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EDUCATING TOMORROW'S STEM PROFESSIONALS

**New York State STEM Education Collaborative
&
New York Institute of Technology**

**2016 STEM Summer Institute
July 10-12, 2016
NYIT Old Westbury Campus**



Schedule updates: www.nysstemeducation.org

NYS STEM Education Collaborative

Mission & Goals

Our Mission Statement: To define STEM and the STEM disciplines in a fashion that will serve as a model for New York State and throughout the nation.

AMTNYS, ASEE, NYSSPE, NYSTEEA and STANYS will work collectively and collaboratively to deliver STEM Education in the spirit and vision of the NYS MST Frameworks and Learning Standards. We must take this approach to skillfully and completely address the concerted state and national cry for STEM Literacy.

Our Overarching Goals:

- **To transform the NYS MST Learning Standards into an effective and meaningful STEM Education Learning Standards delivery.**
- **To explore the possibility of holding a mutually supported STEM Education Collaborative Conference or Symposium by 2010 that will encourage and facilitate the sharing of successful and innovative classroom STEM practices by presenters representing AMTNYS, ASEE, NYSSPE, NYSTEEA and STANYS.**
- **To carry forward our NYS STEM Education Collaborative foundational work with enlightening debate and constructive discussions through various means of communication and a (yet to be determined) conducive timeframe.**
- **To work together to ensure that accepted research and practice based STEM principles are applied in the development of revised or new MST Standards.**
- **To mutually support, connect and strengthen science, technology, engineering and math P---16 instruction. All three disciplines would still maintain their separate learning standards, integrity, scope and depth but would be delivered within a cross connected methodology.**
- **To influence support funding, school policy, teacher training and preparation methods, with our mutually envisioned STEM Education approach.**
- **To foster the modification of existing assessments, with changes in written language and references, to bring about STEM connections, without changing the primary purpose and thrust of each.**

Member organizations:



Summer Institute Series:

2010 SUNY Oswego/2012 Syracuse University/ 2014 & 2015 SUNY Alfred/2016 NYIT



2016 N.Y.S. STEM Ed. Collaborative Summer Institute Schedule:



(Professional development verification available at each session)

Sunday:

2:00- 5:00 PM	Open Vendor Area for Vendors	Schure Hall
3:00PM – 5 PM	Registration / Check in –	Salten Hall
5:00PM – 6:00PM	(1PD) Poster Session – Cocktails -	Salten Hall
6:00PM – 7:00PM	Dinner – Networking!	Salten Hall
7:00PM – 8:00PM	(1PD) STEM Trivia + Announcements –	Salten Hall

Monday

7:00AM – 8:45 AM	Registration – Check In	Salten Hall
	Coffee + Pastries	
9:00AM – 10:00AM	(1 PD) Plenary Panel	Salten Hall
	Facilitator: Dr. Mark Vaughn- Corning Inc.	
10:00AM – 11:00AM	Vendors & Break –	Schure Hall
11:00AM – 12:15PM	(1PD) NYIT Provost – Welcome	Salten Hall
	Keynote: Dr. Frederic Bertley – Philadelphia Franklin Institute	
12:15PM – 1:00PM	Box Lunch	Salten Hall
1:15PM – 2:15PM	(1PD) Session 1 Presentation –	Schure Hall
2:15PM – 2:45PM	Vendors Event – Break -	Schure Hall
3:00PM – 4:00PM	(1PD) Session 2 Presentation –	Schure Hall
4:10PM - 5:10PM	(1PD) Session 3 Presentation	Schure Hall
5:15PM to 5:30 PM	Travel to De Seversky Mansion (5 Min. Drive)	
	1 Northern Blvd, Glen Head, NY 11545	



2016 N.Y.S. STEM Collaborative Summer Institute Schedule:

PD: Professional Development Verification Stickers available after each session



Monday Evening

5:30PM to 6:30PM	Cash Bar and (1PD) Poster Session-	Mansion
6:30PM – 7:30PM	Dinner	Mansion
7:40PM - 8:50PM	(2PD) Keynote & Awards - Keynote Speaker.: Dr. Leigh Ann DeLyster Dir. Of Ed. & Research – NYC Foundation CS	Mansion

Tuesday

7:00AM – 8:45 AM	Registration Check In –	Salten Hall
9:00AM – 10:00AM	(1PD) Session 4 Presentation -	Schure Hall
10:00AM – 10:30AM	Vendors & Break -	Schure Hall
10:30AM – 11:30AM	(1PD) Keynote - Distinguished SUNY Engineering Prof John Wadach	Schure Hall
11:30AM – 12:00AM	Vendors & Break	Schure Hall
12:00AM – 12:45PM	Box Lunch	Salten Hall
12:45PM – 1:45PM	(1PD) Session 5 Presentation	Schure Hall
2:00PM – 3:00 PM	(1PD) Session 6 Presentation -	Schure Hall
3:15PM	<i>Time to Head Home! Thank YOU!</i>	

Plan for waves of change in your community~!

Professional Development Hours For Each Day

2 for Sunday/ 8 for Monday/ 4 for Tuesday

1 for Write out strategies on: a) How you would implement, in your classroom and b)describe what you learned.

15 - Total Professional Development Hours Available from 2016 NYS STEM Ed Institute

Please Thank Our Institute Sponsors:

Silver Sponsors

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Technical
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A Division of the Successful Practices Network

CTE; Technical Assistance Center



NYS United Teachers

Bronze Sponsor



Practicing Institute of Engineering (PIE)



Proclamation

Honoring the
New York State
STEM Education Collaborative's
2016 Summer Institute
at New York Institute of Technology

WHEREAS, *It is the sense of this New York State Senator to acknowledge the efforts of organizations who promote an enhanced education of residents of this great Empire State; and*

WHEREAS, *Attendant to such concern, this member of the New York State Senate is justly proud to honor the New York State Science, Technology, Engineering and Math (STEM) Education Collaborative's 2016 Summer Institute, at New York Institute of Technology Old Westbury Campus during the week of July 10, 2016; and*

WHEREAS, *The NYS STEM Education Collaborative is a consortium of organizations, including the Association of Mathematics Teachers of New York State (AMTNYS), New York State Society of Professional Engineers (NYSSPE), New York State Technology & Engineering Educators Association (NYSTEEA), and the Science Teachers Association of New York State (STANYS), working to promote the scope and integration of STEM education on a statewide and national platform; and*

WHEREAS, *The mission of the NYS STEM Education Collaborative is ensuring the inclusion of accepted research and practice-based STEM principles in the ongoing development and implementation of new statewide and national education standards; and*

WHEREAS, *Integration of STEM education into the curriculum of students in pre-kindergarten through graduate school will better prepare them for success in their post-secondary and professional careers; and*

Two

WHEREAS, *Increasing support, curriculum and teacher training, as it pertains to the integrative STEM education approach, will expand and strengthen the overall education of our students; and*

WHEREAS, *The 2016 Summer Institute will encourage the sharing of successful and innovative classroom practices, provide enlightening debate and constructive discussion, and advocate for the modification of existing assessments with changes that incorporate STEM connections; and*

WHEREAS, *It is the intent of this member of the New York State Senate to publicly recognize those who are making significant contributions to the citizens and communities in this great Empire State; now, therefore, be it resolved that;*

SENATOR CARL L. MARCELLINO *honors the New York State STEM Education Collaborative's 2016 Summer Institute, and a copy of this Proclamation, suitably engrossed, should be transmitted to Nada Marie Anid, PhD, who together with Charles H. Goodwin, DTE, and Shiang-Kwei Wang, Co-Chairs of the NYS STEM Education Collaborative's 2016 Summer Institute.*

Proclaimed By Order Of Senator Carl L. Marcellino,

Dated,

November 16, 2015



Carl L. Marcellino
New York State Senator
9th District





800 Troy-Schenectady Road, Latham, NY 12110-2455 ■ (518) 213-6000 ■ www.nysut.org

Karen E. Magee, *President*
Andrew Pallotta, *Executive Vice President*
Catalina R. Fortino, *Vice President*
Paul Pecoreale, *Vice President*
Martin Messner, *Secretary-Treasurer*

July 10, 2016

Dear STEM Institute Participants:

I am delighted to send greetings to educators from around the state attending the New York State 2016 STEM Education Summer Institute: *"Educating Tomorrow's STEM Professionals"* at the York Institute of Technology Long Island – Old Westbury Campus. NYSUT is proud to support the 2016 Summer Institute and the work of the New York State STEM Education Collaborative.

NYSUT is a staunch supporter of professional development and recognizes the professional development needs of our members to be effective in the classroom to ensure our students have the skills necessary to succeed in STEM and STEM related fields.

Educators from all stages of the education system need to understand the importance of STEM education and see the continuum of STEM skills necessary for their students. The theme of this year's STEM Institute will reinforce the importance of involving educators of all levels in understanding the education pipeline and the career opportunities available to students.

Thank you for your hard work, dedication and commitment to STEM education and our students.

Sincerely,

Karen E. Magee
President

KEM/tm/jn

New York State United Teachers
Affiliated with • AFT • NEA • AFL-CIO





Science Teachers Association of New York State, Inc.

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July 2016

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*A chapter of the National
Science Teachers Association
(NSTA)*

*A member of the New York
State Council of Education
Associations (NYSCEA)*

Dear Fellow New York State STEM Educators,

On behalf of the *Science Teachers Association of New York State* (STANYS), I welcome you to the Summer 2016 NYS STEM Education Collaborative Institute. I thank you for taking the time to collaborate with professionals that share a passion for education. Programs like this offer a valuable opportunity for STEM teachers to increase their depth of understandings and learn more about the interconnections that define STEM.

I am very pleased to inform you that K-12 science education is in the early stages of a conceptual shift from concentrating on what we know to what students can do. The new science learning standards that are being adopted by many states and are being considered in New York have different expectations. Teaching and learning the big concepts and content is through science and engineering practices. Students learn by exploring phenomena, experiencing activities, engaging in dialogue, and constructing knowledge while gathering an understanding of the natural world. In addition to asking questions, science students are now expected to identify problems and design solutions.

This conceptual shift is the essence STEM. Science programs implementing curricula based on the new science standards approach should integrate learning that was previously taught in isolated subjects. Science teachers are moving from the "sage on the stage" and facilitating student directed learning using scenarios that engage and encourage greater understanding with less emphasis on science facts and vocabulary. Students should be presented with learning opportunities that integrate all the STEM disciplines plus the communication practices associated with ELA.

A reason I'm excited about STEM and encourage science teachers to participate in STEM conferences is that the inter-consecutiveness of a STEM approach complements the initiatives behind the new science standards. Designing curricula that engage students with real world applications and foster student directed learning that integrates all the disciplines will result in increased STEM literacy for all students.

This year's STEM Institute's theme, "*Educating Tomorrow's STEM Professionals*" offers a program that should help teachers educate our students to be critical thinkers, encourage more to pursue advanced degrees and expanded our STEM-capable workforce.

Sincerely,

Glen Cochrane
President STANYS

STANYS 121st Conference,
November 4 - 7, 2016
Friday - Monday
Rochester, NY



New York State Technology & Engineering Educators' Association
Chartered by the Board of Regents of New York State
www.NYSTEEA.org

July 11, 2016

On behalf of NYSTEEA, I welcome you to the New York State STEM Institute at New York Institute of Technology on Long Island. The planning committee has done an outstanding job in developing the conference program. Over the next few days you will have an opportunity to network with dozens of professionals who envision STEM as a collaborative effort among Science, Technology and Engineering, and Math educators. This STEM Institute is the perfect opportunity to see what and how teachers in other disciplines are teaching and delivering content that connects to what you are doing in your classroom.

At NYSTEEA we believe that Technology and Engineering Education is the glue that holds STEM together. Our definition of Technology and Engineering Education is the application of tools, materials and knowledge to solve problems. We teach the process of designing and engineering solutions where students learn in a hands-on, minds-on environment of invention and innovation. In Technology Education classes around the state, teachers are helping students work through the process of design to create something while applying the knowledge they know about a specific content area.

Together as STEM teachers we understand the importance of the theme of this summer's institute, "Educating Tomorrows STEM Professionals". We know that more then ever in the United States, and in New York, STEM professionals are in high demand. I've learned through various experiences that with a STEM focused education, access to an array of career options opens-up all over the state. These few days will encourage all of us to learn more about the diverse landscape of STEM careers and bring that information back to our students. Facilitating discussions with our students about these STEM careers will help New York State continue to thrive as a leader of innovation and invention around the nation and the world.

I look forward to meeting you so when you see me, please introduce yourself and tell me about what you teach as well as what you think we can do to make a real difference for our students. Together we are stronger and we can make STEM real for our students. STEM is a way of thinking, a method of teaching, and a process of learning.

Thank you,
Liz Gallo
NYSTEEA President



**The New York State Society of
Professional Engineers, Inc.**

The Founding Society of the National Society of Professional Engineers

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May 16, 2016

Dear STEM Institute Participants:

At the New York State Society of Professional Engineers (NYSSPE) we are passionate about inspiring the next generation of engineers and science professionals, but inspiring them starts with YOU!

I commend each of you for your commitment to educating our youth, because your time and effort will help them to solve some of the world's biggest problems.

Thank you for your dedication and tireless work to help the students of the State of New York better themselves, every day.

Please accept my best wishes for continued success and a wonderful Institute.

Best Regards,

Anthony Fasano, PE, LEED AP, ACC
Executive Director, NYSSPE



**ASSOCIATION OF
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NEW YORK STATE**

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9 Cresson Hill Road
Windsor, NY 13865

Dear STEM Institute Participant:

Welcome to the 2016 NYS STEM Collaborative Summer Institute:
Educating Tomorrow's STEM Professionals!

We are so excited that you have chosen to spend the next 3 days finding new ways to both connect the STEM disciplines together and connect with colleagues. It is our hope that you will leave with energizing lessons that you can use right away when school starts in the fall. It is of vital importance that we provide all students with access to meaningful lessons that connect the principles of science, technology, engineering, and mathematics. As the theme suggests, we are truly preparing today's students for tomorrow's careers that haven't even been imagined yet!

So how can you make the most of your time here? It won't be hard! The esteemed plenary panelists and keynote speakers provide an excellent base for getting your brain pumped up, but that is just the beginning. With over 136 sessions and an excellent set of exhibitors, there is sure to be something that piques your interest. While you are here, pick some sessions that are different from the types of sessions you usually gravitate towards – step outside your comfort zone – have some fun! You can also take a tour of the NYIT campus and see what kinds of wonderful opportunities await future STEM students and see first-hand what kinds of innovations exist here.

Thank you so much for making the decision to attend this Institute. Your dedication to making real STEM connections happen in your classroom is inspirational. Enjoy!

Sincerely,

Elizabeth Waite
AMTNYS President



New York State STEM Education Collaborative (NYSSEC)

“Educating Tomorrow’s STEM Professionals”

Warm Greetings to our 2016 STEM Institute Participants!

On behalf of our Collaborative’s planning committee, members, and partners it is a great pleasure to welcome you to our fifth STEM Summer Institute, this year at NYIT. We believe the offerings of our institute, including the wide range of STEM integrated topics, knowledgeable and experienced presenters (representing all levels of learning), the plenary panel, our outstanding keynote speakers, networking opportunities, and the array of STEM connected vendors, provide you with experiences that can greatly enhance and expand your instructional strategies. In addition to sitting in on presentations related to your subject and grade level, we feel it is important for you to attend presentations connected to other disciplines as well. You will be amazed at the ideas you can glean that actually benefit your instruction. Gaining a greater understanding of what we are all about is in the true collaborative spirit.

Can you imagine how capable, resourceful, mentally agile, turned on, and confident our students would be with solving real world problems, if they were exposed to integrated STEM learning, on a consistent basis, K through 12 and beyond? In fact students would have a much clearer understanding of how the world around them works and how they can live and work productively, effectively, and flexibly to meet the ever changing demands of their present day and future world. In essence, this approach is the over-arching goal our Collaborative has for New York State and across the nation.

As the NYSSEC Chairperson, it has been a great joy and wonderful human experience to work so closely with representatives from STANYS, NYSTEEA, NYSSPE, and AMTNYS. Our Collaborative’s approach to STEM instruction and learning provides the glue that brings us together. This institute serves as a model for making American education relevant, exciting, challenging, practical and meaningful to all students at all grade levels. Our Collaborative cannot thank the New York Institute of Technology administration and support staff enough for their tremendous support, hospitality, and guidance throughout our entire planning process. Truly our Collaborative, its partners and Alfred State have operated as one team and one magnificent collaboration.

Enjoy all the offerings of our institute. Through STEM integrated learning we are all connected.

Yours In STEM Learning,

**Charles H. Goodwin, DTE, Chairperson
N.Y.T. STEM Education Collaborative**



Office of Academic Affairs
and the Provost

State University Plaza
Albany, New York 12246

www.suny.edu

10 July 2016

Dear STEM Institute Participants,

Greetings from the Empire State STEM Learning Network! Comprised of 'STEM Hubs' from across New York State, we are part of the national STEMx initiative that is managed by Battelle – the world's largest nonprofit research and development organization. I'm delighted to welcome you to the fourth Summer Institute of the NYS STEM Education Collaborative! The Institute's theme expresses a need which is more important than ever before – *Educating Tomorrow's STEM Professionals*. The ideas you will share, and the skills you will gain, over the next few days are essential in helping to continue to improve STEM education in New York State.

It is well known that students who complete a degree in the STEM disciplines have a strong chance of entering a productive career track, and this is a credit to their teachers. As Neil deGrasse Tyson has said, "STEM is hard" ... and if it wasn't for their outstanding teachers many students might not master it. In learning STEM students often also master the essential 'soft skills' of teamwork, collaborative learning and problem solving, communication of complex ideas, and perseverance in the face of learning complex and challenging material.

The 2016 Institute host, New York Institute of Technology, is providing a great setting for STEM learning and networking. Many thanks to the planning committee for all its hard work to create this opportunity to integrate and innovate. Most of all, thanks to all participants for everything you do to advance high quality STEM education for all!

Sincerely,

Phillip A. Ortiz, Ph.D.
Assistant Provost for Undergraduate and STEM Education, and
Coordinator, Empire State STEM Learning Network
The State University of New York

To Learn
To Search
To Serve



Academic Affairs

July 10, 2016

Welcome STEM Institute Participants!

New York Institute of Technology (NYIT) is pleased to host the fifth annual New York State STEM Collaborative Summer Institute at our Old Westbury campus. This is our first time hosting the conference, and we are excited about this year's program and theme: "Educating Tomorrow's STEM Professionals."

NYIT is at the forefront of STEM education. Through a collaboration between our Schools of Education and Engineering & Computing Sciences, we offer an advanced certificate program for future K-12 teachers on the instruction of STEM concepts to prepare their students for college and careers in STEM-related fields.

NYIT is one of 122 U.S. schools—one of only two colleges on Long Island and four in New York State—participating in the National Academy of Engineering (NAE) Grand Challenge Scholars program, which calls for graduating 20 students per year in STEM studies.

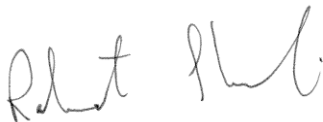
Additionally, NYIT received a New York State Education Department grant last year of nearly \$1 million over five years to support the state's Science Technology Entry Program (STEP), which immerses high school students in STEM subjects and prepares them for college. And in 2011, our School of Education—whose online programs rank among the top 25 nationally according to *U.S. News & World Report*—received a six-year NSF grant of \$1 million to prepare science teachers to use technology in the classroom.

Of further note, last year, the first female dean of our School of Engineering and Computing Sciences, Nada Marie Anid, Ph.D., received a "100 Inspiring Women in STEM" award for her work in encouraging and motivating a new generation of young women to consider careers in the much-needed STEM fields.

This conference is a great opportunity for K-12 teachers and administrators to learn more about STEM concepts and innovative technology integration ideas, as well as to network with colleagues, explore computational thinking skills and engineering practices from STEM thought-leaders, and tour NYIT's traveling STEAM (Science, Technology, Engineering, Arts, and Math) van.

We are honored to partner with the New York State STEM Education Collaborative on this year's conference and support its vital mission to ensure future, skilled STEM graduates for the state's business community. Enjoy the conference!

Sincerely,



Rahmat Shoureshi, Ph.D.
Provost and Vice President for Academic Affairs



New York State STEM Education Collaborative STEM Institute Planning Committee

Thank You! Thank You! Thank You! Thank You!

Dr. Nada Anid	STEM Inst. Co-Chairperson - New York Institute of Technology
Dr. Shiang-Kwei Wang Technology	STEM Inst. Co-Chairperson - New York Institute of
Charlie Crumb	CTE Technical Assistance Center
Ellen Falk	AMTNYS Vice President & STEM Collaborative Liaison
Chuck Goodwin, DTE	STEM Collaborative Chairperson - Past President NYSTEEA
Steve Fielman	Science Teachers Association of New York State
Gwendolyn Maturo-Grasso	Technology Alliance of Central New York – CNY STEM HUB
Robert Hazen	AMTNYS – STEM Education Collaborative Webmaster
Dr. Hui-Yin Hsu	New York Institute of Technology
Staci Kirschner	Facilities & Registration – New York Institute of Technology
Alta Jo Longware	2014 - 2016 NYSTEEA President
Dr. Sarah McPherson	New York Institute of Technology
Dr. Philip Ortiz	Coordinator, Empire State STEM Learning Network
Ellen Palazzo	CTE Technical Assistance Center
Fred Pidgeon	Past President Science Teachers Assoc. of New York State
Dr. Robert Rogers	AMTNYS Past President - SUNY Fredonia - Vendors
Frank Roma, PE	NYS Society of Professional Engineers –STEM Collab. Liaison
Carmelitta Seitz	NYS Assoc. for Computers & Technologies in Education
Dr. Stan Silverman	New York Institute of Technology
Dr. Mary Margaret Small	North Country STEM Hub – Clarkson University
Dr. Joseph Zawicki	STANYS – Buffalo State – Program/Communication Registration

STEM Institute 2016 Keynote Speakers



Frederic Bertley, Ph.D.

Senior Vice President of Science and Education
Franklin Institute
Philadelphia, PA

Making Sense of STEM Education for the 21st Century



Leigh Ann DeLyser, Ph.D.

Director of Education and Research
NYC Foundation for CS Education
(CSNYC)
New York City, NY

**Co-Author of Association for Computing Machinery
“Running On Empty” Report**



JOHN B. WADACH

Chair of the Engineering Science and Physics
Department
Monroe Community College
Rochester, NY

Motivating Students with Design-Build Projects

Please Thank & Support Our Vendors



Plenary Panel Discussion Group



Plenary Facilitator

Mark Vaughn, Ph.D
Manager, Technical
Talent Pipelining and
Lead for STEM

Technology Community
Office
Corning, Inc.



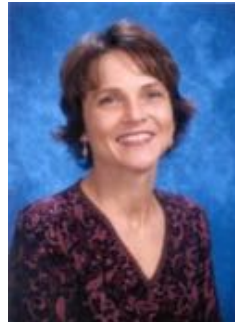
Nada Anid, Ph.D.
Professor and
Dean,
School of Engineering
and Computing
Sciences, NY Institute
of Technology



Marc Chiffert, P.E.
Managing Member of
CHIFFERT Engineering
PC ("CAEC")
New York City, NY



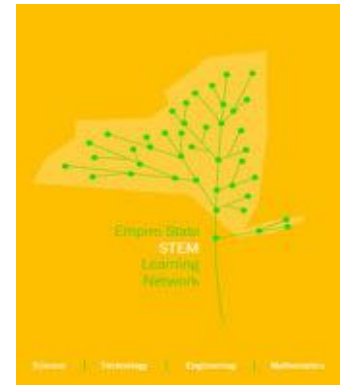
Glenn Cochrane
President
Science Teachers of
New York State
(STANYS)



**Alta Jo (AJ)
Longware**
Past President
New York State
Technology and
Engineering Educators
Association
(NYSTEEA)



Robert Rogers, Ph.D
SUNY Distinguished
Teaching Professor of
Mathematics
SUNY Fredonia

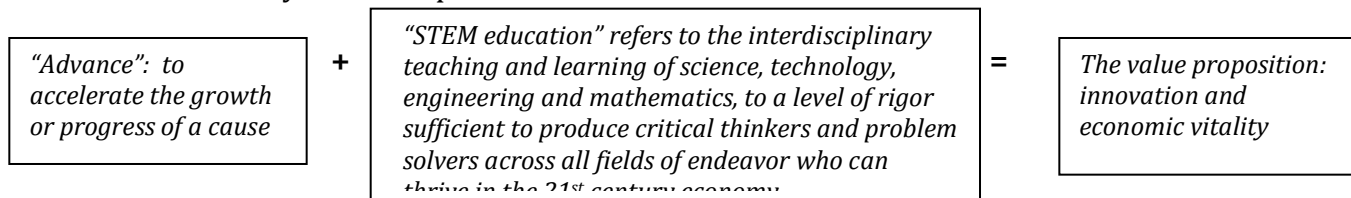


MARGARET ASHIDA STEM LEADERSHIP AWARD

To honor the memory of Margaret Ashida, the New York State STEM Education Collaborative will honor outstanding individuals with an annual “Margaret Ashida STEM Leadership Award.” Margaret Ashida was an energetic and driven person who was able to create a wave of change through tireless efforts to help develop connections between business, industry, and STEM educational leaders. Her ability to help others network from Pre-K through the university level, through business and industry, not only in New York State, but across the country, helped implement and foster pathways for the development of a national STEM workforce. Her advocacy helped create New York State STEM Hubs. She was able to get New York communities to collaborate in unique ways, fostering the development of STEM career pathways.

Margaret was the Founding Chair for the Empire STEM Learning Network, a state-wide community-led collaborative. She was a board member for the NYS STEM Education Collaborative, a coalition of AMTNYS, NYSSPE, NYSTEEA, and STANYS. The collaborative works to deliver STEM education following the spirit and vision of New York State's MST Frameworks and Learning standards to skillfully and comprehensively address the concerted national cry for STEM Literacy. Margaret is missed, but will be forever remembered for her work ethic, her dedication to excellence, and the friendships she shared with all of those she met.

The Mission of the Empire STEM Learning Network (STEM Hubs): to advance STEM education to prepare all students – regardless of their career goals – for college and career success, to fuel innovation and economic vitality in the Empire State:



The 2016 MARGARET ASHIDA STEM LEADERSHIP AWARD honorees are:

- **K-12 Education:** Mr. Marvin Cadornigara
- **Pre K-12/Higher Education:** Michelle Kavanaugh, PhD
- **STEM Workforce:** Frank Roma

Special Guest Presenter 2016: Anne LePore (Margaret Ashida’s Sister-in-law)

Awards Courtesy of: Corning Inc. &* NYIT

Committee Chair: Gwendolyn Maturo-Grasso glmaturo@syr.edu www.nysstemeducation.org

Committee: Ellen Falk; Chuck Goodwin; Frank Roma; Joe Vargo; Mark Vaughn; Joe Zawicki;

- *Nominated Members were not permitted to score!*

FYI: 2017 Nominations will open in January!

MARGARET ASHIDA STEM LEADERSHIP AWARD

Pre-K-12 Schools: **Mr. Marvin Cadornigara**



Mr. Marvin Cadornigara has been doing outstanding work in STEM teaching. He implemented the use of various technologies in his 6th grade Science classes to enhance scientific inquiry and develop new literacies among students. Students use online databases in gathering authentic water quality data (MYSound), collecting mitochondrial DNA data for forensics studies (Bioservers), presenting issues and intervention on endangered species (Arkive), gathering authentic data among global physical events (NOAA), as well as gathering and presenting worldwide climate change data (Climate Change Knowledge Portal); They are creating projects and presentations that are inquiry-based, are supported by research and collaboration, and all address the common core standards; creating models and STEM projects like micro-models and Rube Goldberg experiments; writing laboratory and project reports; analyzing and presenting data using the research capabilities of Google docs, slides, and spreadsheets; incorporating images and videos and identifying locations using Google Earth; creating video clips of environmental investigations; creating stop animation videos and infographics of Science concepts learned in class and in demonstration of scientific processes, such as mitosis, replication, translation and transcription, etc. Mr. Cadornigara employs the flipped learning model in the classroom by creating teaching videos and utilizing interactive websites to challenge students to self-learning at home. He creates original instructional videos available on both his ShowMe and YouTube channels. He maintains a classroom website called “Mr. Cadornigara’s Project-Based Inquiry Science Class @NEST+m”, where his lesson presentations, project profiles, and outstanding student works are showcased for free digital access.

Since 2012, his students participated in the “Student Spaceflight Experiment Program to the International Space Station”, where they designed experiments to be conducted by astronauts in microgravity aboard the International Space Station during the Mission 3, 4, 5 and 8 programs. Since 2013, his students participated in the yearly ExploraVision competition, with one honorable mention prize in 2014, an honorable mention prize in 2015, and seven honorable mention prizes in 2016. He fielded in 10 team entries to the 2015 Future City Competitions (NYC Finals), where one team from NEST+m won 2nd place, while 3 others won special awards. In 2016, from among ten team entries from NEST+m, one team won 5th place and two others won special awards. He was recognized as one of the 2014 inaugural Excellence in School Technology Awardees by the NYCDOE in July 2014 and was conferred the Blackboard Awards for Excellence in Education by the Family Magazine and Manhattan Media in June 2015. Margaret would have loved seeing this teacher in action: he truly sends out waves of STEM energy in multiple directions in every class!

MARGARET ASHIDA STEM LEADERSHIP AWARD

Pre-K-12 Schools/Higher Education:

Michelle Kavanaugh, PhD



Regarding Michelle's lasting and meaningful contributions to STEM career paths for her WNY community she has excelled greatly. Since 2013, when the WNY HUB was organized she has served as President and has assembled a magnificent organization of education, community and business and industry leaders. She has created a viable effective and very active STEM HUB that should serve as a model for all STEM HUBS. Michelle facilitates different themed STEM connected programs on a monthly basis. This month of May WNY STEM Hub held The WNY STEM /STEAM exposition. Michelle's Organizational infrastructure is impressive, expansive effective and Obviously sustaining.

Beyond the call of duty... Michelle has also been directly involved with the NYS STEM Education Collaborative with numerous endeavors (NYS Summer STEM Institute Planning Committee, Rubric Committee, Interfacing with Superintendents of Schools, helping to bring in other HUBS into the Collaborative's operation and membership. Michelle has completed many creative and innovative endeavors with STEM education throughout her HUB and region. Her organizational structure is truly impressive on every level. She has pulled together an outstanding steering committee and solid sources of funding that are key for sustainability.

After 11 years as a Superintendent of Schools, and a total of 37 years of service in education, Michelle is retired but continues to support educational leaders and organizations in achieving performance excellence results. She provides consultant services to school districts in the Finger Lakes and Western New York Michelle served on the National Board of Examiners for the Baldrige Award and continues to apply quality practices in her work.

In March of this year she was awarded **Women Touching the World Award:** Unlimited Possibilities: Overcoming Poverty Ministries, Inc. The award, reflecting National Women's History Month, is bestowed annually to women in Buffalo who strengthen other females in the area of career development, self-esteem, community involvement, culture appreciation and value oriented principles. aligned with the Focus of the UPOP Ministries. The awards program funds a college scholarship program for promising young women. Michelle Kavanaugh worked closely with Margaret Ashida and she emulates many of the leadership qualities that Margaret possessed.

MARGARET ASHIDA STEM LEADERSHIP AWARD

STEM Workforce: Frank Roma



Frank Roma is an outstanding supporter of STEM education. He is an engineer by trade, and has been a pillar of the New York State STEM Education Collaborative. Frank is dedicated to STEM education; he has worked tirelessly to ensure that the collaborative provides only the highest quality professional development and adheres to the highest standards organizationally.

Frank is a person who sets his mind to a task moves forward to tackle tasks with both enthusiasm and sensitivity to the individuals with whom he is working. I have worked with the task of soliciting, receiving and vetting the conference proposals for the past few years. Frank is always there, ready to help. He is among the first (if not the first) person to vet proposals, noting how many areas (science, technology, the arts, engineering, literacy, and mathematics) each presentation addresses.

Frank has a keen eye for recognizing truly integrated projects (those that cross the boundary of a single subject and wholeheartedly embrace multiple disciplines. From the first conference calls to address “next year’s” program, to careful planning and implementation, to assisting in the communication with presenters and participants, to providing insights into conference evaluation, Frank is always there – quietly voicing his thoughts and impressions, gently guiding the collaborative toward what often develops as our strongest option.

Frank is a jewel in the crown of STEM education, and the NYS STEM Education collaborative. He is an invaluable asset. He deserves our recognition for the heavy lifting he has done to support our goals. Frank epitomizes the kind of STEM Workforce partner Margaret sought after so dearly! Frank is highly deserving of the Margaret Ashida STEM Leadership award for industrial partners.

Conference Presentations



1.1 Schure Hall Room #211

Rich Simpson

Implementing Mastery-Based Learning within an Adaptive Instructional Tool

Mastery-based learning refers to a form of instruction in which a student's progression is dependent on demonstrating mastery of the material through successful completion of tasks or assessments. We used an adaptive instructional tool called Smart Sparrow to deliver instruction and perform formative assessments that allow students to demonstrate mastery. JavaScript apps within the Smart Sparrow modules randomly generate unique questions based on templates. Each template can also include feedback appropriate to the question asked. What the student experiences within Smart Sparrow is a formative assessment that they must pass before being able to progress to new material.

1.2 Schure Hall Room #212

Anna Lee



3D Printing in The Classroom

3D Printing is a technology that can be used to enhance the classroom experience. Literature has shown that 3D Printing is relevant in teaching and learning. Incorporating the use of 3D Printing and its products in teaching will provide students with a more authentic classroom experience. Through the use of this technology, teachers are physically able to place simulated objects in the hands of their students. The use of these materials enable students with limitless possibilities. During the presentation, attendees will learn about 3D Printing technologies and their classroom applications. In addition, attendees will receive an overview of available 3D Printing software and example lesson plans. Attendees will gain the background knowledge needed to incorporate 3D Printing in their classrooms.

1.3 Meet for Tour at "Quad Entrance"

David Fanning



NYIT School of Engineering, Tour 1

The tour will showcase School of Engineering and Computing Sciences' Student Machine Shop (B20), Student Lab Area & Faculty Research Area (B21), Materials Science Area & Lab Classroom (B19), Clean Room Prep Room (B19A), and viewing of the Clean Room (B19B).

1.4 Schure Hall Room # 206

Mary Ann Nickloy, Kelly Fahrenkopf, NEATEC



Thin Films

NEATEC is an NSF funded ATE Regional Center located at SUNY Polytechnic Institute. Students will learn about thin films using soap bubbles. They will learn the application of thin films in the world of nanotechnology. Middle school math is included in the module as students calculate the volume and surface area of a sphere. Teachers will learn how to sign up for our kit lending library.

1.5 Schure Hall Room #102

Sarah McPherson

Universal Design for Learning in STEM for All Students

In order to prepare teachers to teach STEM a framework is useful to establish the relevance of interdisciplinary curriculum. This presentation will address the principles and guidelines for Universal Design for Learning (UDL) teachers can apply to STEM education for hands-on, inquiry, and project-based learning to prepare K-12 students for pursuing STEM related fields in college and careers.



1.6 Schure Hall Room #107

Sharry Whitney, Terry Talley, Rice University/Accelerate Learning

Building the Skill of Argumentation and Discourse in STEM

Join us in this session that will model successful implementation of consensus building through discourse and argumentation. These Scientific and Engineering Practices are at the heart of a STEM classroom that meets the needs of diverse learners and creates a student-centered learning environment. When teachers consciously reduce teacher talk and increase the purposeful student talk student achievement gains are noted. Through discourse, argumentation and collaborative activities, students use the authentic practices of scientists and engineers



1.7 Schure Hall Room #105

James Alloway

Visualizing the Fundamentals of Designed Experiments

Many students believe that the scientific method requires varying one factor at a time. Statistically designed experiments allow one to vary multiple factors simultaneously, as well as to detect interactions between factors. This approach uncovers information that is typically missing, and requires less data than the traditional one-factor-at-a-time approach. This session introduces DOE basics using 3-D models to illustrate key concepts.



1.8 Schure Hall Room #228

Melissa Hirt

Shrinky Dinks meets STEM

This is a fun and engaging lesson for students to explore STEM concepts. Students work in teams to calculate scale factor of this unique plastic. They will also explore the science behind why these plastics shrink. A product will be designed using their research to meet the design criteria.



2.1 Schure Hall Room #211

Marc Chiffert, P.E., , ,

Application of Math and Science Equations to Architectural Engineering Design

Samples of math and science equations as applied in the architectural engineering design field. Practical examples to understand practical applications of math equations in construction and design.



2.2 Schure Hall Room #212



Sharry Whitney, Terry Talley, Rice University/Accelerate Learning, ,

Application of Math and Science Equations to Architectural Engineering Design

Samples of math and science equations as applied in the architectural engineering design field.

Practical examples to understand practical applications of math equations in construction and design.

2.3 Meet for Tour at Quad Entrance

David Fanning

NYIT School of Engineering, Tour 2

The tour will showcase School of Engineering and Computing Sciences' Electrical Engineering, Computer science labs, the ETIC labs and business accelerator.



2.4 Schure Hall Room #206

Kavanaugh Michelle, Joseph Zawicki, WNY STEM Hub, SUNY Buffalo State, Jim Guido, WNY STEM Hub, *How Hundreds of Students Defied Gravity*

Students in Grades 5-12 rarely have an opportunity to write scientific proposals or to test experiments that they design in a microgravity lab. Even more rare is the opportunity for students to have their science experiment conducted by astronauts and returned to Earth for ongoing ground truth testing with local university scientists. As a result of facilitation by the WNY STEM Hub, 310 students in a Buffalo Niagara Coalition of 10 schools developed proposals. One was selected by a national panel from the National Center for Earth and Space Science Education for flight. Learn about the process, program and life-changing impact of this project that can be replicated in your school and community.



2.5 Schure Hall Room #102

Seth Messier

STEM in the Elementary Classroom

You have been hired by the local team to design a football helmet that can protect players and withstand a maximum impact speed. The team in the firm that comes up with the most effective design will get the contract for the account. This PBL (Problem Based Learning) STE(A)M activity, is designed for gifted and talented upper elementary to lower middle school students. In this design challenge lesson, students will use an egg to represent the brain. The yolk represents the brain, the whites of the egg represent the cerebral spinal fluid and the shell represents the skull. Students will design and build a "football helmet" to protect the brain at maximum impact speed and will test their design at increasing speeds. Students will identify the constraints and specifications embedded within this unit. Prior background to basic anatomy of the brain would be required.



2.6 Schure Hall Room # 107

Mary Eileen Wood

Maker Magic: Your community's love affair with STEM fun!

In a two-session series, we will (1) discover the Maker within each of us, (2) begin designing our own Maker kits, (3) identify potential local partners for Maker Halls "back home," and (4) develop options for bringing Maker Halls to your own communities. Bring enthusiasm; leave in only two hours with laughter, free Maker resources, and your plan to "make it all happen" back home! Experience a Maker Hall where people ages five to 95 explore and play, where teachers and parents, librarians and union trainers, retirees and high school students, lab techs and engineers, become Maker Adventure Hosts. PLAY as you discover cheap, easy ways to engage your students and community with STEM.



2.7 Schure Hall Room #105

Robert Rogers

STEM for the Common Person

Many discussions about STEM education center around careers. Introducing STEM ideas to a general populace is just as important. Most of our students will not be choosing a STEM career and some of them will be the STEM policy makers. We'll discuss ideas for introducing relevant STEM topics as general education in the classroom.



2.8 Schure Hall Room #228

Rebecca Glavan

Incorporating Gaming in STEM Research to Foster Intrinsic Educational Engagement

The presenter will elaborate the concept of game-based learning in the science research classroom, discuss what makes these games so engaging and what can we learn from this for motivating our students. Appropriate games will be discussed that can facilitate students' collaborative learning, student-to-student discussions, decision-making, self-regulation, independent thinking, data collection, analysis and experimental design. The challenges of game-based learning will also be covered.



3.1 Schure Hall Room #211

Nicole Simon

Full STEM Ahead!

This workshop will use the TPACK (Technological Pedagogical and Content Knowledge) framework to explore how to incorporate emerging educational technologies into science education. Simulation experiments and virtual learning environments will be discussed. Simulations include multiple representations of information presented in a manner that builds mental models of complex systems. Learn how to stimulate learners by engaging in authentic learning situations and modeling of scientific phenomena. Critical thinking and cross-disciplinary learning is supported in this workshop and provide the tools necessary for developing technologies in science education and demonstrating a global perspective of cross-curricular science education through science simulations.



3.2 Meet for Tour at Quad Entrance

David Fanning

NYIT STEAMed Vehicle Tour

The STEAM vehicle addresses the critical need for engaging students in the processes of innovation, creativity and technology so that they can become college and career ready. The project addresses the critical need for students to become creators of knowledge while presenting, sharing and publishing their designs and solutions to a larger audience, engaging in discourse around their designs, creations and inventions. Participants acquire strategies for problem solving that integrate STEAM into various activities and obtain skills in using various tools technological tools and processes. This project provides educators with creative, student-powered, hands-on STEAM learning opportunities that align to Common Core and Next Generation Science Standards. Specific strategies are designed to address the needs of female students, students of color and students in poverty so they can see themselves participating in STEAM related careers and continuing education.





K-4 5-8



S T E

3.3 Schure Hall Room # 212

Suzanne Rayson, Susan Jaquish, STEAM teacher PS 102

STEAMing into Their Future

This session will demonstrate how the teaching and learning of STEM disciplines can be woven together with ELA and the Arts to create an innovative, integrated STEAM curriculum that engages the natural curiosity of elementary learners and immerses them in the rigors of STEM discovery and Arts expression. Presenters will show how core subject areas can be aligned under a STEAM title to challenge growing minds to apply higher order thinking and disciplined behaviors to inquire, brainstorm, plan and create solutions to “real world” problems. Participants will have the opportunity to review K-5 STEAM units together with samples of collaborative student work that exhibit how young students devise solutions, communicate their learning and present their projects.



5-8 9-12



S T

3.4 Schure Hall Room #206

Hui-Yin Hsu, Shiang-Kwei Wang, New York Institute of Technology

Use Google Applications to Develop New Literacy Skills in Science Classrooms

New literacy refers the skills to use computer and Internet technology to communicate. The free and reliable Google Applications provide great opportunities to develop students’ new literacy skills. The presenter will introduce various Google Applications and how they align with science curriculum and Common Core standards, including Google Docs, Spreadsheet, charts, pivot tables and Google Maps.

3.5 Schure Hall Room #102

Dana Morse

STEM Behind Hollywood

From zombies and superheroes to crime drama and space, Hollywood’s blockbuster genres rely on real-world science, technology, engineering and mathematics (STEM) to bring the magic to life on the big screen. STEM Behind Hollywood is an exciting new program created by TI with the assistance of the Science & Entertainment Exchange, a program of the National Academy of Sciences, to get students excited about STEM education and careers



5-8 9-12



S T



M

3.6 Schure Hall Room #107

Kristen Magyar

Engineer like a Superhero

With so many schools trying to implement STEM nights or a mixture of STEAM, STREAM or any combination, learn how Highland Falls Fort Montgomery CSD planned Engineer like a Superhero Night to provide for family and community engagement. During this session you will learn how to Engineer like a Superhero and design a STEM night for Family and Community Engagement.



K-4 5-8



S T E M LA A

3.7 Schure Hall Room #105

Kristina Holzweiss, Gina Seymour, Islip High School

Got SLIME? - Adventures in Creating a Makerspace

The Maker Movement provides a unique learning environment for participatory education and creative collaboration. Regardless of learning style, language barrier, or special learning needs, the maker movement places the K-12 learner at the center of the learning process. Let us show you ways to create a designated Makerspace, how to apply the Maker Movement concept within the individual classroom, and how to participate in our regional student maker expo, SLIME.



K-4 5-8 9-12 OA



S T



A

3.8 Schure Hall Room #228

Camila Achutti



A lean project based-learning curriculum focused on programming skills to empower technical and non-technical teachers regarding digital and technology literacy.

The knowledge society, comprehended as the result of the development of digital technologies, creates possibilities for new understandings of the world, whose representations take a myriad of multiple forms. Access to information transforms our status quo. The Digital Age gave birth to multiple forms of literacy; digital literacy, technology literacy and media literacy, among others. They interconnect, overlap and converge into and within each other, increasing their unique power in a dynamic process known as transliteracy. This process represents a fundamental paradigm shift to teachers — most of them, digital immigrants — whose mission is to facilitate learning experiences of digital natives students, using digital tools. During this session, I will show how can we take advantage of existing tools to teach computational thinkins and programming without being an expert on this.

3.9 Meet for Tour at Quad Etrance

Wisser Library

NYIT Wisser Library, School of Education



School of Education will showcase the STEM ed lab, including the following equipment: Oculus Rift, Nao robot, 3D printer, and Lego robotics.

4.1 Schure Hall Room #211

Stuart McNiell, Tom Barry, Intrepid Sea Air and Space Museum

Astronauts Behaving Badly: Putting STEM on Stage



This presentation will focus on the stage as a place for the fusion of STEM and the Humanities. Educators from the Intrepid Museum will use selections from their play Astronauts Behaving Badly to demonstrate theater games that teach aerospace topics. The play also includes the use of transcripts from space missions that the Intrepid recovered. Strategies for use in the classroom, as well as connections to the Common Core and state science standards will be included.

4.2 Schure Hall Room # 212

Azad Gucwa, Kathleen Feeley, Long Island University, Post Campus

A Model for Inclusive STEM Education : Exceptional Researchers' Discovery Institute

Students with autism spectrum disorder (ASD) have a particular strength in mastering the science curriculum. Unfortunately, social, behavioral, and/or communicative challenges may prevent them from participating in community based extracurricular activities alongside their typically developing peers. This presentation will focus on the rationale for and supports necessary for student with disabilities to succeed in STEM disciplines. The Exceptional Researchers' Discovery Institute provides high school students hands-on research experiences and the opportunity to meet with local scientists involved in research. To our knowledge, this is the first institute of its kind that is specifically designed to provide an inclusive opportunity for high school students to learn about and engage in active scientific research.



4.3 Meet for Tour at Quad Entrance

David Fanning

NYIT School of Engineering, Tour 1

The tour will showcase School of Engineering and Computing Sciences' Student Machine Shop (B20), Student Lab Area & Faculty Research Area (B21), Materials Science Area & Lab Classroom (B19), Clean Room Prep Room (B19A), and viewing of the Clean Room (B19B).



4.4 Schure Hall Room # 206

Shiang-Kwei Wang, Hui-Yin Hsu, New York Institute of Technology

Integration of Google Cardboard in the Classrooms

In this session, the presenters will introduce attendees to the Google Cardboard virtual reality technology. The session will include the following components: Introduction of Google Cardboard, Google Cardboard cases studies, discuss possibilities of using Google Cardboard in various subjects, and resources. Each participant will be provided a Google Cardboard device to experience immersive learning.



4.5 Schure Hall Room #102

Alta Longware

Paper + Angles + Forces = Fun Making Gliders

Sometimes, learning needs to be a little more fun and making paper airplanes can be the solution. During this one set activity, students read and follow step by step instructions to fold a piece of paper into an amazing little glider that will fly 50+ feet. They must also apply math and measurement skills to confirm their design meets the specifications. Then while conducting test flights, students learn about the principles of flight including center of gravity and forces.





4.6 Schure Hall Room #107

Ellen Darensbourg, Rebecca Lugo, PS 354 The STEM Institute of Queens, NYCDOE, Raevan Askew, PS 354 The STEM Institute of Queens, NYCDOE, Sharry Whitney

Making STEM a Mindset: A Roadmap for Change

At a time when STEM is the biggest buzzword in education, our inner-city elementary school committed to embracing STEM as a mindset, which influenced and changed not only how we teach, but how we think, and ultimately, who we are as a community of learners. We will share the journey of our transformation into a STEM-themed magnet school, and detail the shifts in curriculum, partnerships, fundraising, and more that we made to ensure that we earned the right to wear the STEM name on our school. Our process included making STEM the heart of who we are: embracing the engineering design cycle across content areas; redesigning our curriculum to revolve around transdisciplinary project-based learning units; increasing our use and integration of technology; and moving towards a more “STEAMy” approach by pushing STEM in the arts. We will discuss how we incorporated a hydroponic garden lab, an outdoor garden, new technology, and a new library-media center. We will describe how we have enhanced our educational offerings by growing partnerships with local universities, community-based organizations, and professional organizations; adding special programming such as our Genius Hour and after-school and Saturday enrichment programs; and conducting parental involvement activities such as monthly theme-based family nights. We have also embedded “hot topic” activities such as coding, robotics, LEGO education, Engineering is Elementary, and 3D printing into our teaching repertoire. We are far from perfect, but have worked very hard to provide our students with the kind of college- and career-focused education that will open doors for them in the future, encouraging them along the STEM pipeline towards exciting STEM-based careers. Based on our experiences, we hope to inspire and guide others to take on the ambitious goal of mindset change. For as we like to say at the STEM Institute of Queens, STEM is who we are, not just what we do.

4.7 Schure Hall Room #105

John Heilman, Francis Parker School



Design Thinking at the Elementary Level

Participants will investigate how to create, implement and even start to grapple with how to assess a STEM based Design Thinking Program at the elementary grade level from two educators that have made the leap! Program Description: Build it and they will come seems to be a common rallying call for building a design lab, maker space, tinkerlab, etc. Francis Parker also fell victim to that type of siren call, but was able to step back from the rocky shore of committing thousands of dollars in equipment purchases and facility construction by developing a design thinking vision. The Parker Lower School, in particular, was able to take the newly created design thinking vision and dabble a bit with implementation before conservative capital investments were made on a work space and equipment. We have just completed year 1 with a full program roll out for grade 3-5 with grades JK-2 in the works. Attendees will gain a working knowledge of how the Parker Lower School program was created, equipped, implemented and initially assessed. They will also be treated to the sometimes hilarious and unintended successes and challenges involved when creating a STEM based Design Thinking Program.

4.8 Schure Hall Room #228



Lynne Tompkins, Amy Kilmer NFCSD, Valerie Rotella NFCS K-4 5-8

STEM Initiative NFCSD Pre-K through 12 Vertically Aligned, Relevant Curriculum

STEM education is a national priority for all American students. The jobs of the future will rely heavily on aptitude in science, technology, engineering, and math. The Niagara Falls City School District is the first District in NY State to construct dedicated STEM classrooms in EVERY school. The NFCSD has been a leader in STEM education since 2007 when we received a MSP Grant focusing on STEM education; partnering with Niagara University. Highlights of our presentation will include:

- Curriculum Development – vertical alignment Pre-K-12 • Working with partners to provided authentic engaging learning experiences
- STEM Instructional coaches - work directly with teachers
- Building Capacity – program sustainability – Higher Education connections •Lessons Learned



5.1 Schure Hall Room #211

John Lee, Dr. Hui-Yin Hsu, NYIT Chair & Associate Professor Teacher Education

Learning Through Student-Generated Questioning

The SMILE (Stanford Mobile Inquiry-based Learning Environment) project is a mobile learning model that falls under the umbrella of the Constructionist learning theory. SMILE began with the objective to enhance or replace traditional classroom instruction with a more effective Inquiry-based learning environment. By harnessing our natural curiosity as humans, SMILE encourages students to become active agents in their learning process. This is accomplished by integrating the use of mobile devices, network, and pedagogy to an interactive student-generated questioning format. SMILE offers its users a collaborative learning environment by which learning and assessment seem to occur simultaneously. During this presentation attendees will see how SMILE will one day be part of daily instruction and student-teacher interaction in classrooms around the world.

5.2 Schure Hall Room #212



Chuck Goodwin

Effectively Integrating STEM While Designing an Air Droppable Survival Shelter

The Air Droppable Survival Shelter is a pre-engineering case study that is a totally interconnected STEM Design Project. The shelter problem incorporates Research, Structural Forces, Structural Design, Ergonomics, Material Utilization, Documentation, Experimentation, Packaging, Contract Specifications, Mathematical and Physical Modeling, Prototyping, Testing and Analysis.

5.3 Schure Hall Room #206



Catherine Filibes, Sean Dabroski, GA Fleet Associates, Salvatore Rachiele, NYC ASPE Chapter president, Ken Conover, GA Fleet associates

Rainwater Harvesting

To educate about rainwater harvesting, methods use to harvest the rain and conserve water, how to treat the rain for potential re-use in non potable water applications such as cooling tower make-up, irrigation, toilet flushing..etc

5.4 Meet for Tour at Quad Entrance



David Fanning

NYIT School of Engineering, Tour 2

The tour will showcase School of Engineering and Computing Sciences' Electrical Engineering, Computer science labs, the ETIC labs and business accelerator.

5.5 Schure Hall Room # 102

Subrina D. Oliver

STEM: A Social Impact Discipline



The goal of my presentation is to share how I have used STEM to help connect secondary students to communities locally and abroad. Through authentic learning experiences, teachers can help promote social awareness, encourage civil participation and leverage his/her student's problem-solving capacity to address real world issues. Social Impact activities offer great opportunities for all grade levels to make a difference beyond the school walls.

5.6 Schure Hall Room #107

Marvin Cadornigara, Vivian Alforque PS 87 Middle Village , Barbara Aguin Lower Manhattan Community Middle School, RosalindaBajolo IS 230, Hui-Yin Hsu NYIT, Paul Kim Stanford University *Using SMILE (Stanford Mobile Inquiry-Based Learning Environment) to facilitate inquiry-based learning in STEM education*



Students' questions play an important role in meaningful learning and scientific inquiry. A key feature of scientific discourse is the role of questioning in eliciting explanations, building models, postulating theories, evaluating evidence, justifying reasoning, and constructing a convincing argument that supports or refutes claims. Simply put, the act of questioning encourages learners to engage in critical thinking. Given that asking questions is fundamental to science and scientific inquiry, the development of students' abilities to ask questions, reason, problem-solve, and think critically should become a central focus of science curriculum. This study will present four middle school science teachers' integration of SMILE (Stanford Mobile Inquiry-Based Learning Environment) to facilitate and scaffold students' question generation activities embedded in the teaching routines.

5.7 Schure Hall Room #105

Michael Uttendorfer

Engaging Math Activities for the NAO Robot



This presentation will demonstrate basic flowcharting concepts and strategies for the programming of the humanoid robot NAO. Learn how to make NAO walk, talk, and even dance. Share the fun of helping the presenter move NAO to a predetermined target using mathematical calculations of measurements such as robot's stride length, distance estimation and path angle. Learn how to engineer the robot to recognize faces, respond to speech commands and even recognize objects using simple drag and drop command. No prior coding or robotics experience is required.

6.1 Meet for Tour at Quad Entrance

Wisser Library, Hui-Yin Hsu, New York Institute of Technology

NYIT Wisser Library, School of Education

School of Education will showcase the STEM ed lab, including the following equipment: Oculus Rift, Nao robot, 3D printer, and Lego robotics.



6.2 Schure Hall Room #211

Joseph Zawicki, Dan MacIsaac, Kathleen Falconer

Gadgets in Optics - Applications for STEM Teaching and Learning



This session will focus on inexpensive demonstration items that illustrate optical principles while highlighting the application of STEM teaching and learning approaches. Participants will view integrated STEM lessons using readily available and inexpensive kits and/or materials.

6.3 Meet for Tour at Quad Entrance

David Fanning

NYIT STEAMed Vehicle Tour

The STEAM vehicle addresses the critical need for engaging students in the processes of innovation, creativity and technology so that they can become college and career ready. The project addresses the critical need for students to become creators of knowledge while presenting, sharing and publishing their designs and solutions to a larger audience, engaging in discourse around their designs, creations and inventions. Participants acquire strategies for problem solving that integrate STEAM into various activities and obtain skills in using various tools technological tools and processes. This project provides educators with creative, student-powered, hands-on STEAM learning opportunities that align to Common Core and Next Generation Science Standards. Specific strategies are designed to address the needs of female students, students of color and students in poverty so they can see themselves participating in STEAM related careers and continuing education.



6.4 Schure Hall Room # 212

Elizabeth Chatham, Leigh Hope Wood, Bronx Latin - New Visions for Public Schools, , Rebecca Glavan
Hudson River Ecology: Using data to explore the impact of invasive species.

An immersive experience based on a unit from the New Visions Living Environment curriculum project. Participants will learn how to engage students using teaching materials created by The American Museum of Natural History and adapted for the classroom by New Visions teachers. These materials, including a graphing tool, support students in using data to construct a scientific explanation.



6.5 Schure Hall Room #102

Bishop Jane , Alicia Kachadourian, Bank Street College School For Children, Jenny Ingber, American Museum of Natural History, Bank Street College Kerlin Institute

Building Meaning Through Experiential Learning for Alternate Learners

What do you do when you need to teach but are given insufficient or inadequate materials or supplies? This is a story of one self contained special education teacher in a Title I school. Due to familial and/or economic circumstances, some children have limited experience with the world. Experiential Multisensory-based learning inside and out of the classroom were utilized to build the background knowledge of students and present the curriculum in a way that they could understand. As a 2015-16 Kerlin Institute Fellow (at Bank Street College), I have had the opportunity to research and study the way my special education students (in the New York City Department of Education) learn.



6.6 Schure Hall Room #206

Brian Vanek

Lego Mindstorms programming with Robot C

This session will provide you with the building blocks to integrate robotic programming with Robot C into your classrooms. The participants will build and program a Lego Mindstorms robot using the RobotC software to solve various challenges. Connections to standards and student success will be discussed.



6.7 Schure Hall Room #107

Matthew McGuire, AJ Longware, NYSTEEA Engineering for All (EfA)

Engineering for All (EfA) -WATER: The World in Crisis, FOOD: Vertical Farming – Feeding 9 Billion People

Use water filtration and vertical growth hydroponic systems as a means to leverage students' interests in social equity and build awareness of how engineering can address global and community concerns. Students use an informed design process to explore and problem solve to find potential solutions to these concerns. Engineering for All promotes the potential of engineering as a social good with overarching STEM ideas and practices.



Conference Posters:

A. Sunday 5:00PM – 6:00PM

Stalten Hall

B. Monday 5:30PM to 6:30PM

De Seversky Mansion

Cash Bar available during both poster sessions...

Barbara Algarin, Josh Ng - Lower Manhattan Community Middle School

Maximizing student learning in the science classroom through technology integration

The successful integration of technology can amplify any classroom. Many Applications allow teachers to collect and document student learning in real time, increase engagement, equally participate and collaborate in the writing process and provide the more artistic students a forum to display their learning. The presenter will share the experience of integration several applications including Google Apps for Education, to showcase how to maximize learning in the science classroom through the use of technology.

Rebecca Glavan

Using Mobile Learning Apps and Social Media in the STEM Classroom

The presenter will discuss the use of mobile learning apps and social media in the science classroom for learning and disseminating information. Specific apps will be discussed in the context of a social action project to help students plan, stay organized, interact, get and give immediate feedback, collaborate and assess their work. Guiding learning through virtual assignments, online materials and assessments, accessible from any device at any time, will be covered.

Sharry Whitney, Terry Talley, Rice University/Accelerate Learning

STEM Literacy: Literacy Strategies for Making Science Text Meaningful

Scientific Literacy is grounded in understanding specific science concepts that are at the heart of a strong STEM program but are often difficult to attain through complex science text. Join us as we learn the power of using Close Reading strategies to engage students in reading, writing, and discussing the science text in collaborative groups, which will lead to student mastery and high achievement. This session will convince you that your students CAN read science and build the capacity for scientific literacy success in your STEM classroom.

Sharry Whitney, Terry Talley, Rice University/Accelerate Learning

Claim-Evidence-Reasoning: The Value of Using the Scientific Explanation Framework in STEM

Claim-Evidence-Reasoning is a way for students to explain, in a scientific way, how their observations and data from an investigation are connected to science knowledge. By first analyzing evidence to make a claim statement about what occurred, students are then taught to use scientific reasoning to explain how the claim is connected to what they already know about phenomenon. This acclaimed and highly successful instructional strategy is changing how lab conclusions are written and finally making science investigations meaningful for students.

Suzanne Rayson, Susan Jaquish, Grade 4 teacher at PS 102, John Cingari, Grade 3 ICT teacher at PS 102
STEAMing into Their Future

The session will demonstrate how STEM disciplines can be woven together with ELA and the Arts to create an innovative STEAM curriculum that engages the natural curiosity of elementary learners and immerses them in the rigors of STEM discovery and Arts expression. Presenters will demonstrate how core content, aligned under a STEAM title, challenges growing minds to apply higher order thinking and disciplined behaviors to find solutions to 'real world' problems. Participants will also have the opportunity to see unique K-5 units of study and authentic collaborative student work that communicate the wonders and possibilities of STEAM.

Joseph Heimburger, Dan MacIsaac, Buffalo State College
Action Research and Design-Based Research for Physics Teacher Preparation in Germany: A Case Study

Matthew Pappas
Mission to Mars: A Collaborative Approach to a Multidisciplinary Problem

Mimi Pezzuto, Stacy Gropack, Dean, LIU Health Prof and nursing
Engaging High School Students in an introduction to the allied health professions

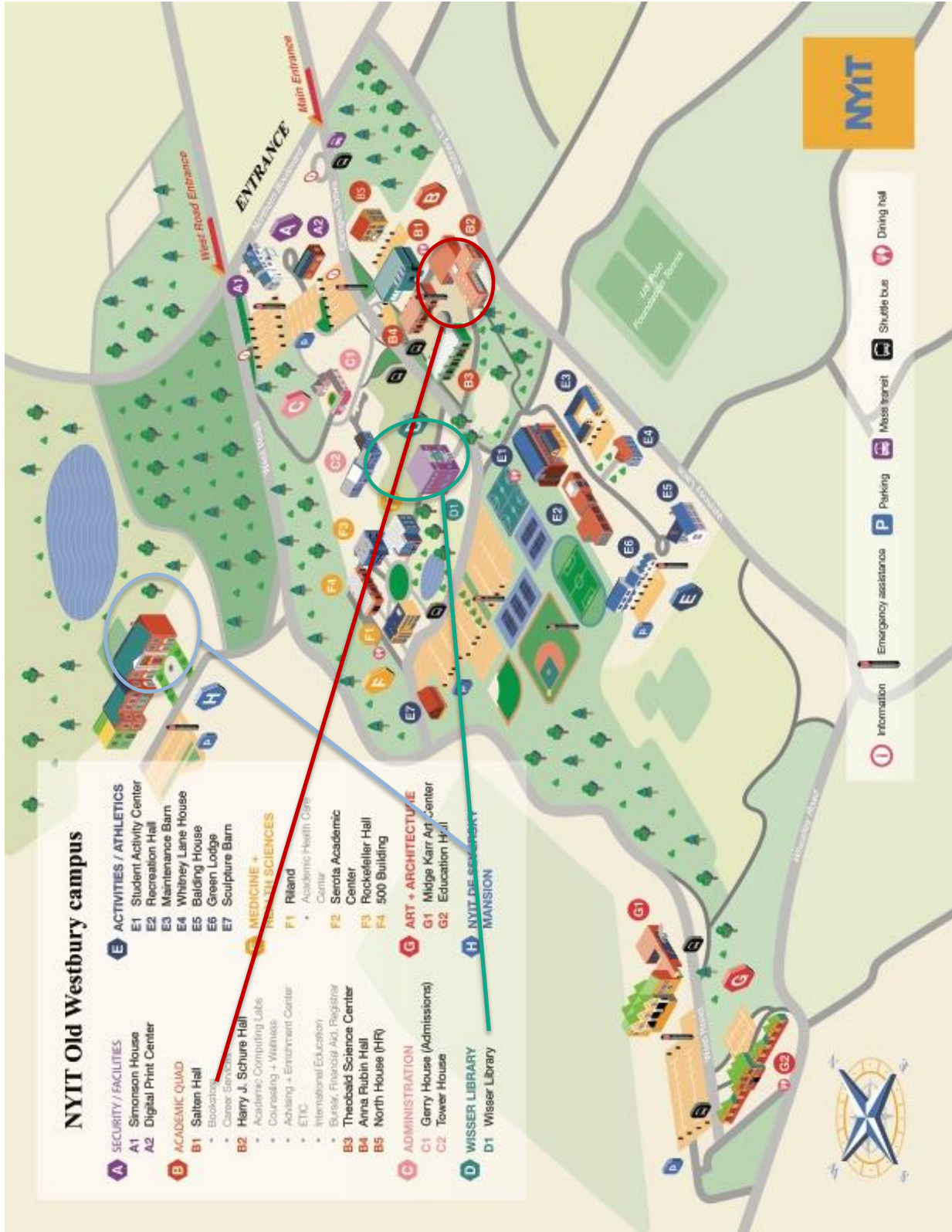
Andrew Roberts, Dan MacIsaac SUNY Buffalo State College
Making Physics Videos using iPads

Frank Roma
Using STEM to Describe the Groundwater Contamination of a Chemical Spill and its Health Effects.

Joseph Zawicki , Dan MacIsaac, Kathleen Falconer, Catherine Lange
Gadgets in Optics - Applications for STEM Teaching and Learning

NYIT Old Westbury campus

- A SECURITY / FACILITIES**
 - A1 Simonson House
 - A2 Digital Print Center
- B ACADEMIC QUAD**
 - B1 Saitten Hall
 - Bookstore
 - Career Services
 - B2 Henry J. Schure Hall
 - Academic Computing Labs
 - Counseling + Workshops
 - Advising + Enrollment Center
 - ETC
 - International Education
 - Bureau, Financial Aid, Registrar
 - B3 Theobald Science Center
 - B4 Anna Rubin Hall
 - B5 North House (HR)
- C ADMINISTRATION**
 - C1 Gerry House (Admissions)
 - C2 Tower House
- D WISSER LIBRARY**
 - D1 Wisser Library
- E ACTIVITIES / ATHLETICS**
 - E1 Student Activity Center
 - E2 Recreation Hall
 - E3 Maintenance Barn
 - E4 Whitney Lane House
 - E5 Balding Lodge
 - E6 Green Lodge
 - E7 Sculpture Barn
- F MEDICINE + HEALTH SCIENCES**
 - F1 Pitland Center
 - Academic Health Care Center
 - F2 Seneca Academic Center
 - F3 Rockefeller Hall
 - F4 500 Building
- G ART + ARCHITECTURE**
 - G1 Midgge Karr Art Center
 - G2 Education Hall
- H NYIT DEPARTMENT MANSION**



- Information
- Emergency assistance
- Parking
- Message
- Shuttle bus
- Dining hall

