RECAP OF STEM OUTREACH EVENT IN MINNEAPOLIS

STEM Outreach through Sports Analytics
MIT-Sloan 2017 Sports Analytics research national award winning 4th Family outreach program.
http://www.4thfamily.org/stem-education-program.html

With:
4th Family (Albany NY)
American Society of Biomechanics
National Biomechanics Day

WHAT: Demonstration program with 4th Family STEM Director John Drazan and Associate Amy Loya, engineers and former college basketball players.

WHEN: Wednesday January 31, 2018
5-6:30 pm “Science of the Slam”

WHERE: Minneapolis Midtown YWCA 2121 E Lake St, Minneapolis, MN 55407
- on light rail Blue Line

ADDITIONAL RELATED EVENTS:
Noon-1pm
4th Family STEM director and 2017 MIT/Sloan prize winner, John Drazan, will be giving a lecture on campus about the use of sports analytics (East Bank, Masonic Cancer Research Center, room 450). Take advantage of the opportunity to meet the creative and intellectual force behind this innovative program, and ask questions about how it might fit with your organization’s or own goals.

1:30-3pm
Building force platforms, at Medical Device Center (University of Minnesota), volunteer opportunity

WHY? To experience first-hand the 4th Family program for STEM Outreach, and learn how it might fit with your organizational mission or your personal outreach.

Who should attend?
- Associations interested in learning about successful and innovative STEM outreach to urban youth
- Associations working with urban youth to increase academic goals
- Individuals interested in volunteering to assist in activities

For more information: bechtold@umn.edu

THANK YOU to Novel Electronics for providing support for this event, including travel and supplies.
STEM OUTREACH and NBD DEMONSTRATION PROJECT
January 31, 2018

Team assembles for breakfast in Minneapolis

(clockwise from right):
John Drazan (RPI BME Lecturer and 4th Family STEM Director), Maria Pasquale, Susan Diekrager (Novel Electronics and Diversity Committee), Amy Loya (BME PhD student at RPI and 4th Family STEM Coordinator), Robin Queen (ASB Diversity Chair), Joan Bechtold (ASB Fellow and Diversity Committee)

Research Education Seminar:
"Using Biomechanics and Youth Sports for True Broader Impacts"

John Drazan, PhD
Lecturer in Biomedical Engineering, Rensselaer Polytechnic Inst. / 4th Family STEM Director
Amy Loya
BME PhD student at RPI / 4th Family STEM Coordinator

The purpose of our STEM OUTREACH and NBD DEMONSTRATION EVENT was to introduce the 4th Family STEM outreach concept to Twin Cities community members interested in reaching traditionally underserved youth, inspiring their interest in STEM, and thereby also recruiting untapped STEM talent.

The 4th Family approach (http://www.4thfamily.org) to STEM outreach is based on the use of sports analytics to improve youth athletic performance. Dr. Drazan’s approach led him and the 4th Family team to win the prestigious MIT-Sloan Sports Analytics National Award in 2017.

(left): John with the Mississippi River (and US Bank Stadium, where the Super Bowl would be held 4 days later!)
Build Session:

The University of Minnesota Medical Devices Center graciously allowed us the use of their build space to assemble “Jump pads” to determine flight time and jump height.

(Left): John Drazan and Robin Queen unload materials

(Left): Super volunteer Mary Foltz (Rehabilitation Sciences PhD student, University of Minnesota) and Joe Hale (Medical Device Fellows Program Director) strategize prior to construction. While such high tech facilities aren’t needed for building the jump pads, we did appreciate the hospitality!

(Below): Maria Pasquale discusses with Dr. Marge Hartfeil, Volunteer Coordinator for Medical Devices Center

(Above): Society of Women Engineers (SWE) and University of Minnesota Medical Devices Center staff assemble (and decorate) jump plates. John Drazan gives instructions and pep talk!

(Right): the result of circuit building, construction, and decorating efforts from SWE volunteers

National Biomechanics Day April 11, 2018
Basketball Demonstration:

During the 1-1/2 hour event, students participated in warm up drills, jump competitions, learned how flight time represents jump height, learned how to improve jump height through kinematics, and learned how research can help them improve their game.

(left, above): Amy and John explain jump pad and Matlab program to SWE volunteers ahead of student arrival.

(left, below): John explains flight time and jump pad to participants from the Midtown YWCA after school program, “Strong Healthy Fit”.

(right): Outreach enthusiasts and volunteers:

Susan Diekrager, driving force behind event, and Novel Electronics sponsor

Jamal Abu-Shamala, former University of Minnesota Gopher Basketball player, Twin Cities financial planner and Youth development / mentorship program leader

Dr. Marc Tompkins, University of Minnesota/TRIA sports medicine/knee surgeon, researcher and youth training and mentorship.
(left): Leah Eby, Eureka! Program Coordinator, Girls Inc. at YWCA Minneapolis, working the sign in table.

Leah and her team took a chance on hosting this event with students from the YWCA’s after school program and her Eureka! Program:
https://www.ywcampls.org/our_voices/2015/03/25/476/girls_inc_at_the_ywca_of_minneapolis_launches_eureka_program

She has been an awesome partner and we’re looking forward to teaming with her and SWE and other professionals to provide mentoring and internships for her student cohorts.

(right): Leah Eby and Therese Genis, the “Strong Fast Fit” Midtown YWCA Center Coordinator chat with Amy Loya (while John can’t resist the allure of a basketball and a hoop in the middle of an action-packed day)

Outreach team (above from left): Joan Bechtle, John Drazan, Susan Diekrager, Robin Queen, Maria Pasquale, Amy Loya, Jamal Abu-Shamaia
Lessons learned:

1. Identify your goals; and plan with the end in mind. Our goals included:
   a. **Goal:** develop this into a sustainable/repeating program in the Twin Cities
      i. Find community partners with mutual interest that would carry this forward
      ii. Find professional sports and academic partners to provide backbone
   b. **Goal:** use this Twin Cities Demonstration Project to develop a pathway for implementing an impactful program in other communities.
      i. Learn how to introduce a program like this to groups of likeminded individuals/communities. Our initial target is through ASB members, leveraging their academic centers.
      ii. Develop Procedures/Protocols to standardize and ease implementation
      iii. Learn what works and what doesn’t work
   c. **Goal:** Work with 4th Family to determine if larger / national outreach can achieve a fit with their mission and vision and can be managed with their resources/budget.
      i. Model after other successful programs (College Possible growth from one urban community into six national communities and a “Catalyze” program on College campuses [http://www.collegepossible.org](http://www.collegepossible.org))
      ii. Seek out other successful programs in similar focus (e.g. Project Success [https://www.projectsuccess.org](https://www.projectsuccess.org))
      iii. Thinking Cap Day with NFL/sports and Microsoft/coding
   d. All goals are still in progress!

2. Get started!
   a. National Biomechanics Day and the ASB annual meeting in Rochester (August 2018) were great impetus to help us set a date and start planning. We’d talked about it for a year…
   b. A small group of people who work well together was able to efficiently make headway.
   c. Be generous in self-funding as needed to create enthusiasm and interest and participation (think Novel Electronics… thank you!!!).

3. Start early to identify partners outside core group (for us these included: YWCA, Community Development organizations, Northside Achievement Zone, University of Minnesota Medical Devices Center, Society of Women Engineers, Sports Surgeons and researchers, professional or University sports teams or clubs, accomplished athletes, National Biomechanics Day, American Society of Biomechanics, other professional organizations)
   a. After school programs, summer camps
   b. Identify a space for build event and partners to learn the process
   c. Volunteers for build and science of the slam event
   d. Get attention by meeting in person
   e. Develop relationships, mutual goals.
   f. Network relentlessly (don’t give up!)
   g. Keep at it! Following over a month of various contacts and networking, former Gopher basketball player Jamal Abu-Shamala was a last minute recruit to our event, but his passion and direction and engagement are going to be key for moving this forward.
   h. Ask partners for ideas (we have a long list for follow up)
4. Personally make an effort to **learn about Diversity/Equity**, use local organizations as resources.
   a. Don’t reinvent the wheel
   b. Utilize online resources, learn best practices
   c. Contact your University Diversity/Equity/Inclusion Department
   d. Contact your University Education Department
   e. Utilize your own Department for introductions / support.

5. **Have fun! Celebrate!** Breakfast at the Birchwood Café and dinner at Ghandi Mahal with tall beers!

**Next steps:**

1. **2nd Biomechanics outreach event at International Foot and Ankle Biomechanics - IFAB meeting in NYC (April 8, 2018):** Robin Queen, Howard Hillstrom, John Drazan, Amy Loya – 4th Family, Susan Diekragr, Maria Pasquale – Novel Electronics [http://www.i-fab.org/congress.html](http://www.i-fab.org/congress.html) This event is during National Biomechanics Day/Week.

2. **Presentation/symposium at IFAB meeting – Tuesday April 9, 10:30am:** to introduce attendees to the concept of STEM outreach through sports analytics, and benefits/reasons to become involved in Diversity and Equity work through STEM outreach (Queen, DeVita, Drazan).

3. **4th Family is piloting a soccer-based STEM outreach** event on National Biomechanics Day (April 11, 2018), in Albany NY. From this we will learn about transferring 4th Family approach (of inciting STEM interest through sports analytics) to a new sport, and one which has significant following in underrepresented communities.

4. **Symposium and build/outreach events at ASB Annual meeting (Rochester MN):** [http://asb2018.asbweb.org](http://asb2018.asbweb.org) (Kristin Zhao – Program Chair, Robin Queen, Susan Diekragr/Novel, Joan Bechtold, John Drazan, Amy Loya)
   a. **Symposium will be held during ASB Annual Meeting scientific program to introduce attendees to the concept of STEM outreach through sports analytics, and benefits/reasons to become involved in Diversity and Equity work through STEM outreach (Queen, DeVita, Drazan, Bechtold).**
      Date/time will be confirmed shortly.

   b. **Diversity Outreach session at ASB Annual Meeting Wednesday morning August 8 (8am – noon). The content of this event has not been finalized, but we anticipate including some or all of these:**
      i. Interactive introduction to 4th Family approach
      ii. Build session for assembling “jump pads” to be used in outreach event
iii. Basketball (or potentially soccer) “Science of the Slam” event with local Rochester students (Boys and Girls club).

c. We are considering a companion outreach event in Minneapolis to help us continue development of a sustainable program in the Twin Cities. This could be either Tuesday afternoon August 7 or Wednesday afternoon August 8 (allowing ASB meeting attendees to observe/participate in event when in transit through Minneapolis to Rochester, with potential for bus transportation. Rochester is a 90 minute drive from Minneapolis).

d. Diversity breakfast on Saturday August 11, 8-9am (ASB Diversity Committee program TBD)

e. Stay tuned!

5. We submitted a symposium application to World Congress of Biomechanics in Dublin July 8-12, 20-18 (Queen, Drazen, DeVita, Bechtold). Waiting to hear if it is accepted — getting global perspective will be valuable!

6. Ongoing —

a. Continue to work on goals
b. Continue to develop a sustainable/repeating program in the Twin Cities and use these activities to develop guidelines for implementing in other communities.

c. Also work with 4th Family, ASB Diversity Committee and other interested parties to fine tune, hone implementation plan

d. Continue to develop partnerships. Start small, one step at a time, reflect, move forward!

Please refer to [attached /linked] Fellows Forum Column in ASB newsletter for more background on ASB Diversity initiatives

ASB Fellows Forum
Joan Bechtold, JJ (Trey) Crisco, Robin Queen, Kristin Zhao

Biomechanics and National Biomechanics Day as Mechanisms to Support Diversity, Equity, and Inclusion

Ed. note: in this article, two ASB Fellows (Joan Bechtold and Trey Crisco), are joined by the incoming (Robin Queen) and outgoing (Kristin Zhao) Diversity Chairs.