plans of study," Dr. McLaren said.

As a result of successfully completing IMSA's CORE curriculum, students will develop the knowledge, skills, experiences and habits of mind necessary for them to solve problems and become self-directed and self-regulated critical thinkers.

While all students must demonstrate competency in the requirements of the core courses, IMSA also is working on drafting a policy that would recognize and provide credit to students for participation in non-traditional learning experiences.

"In the future, we will be presenting a draft policy statement to the IMSA Board of Trustees that allows students to earn credit outside of IMSA," Dr. McLaren said. "We believe this credit must be beyond the core IMSA curriculum."

PLPs and the Senior Year Experience

Much progress has been made to ensure that future IMSA students have even greater personalization to their IMSA learning experience.

IMSA students already have opportunities to personalize their three-year experience in the relationships they have with others and the choices they make related to their academic and residential learning experience.

Course selection, Student Inquiry and Research, Independent Study, Service Learning, TALENT and CoolHub.IMSA projects are just some of the examples of how students can personalize their learning experience at IMSA based on their interests, talents and aspirations. In addition, students have access to a wide variety of athletics and co-curricular activities.

To formalize this process, however, IMSA would like all students to develop a Personalized Learning Plan (PLP), supported by an advisory system made up of faculty and staff to help students develop, monitor and revise their PLPs as needed.

"In 2011–12, all sophomores and/or rising juniors will have a plan, and we will create an advisory system of support to help those students who may need guidance along the way," McLaren said.

In the future, work will continue on developing the senior year experience and defining what its purpose will be.

"In this experience, should students be able to demonstrate and share new knowledge, share interdisciplinary knowledge or show their growth over time?" McLaren asked.

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During their Applied Engineering class, IMSA students present the Hippo Roller, a product they designed to provide a more efficient way to transport water in developing countries.



IMSA students present their research findings during poster presentations at IMSAloquium 2011.

Preservice educators enrolled in IMSA's Teacher Candidate Institutes practice inquiry-based instruction.



Strategy 3

We Will Expand the Development, Delivery, Support and Evaluation of IMSA's Products and Services Grounded in Imagination and Inquiry

During the 2011 IMSA Professional Development Day, participants learn the use of 3D technology to analyze and solve perplexing and difficult problems in the area of cancer research and development.



Strategy 3 supports IMSA's second legislative charge to "stimulate further excellence for all Illinois schools in mathematics and science." A focal point of Strategy 3

is to establish professional development programs for mathematics and science teachers.

the program helps mathematics and science teachers gain the skills to develop and use integrated, inquiry-based curriculum.

Evidence of Effectiveness

"Evidence of program effectiveness is important," said Kolar. "Our programs now have logic models that feed into evaluations to provide evidence of knowledge and skill acquisition."

An example can be found with IMSA FUSION, the award-winning, after-school enrichment program for students in grades 4–8 who are talented, motivated and interested in mathematics and science. IMSA staff members deliver initial and on-going professional development to teachers who instruct the students enrolled in the program. Studies indicate that 74% of participating students take advanced mathematics courses and 100% take advanced science courses in their high school freshmen and sophomore years.

Future Focus

"Our expansion model seeks to leverage technology to enable a cost-effective, online presence that increases reach and impact, said Kolar. "To that end, we are planning the creation of an online Science Resource Center, a collaborative network where teachers can network, problem solve and engage in professional development."

Relevant Programs Through Partnerships

"By building relationships with universities, educational organizations and community groups, we can ensure that our programs are relevant and in demand," said Executive Director of Professional Field Services Michelle Kolar. "We've been working with partners to create an array of programs for preservice, beginning and experienced teachers."

Examples of professional development programs prompted by Strategy 3 include:

- IMSA worked with Southern Illinois University – Edwardsville and National Louis University to deliver Teacher Candidate Institutes (TCIs). These TCI programs enable preservice educators to learn inquiry-based instruction and practice their skills with students who are enrolled in IMSA programs.
- Negotiations with Regional Offices of Education led to record-breaking teacher registrations for IMSA Professional Development Days. At the most recent event held in February, IMSA faculty and staff presented a full day of inquiry-based sessions on topics including *Circling Around Trig Functions*, *Social Media in the Classroom*, *Creativity in Science and Humanities*, *Re-Emerging Infectious Diseases* and more. The event served nearly 250 teacher participants from nine counties.
- Math + Science = Success is a new program for beginning and experienced teachers. Targeted for Chicago,

Educators participate in professional development at IMSA's Chicago Field Office.





Strategy 4

We Will Generate Scholarship That Demonstrates the Effectiveness of Our Practices and Transfers Knowledge Produced by Our Work

The goal of Strategy 4 is to create a system of support that promotes student and staff scholarship, while creating effective methods of communicating this scholarship both internally and externally.

Digital Commons Repository for IMSA Scholarship

Specifically, action plans have resulted in the creation of DigitalCommons@IMSA (<http://digitalcommons.imsa.edu/>), an institutional repository to document IMSA scholarship.

"Key functions of DigitalCommons@IMSA include promoting and disseminating academic and creative achievements of staff and students, increasing awareness of IMSA scholarship, research and creative works among staff, ensuring the preservation of and access to documents, and fostering scholarship collaborations both within and outside of IMSA," said Paula Garrett, coordinator of the Information Resource Center/Electronic Media.

Policy and submission guidelines are posted on the website. Examples of documents include open-access articles, conference proceedings, teacher resources, image and audio files, as well as references to books and other creative works not fully accessible online.

Collaborative Research

In addition to developing IMSA's institutional repository for scholarship, Strategy 4 also seeks to establish mutually beneficial collaborative relationships with individuals and institutions to produce research-based scholarship.

As a result of this action plan, IMSA is working with graduate students, professors and other research professionals on five research and evaluation projects including:

- An evaluation of IMSA's advanced chemistry curriculum changes
- An evaluation of IMSA's new ethics program
- A research and evaluation of females in IMSA's physics electives and computer science electives

The goal of these ongoing scholarship research collaborations is to share research work for national presentations and scholarly publications. In addition, IMSA will determine whether further expansion or dissemination of faculty research work can be supported through private funding.

A formative evaluation of IMSA's research partnerships is scheduled to be completed by June 2011.

Student Scholarly Research

Finally, it is a goal of Strategy 4 that "every IMSA student will participate in a scholarship experience while at IMSA."

Currently, students learn how to conduct scholarly research through IMSA's Methods of Scientific Inquiry (MSI) class, the Student Inquiry and Research Program (SIR) and the Information Resource Center (IRC), as well as throughout the curriculum.

Through these classes and programs, IMSA students learn how to design a science experiment, collect authentic data and communicate evidence in a clear manner.

In the future, IMSA will work to encourage faculty in all disciplines to use the MSI and SIR models to help students learn the research process and build upon what already works well.



The DigitalCommons@IMSA (pictured above) helps foster scholarship collaborations both within and outside of IMSA.

In addition to the obvious benefits for those accessing documents through the DigitalCommons@IMSA, the authors of these documents also gain benefits.

"Authors can be sent emails notifying them on the number of downloads from the website and can enter keywords in order to increase access to their work through Internet searches, etc," said Garrett.

IMSA hosted its first CoolHub Innovation Conference (CHIC) bringing together CHIC participants from IMSA and remote locations through interactive video conferencing.



Strategy 5

We Will Develop Innovation and Entrepreneurial Talent and Capacity

The term "innovation" can invoke many interpretations but IMSA Director of Innovation and Entrepreneurship James Gerry says team members who are advancing Strategy 5 have adopted a definition.

"It was important for us to have a common vision of innovation," said Gerry. "We defined innovation as the development and implementation of new ideas and new ways of doing things to create value, drive economic development and advance the human condition."

Fostering Innovation Through Collaboration

In less than two years, **CoolHub.IMSA** (coolhub.imsa.edu) went from concept to a robust virtual collaborative network that enables learners (ages 13 and up) to explore questions, develop ideas and work together on projects of mutual interest.

Collaboration takes place online and face-to-face through a network that includes video conferencing, online forums, wikis, blogs and more. CoolHub now hosts more than 900 members and 100 collaborative projects involving teachers, students, scientists and others in finding innovative solutions to present day challenges. For example, the International Sustainable Alternative Energy Project involves IMSA, Thomas Jefferson High School in Virginia and The High School Affiliated to Renmin University of China. Students and staff from these educational institutions are working together to convert Miscanthus to butanol and develop prototypes and simulations of efficient wind turbines.

IMSA hosted the CoolHub Innovation Conference (CHIC), a six-hour event to pilot the development of a new type of conference that integrates face-to-face and online project collaboration. CHIC participants at IMSA and from remote locations were connected through interactive video conferencing to create and address their own topics which included:

1. Approaches that encourage high school students to pursue STEM (Science, Technology, Engineering and Mathematics) careers
2. Web-based solutions to promote greater democratization and social interaction leading up to presidential elections
3. Launching Dodecahedron Day to encourage students to apply mathematics in the creation of sculptures
4. Incorporating computer science in the core curriculum

Encouraging Innovation in STEM Teaching and Learning

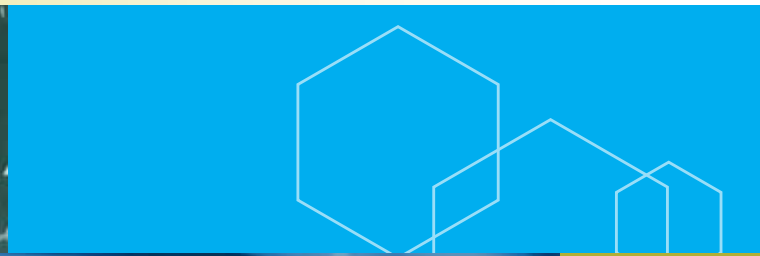
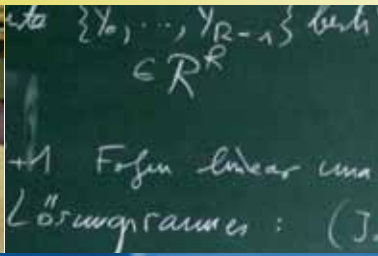
"This strategy fosters programs and incentives to spark innovation and entrepreneurial endeavors among faculty, staff and students," said Gerry. Examples include:

- IMSA minigrants for faculty and staff helped to spur innovation. As an example, one team of faculty members used the minigrant to convert a sophomore physics class to a self-paced and proficiency-based course. These faculty members are able to deliver highly personalized instruction which honors what the students already know and gives them greater ownership of their learning.
- The Scott Swanson Fund for Transformative Student Learning and Innovation was established to honor the life and work of alumnus (IMSA Class of 1990) and former IMSA staff member Scott Swanson. The fund supports student-driven projects in game-changing technology initiatives, advanced computing, new media, online virtual worlds and collaborative innovation networks. Several projects were recently supported including one that provides a safe server environment for students to imagine and develop their own innovations.
- The IMSA TALENT program has enabled student entrepreneurs to pitch a variety of new business ideas to venture capital investors and entrepreneurial leaders.

Future Focus

Gerry said that corporate grants will expand **CoolHub.IMSA**.

"Funding from the Abbott Fund and Tellabs Foundation will help to develop a fully-functional, ready-to-scale CoolHub platform and network which will lead toward long-term outcomes, documentation and dissemination of new models for STEM teaching and learning, and ultimately, adoption of innovations by teachers, schools and districts," said Gerry.



Strategy 6

We Will Diversify Our Funding to Provide Reliable and Flexible Financing

The reach, impact and success of the Strategic Plan will be determined largely by IMSA's ability to generate more flexible and reliable financing for the future.

"Simply put, this provides the fiscal foundation for our current Strategic Plan and very likely for whatever follows it," said IMSA Vice President for Business and Finance/Chief Financial Officer Patrick Furlong. "We all know about the serious problems with our State's finances, and as we look into the crystal ball, this becomes an increasingly important strategy for IMSA, even more important than when we adopted it in 2007," he added.

Increasing Funding Flexibility to Support World-Class Education

"Our mission states that IMSA aspires to be the 'world's leading teaching and learning laboratory for imagination and inquiry,' and to support advancing this mission, we must create ways to grow our Special Purposes Trust Fund," Furlong said. "Because our major sources of funding – including our state appropriated funds – are likely to remain, at best, static for the next few years, we must focus on our Special Purposes Trust Fund, where there is potential for revenue growth from increased contributions and grants."

Continued on next page

Tellabs Foundation
Motorola
Foundation
Abbott Fund



Continued from page 17

During the 2010–11 academic year, several IMSA Fund for Advancement of Education (IMSA Fund) initiatives and major grants helped IMSA to increase its ability to provide current and future funding reliability for its innovative programs for students and teachers throughout Illinois and beyond.

Some of these included:

- The establishment of the Scott Swanson Fund for Transformative Student Learning and Innovation to support innovative student-driven projects
- The establishment of the Muon Society to recognize individuals who name IMSA in their estate plans
- Major grants from the Abbott Fund and the Tellabs Foundation to support **CoolHub.IMSA**, a one-of-a-kind, "no walls," collaborative platform for innovation in STEM teaching and learning
- IMSA Innovation Mini Grants, originally funded by Intel and now funded by the IMSA Fund, to support projects developed by IMSA faculty and staff to benefit teaching and learning at IMSA and throughout Illinois
- An Innovation Generation Grant from the Motorola Foundation to enable IMSA to expand its Problem-Based Learning (PBL) professional development program

Building Relationships for Sustainable Future Funding

Growing the Special Purposes Trust Fund first requires cultivating relationships with key constituents closely connected to IMSA, such as alumni, parents, board members, staff members and other individuals, and emphasizing IMSA's need for unrestricted gifts. The IMSA Fund builds those relationships through key constituent groups, including the Student Committee for Institutional Advancement, IMSA Alumni Association and Parents Association Council. In addition, special activities such as the upcoming 25th Anniversary events, can help raise awareness and increase fundraising opportunities for the 2011–12 year and beyond.

Future Focus

"Going forward, it will be more important than ever to align the work of both the IMSA Board of Trustees and IMSA Fund Board of Directors, and to build relationships that will help us in the future to raise more money for the Special Purposes Trust Fund," Furlong said.

"It is not the greatest economic climate to try and raise more money. However, it is a great time for building sustainable relationships that will last far beyond the current fiscal challenges of our State and IMSA."



FROM THE VICE PRESIDENT

Catherine C. Veal
IMSA Vice President for Strategy
and Advancement

Many business and civic leaders, policymakers and futurists understand that without nurturing the next generation of science, technology, engineering and mathematics (STEM) talent, America will increasingly lose its leadership edge in a global economy powered by STEM innovation. IMSA is thankful to major donors such as the Tellabs Foundation, Abbott Fund, Motorola Foundation, William G. McGowan Charitable Fund, ComEd, An Exelon Company, and others who have joined the State of Illinois in enabling IMSA to spur innovation and expand high quality STEM education throughout Illinois.

As noted in this issue of *IMSA360*, team members who are advancing Strategy 5 of the Strategic Plan – development of innovation and entrepreneurial talent and capacity – have adopted a definition of innovation as “the development and implementation of new ideas and new ways of doing things to create value, drive economic development and advance the human condition.” Many focus on the economic argument, and certainly that is important; for IMSA, however, innovation to advance the human condition, to make peoples’ lives better, is the compelling context. Innovation is key to our institutional strategy and essential for our continuing advancement.

Helping to drive and support innovation on the IMSA campus and beyond are minigrants for faculty and staff ideas, the Scott Swanson Fund for Transformative Student Learning and Innovation for student-driven projects, the Total Applied Learning for Entrepreneurs (TALENT) program for student entrepreneurs, and **CoolHub.IMSA**, a robust online platform for collaborative innovation projects and networks.

IMSA alumni continue to spur innovation and entrepreneurial growth throughout the country including in Chicago. As just two examples:

- **Sam Yagan '95** leads Excelerate Labs, an intensive summer accelerator for startups driven by proven entrepreneurs and investors. The program attracts mentors from around the country to work with teams in direct one-on-one meetings. The program selects 10 companies every spring to



participate in the summer program. These companies build connections and their business during the program, then showcase their progress and plans to angel and venture investors in an Investor Demo Day.

- **Maliha Mustafa '00** is co-founder and director of SPARK Chicago, a six-day incubation contest that provides select applicants with free access to mentors, active investors, and services needed to build a viable company. The program is unique in that it provides donated development and marketing services for startups to build out their infrastructure.

This fall, as our IMSA25 Innovation event, the Academy will host The Founders Fund Tour, a cross country high-tech bus tour to promote innovation and entrepreneurship. Peter Thiel and the Founders Fund “believe that to bridge from today’s challenges to tomorrow’s limitless horizons we need a formative spark that can inspire visionary thinking and promote radical entrepreneurship.” The tour of “rock star” entrepreneurs will make 14 stops, primarily at prestigious universities and also at prestigious IMSA! We will be the only Chicagoland stop. We are honored and thrilled to partner with the Founders Fund; the tour will be announced officially soon after Labor Day.

Creativity, innovation and entrepreneurship are alive and well at IMSA.

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The internationally recognized Illinois Mathematics and Science Academy® (IMSA) develops creative, ethical leaders in science, technology, engineering and mathematics. As a teaching and learning laboratory created by the State of Illinois, IMSA enrolls academically talented Illinois students (grades 10–12) in its advanced, residential college preparatory program, and it serves thousands of educators and students in Illinois and beyond through innovative instructional programs that foster imagination and inquiry. IMSA also advances education through research, groundbreaking ventures and strategic partnerships. (www.imsa.edu)





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SAVE THE DATE for the Following IMSA Events!

Homecoming

September 24, 2011

**The Founders Fund Tour,
an IMSA25 Innovation Event**

October 12, 2011

For information on IAA events, visit www.imsaalumni.org.

IMSA Beyond Knowledge



Celebrate 25 years of IMSA's leadership in science, technology,
engineering and mathematics (STEM) education!

Look for information on events throughout the 2011–12 academic year,
including ways you can be involved and celebrate IMSA's 25th Anniversary!

www.imsa25.com



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