



remakelearning.org

# STEAM Innovation Summer Institute 2015

*for teachers & learning enthusiasts*

*Brought to you by The South Fayette Township School District  
through the generous support of  
The Grable Foundation*





Pittsburgh is the first U.S. city to receive the Tribeca Disruptive Innovation Award for its collaborative network of people, projects and organizations working together to remake learning.  
<http://tinyurl.com/jvu5wjq>

## Building a Future-Focused Vision for Education in the Greater Pittsburgh Region through a Collaborative Effort

Leading expert on innovation Tony Wagner, Founder of Harvard's Change Leadership Group, has discovered through his research that cultures of innovation are based on collaboration, interdisciplinary problem-solving, and intrinsic motivation. If we are committed to developing our students to be innovative thought leaders of tomorrow, we must change the culture of our schools by remaking teaching and learning.

Remaking teaching and learning sounds like a monumental task. It involves leadership, strategic vision, enabling success by removing barriers, and the ability to sustain and accelerate success. Through the efforts of The Grable Foundation, The Sprout Fund, Remake Learning Network, Center for Creativity, and local foundations, universities, and businesses, Pittsburgh has become a hub of innovation.

For the last five years, South Fayette Township School District has been developing a STEAM Model for Innovation. We have been re-thinking the best approach for professional development as a means to engage and sustain innovation. Through generous support from The Grable Foundation, we have been challenged and encouraged to make innovation happen in regional schools by offering the STEAM Summer Institute.

It is our sincere hope that by building this collaborative environment among our teachers we can transform education through innovation. Please join us as together we shape the future of teaching and learning in our region.

*Aileen Owens  
 Director of Technology and Innovation  
 The South Fayette Township School District*



## Expectations for Participants: The South Fayette Township School District STEAM Innovation Summer Institute

The Institute is meant to act as a springboard to a greater vision. Participants are expected to embed their favorite ideas learned at the Institute, whether as a capstone project or classroom lessons, into teaching and learning.

The STEAM Innovation Summer Institute is meant to provide professional development opportunities to assist districts in transforming education through innovation and to provide experiences for teachers that will become a springboard to a greater vision. The colleagues you meet in each session will come from school districts throughout the region and will become your new collaborative team. Our hope is that you will collaborate and support one another while you prepare to embed new ideas from the Institute into teaching and learning. We will provide an online management tool for each session that will allow you to communicate with your colleagues through distance throughout the year. Our teacher facilitators may be able to provide some guidance during the year to help support your initiatives, but we believe that the collaborations you build will strengthen your success.

Our expectation is that during the 2015-2016 school term you will complete surveys that you receive from the director of the Summer Institute which will help us learn the impact the Institute had on teaching and learning. The information you provide will also provide the feedback we need for continuous improvement. We are dedicated to improving our services to you and your assistance is greatly appreciated.

As you look through this registration packet you will find links to register for each inspired learning session. We have limited the number of participants in each session in order to maintain an environment where you can learn comfortably. There may be some sessions that fill up quickly. For this reason we may contact you to ask if you would prefer to be on a waitlist or switch to another session. You will be contacted by email to confirm your place in the session. The instructor may notify you beforehand to let you know about any software downloads or any pre-course materials to help you prepare. Most importantly, we hope you enjoy!

*If you need additional information or have any issues with the registration process please contact Aileen Owens at [aowens@southfayette.org](mailto:aowens@southfayette.org)*



**remake**  
learning

Engineers, Designers, Inventors and Computer Programmers: Instill the Passion K-2+

## Join the Maker Movement: Nurture Your Youngest Engineers, Inventors, and Computer Programmers

**Facilitator:** Melissa Unger, K-2 STEAM Teacher, South Fayette Township School District

**Date:**

Session I: Monday, June 15 - Tuesday, June 16

Session II: Wednesday, June 17 – Thursday, June 18

**Schedule for Inspired Learning Two-Day Sessions:**

8:30am – 11:30am: In session

11:30am – 1:00pm: Lunch (Off-campus on your own)

1:00pm – 4:00pm: In session

**Grade Level:** K-2 with opportunities for 3-5

**Class Size:** limited to 15 participants

**Description:** The Maker Movement is the term now used for creating inventors, designers, and tinkerers. In this innovation-centered economy, it is considered critical to America's future for our schools to create the innovators of tomorrow. Join us as we provide you with a springboard of

Maker experiences to help you set up your own MakerSpace in your school for young engineers, designers, and computer programmers! You will learn how to introduce elementary classrooms to mechanical engineering by making squishy circuits with conductive Play-Doh and LED lights and then automate student inventions using LittleBits and MaKey MaKey. Then, you'll learn the basics of computer programming and computational thinking as you design digital stories using Scratch Jr. There will be many exciting opportunities to share – bring your thinking cap and be prepared to have fun inventing and making!

**Click on this link to register for Session I:**

<https://www.surveymonkey.com/r/102Maker>

**Click on this link to register for Session II:**

<https://www.surveymonkey.com/r/103Maker>

## Create the Innovators of Tomorrow: Introduction to Computer Programming, Engineering and Design with Scratch

**Facilitator:** Shad Wachter, South Fayette School District, Technology Literacy Teacher Grades 3-5

**Date:** Monday, June 15 – Thursday, June 18

**Schedule for Inspired Learning Four-Day Session:**

8:30am – 11:30am: In session

11:30am – 1:00pm: Lunch (Off-campus on your own)

1:00pm – 4:00pm: In session

**Grade Level:** 3<sup>rd</sup> – 8<sup>th</sup> with opportunities from 8<sup>th</sup> – 12<sup>th</sup> and beyond

**Class Size:** Limited to 15 participants



**Description:** At South Fayette School District we believe computational thinking is the new literacy; therefore we have introduced a vertically aligned K-12 computer programming initiative. Scratch block-based programming language is our foundation. Scratch is so powerful in teaching computer programming concepts and practices that it is used for the first two weeks in the Introduction to Computer Programming course at Harvard University. This inspired learning session will help you get started. Here you will learn the concepts and practices of computational thinking and dispositions of good problem-solvers (Habits of Mind) while learning to code using Scratch programming language. In addition you will use computer programming to create interactive stories and games, and will add extensions to Scratch using motors and sensors, to program robots to move. But wait, there's more! You will use Scratch to program MaKey MaKey circuit boards to design and build your own unique inventions. Most importantly, during this session you will learn to build collaborative projects to connect to other schools, your newfound inspired learning friends, as you implement what you've learned.

**Click on this link to register (we know you want to):** <https://www.surveymonkey.com/r/101Scratch>



Computational thinking is the new literacy. At South Fayette School District, Scratch is our foundation for teaching computer programming in K-5.

## Project-based STEAM Learning as a Catalyst for Engineering and Prototype Design

**Facilitator:** Melissa Drake, South Fayette School District, STEAM Teacher Grades 3-5

**Description:** Preparing students from an early age to solve real-world problems is at the heart of South Fayette's project-based STEAM Studio Model for Innovation. Project-based STEAM activities can connect to all areas of the curriculum. In this inspired learning session you will explore the Lego WeDo Robotics curriculum, while learning how to develop your own unique design challenges. During this session you will experience design challenges created by South Fayette's STEAM teacher and students, to encourage innovative thinking through computer programming. Interested in helping your students understand decimals and inequalities? Try making and programming a prototype for an environmentally responsible sprinkler system while learning to program tilt sensors and distance sensors. Do you have students who struggle to understand circumferences? Here's an idea. You can show them how to use computer programming to make a spin-art machine. In no time at all you will come up with a few of your own inventions to share! The first day of the workshop is focused on you - the teacher - becoming familiar with the technology. The second day of the workshop we invite you to bring your son or daughter to work with you to help you see how programming helps students grasp math concepts while being engaged with engineering and programming challenges.

**Date:**

Session I: Monday, June 15 - Tuesday, June 16

Session II: Wednesday, June 17 - Thursday, June 18

**Schedule for Inspired Learning Two-Day Sessions:**

8:30am - 11:30am: In session

11:30am - 1:00pm: Lunch (Off-campus on your own)

1:00pm - 4:00pm: In session

**Class Size:** limited to 15 participants

**Grade Level:** 3<sup>rd</sup> - 8<sup>th</sup>

Click on this link to register for Session I: <https://www.surveymonkey.com/r/STEAM108>



Click on this link to register for Session II: <https://www.surveymonkey.com/r/STEAM109>



Strive for Deeper Learning through Project-based STEAM Initiatives

## Environmental Literacy as a Catalyst for Embedding Design Thinking, STEAM Innovation and Learning

**Facilitator:** Dr. Lorena Ruberg, Visiting Assistant Professor in the College of Education and Human Services at WVU and Tess Sheppard, Chemistry Major, Wheeling Jesuit University, undergraduate research as a research assistant in the hydroponics lab at Wheeling Jesuit.

**Date:** Monday, June 15 – Thursday, June 18

**Schedule for Inspired Learning Four-Day Session:**

8:30am – 11:30am: In session

11:30am – 1:00pm: Lunch (Off-campus on your own)

1:00pm – 4:00pm: In session

**Grade Level:** 4<sup>th</sup> – 12<sup>th</sup> and beyond

**Class Size:** Limited to 15 participants



**Description:** South Fayette and Fort Cherry School Districts recently completed an environmental studies program for K-4 sustainability by growing plants hydroponically and by developing outdoor raised garden beds as part of their art and poetry garden initiative. The districts have now partnered to form a consortium with regional schools to create deeper learning and share the strengths of programs with similar visions. We'd like to share this with you. Dr. Lorena Ruberg and Tess Sheppard will offer hands-on lessons on hydroponic growing that will be easy to replicate with students of all ages. Ideas for embedding environmental literacy in all curriculum areas will be provided by teachers and other regional experts. Other topics addressed will be aquaponics and aquaculture. Before you leave you will have everything you need to launch your own environmental literacy program with your own unique spin.

Click on this link to register: <https://www.surveymonkey.com/r/ENVLIT110>



Foster Environmental Literacy to Promote Understanding, Problem-solving, Citizenship, and Action

## AppJam: Designing Mobile Apps for Social Good

It's the perfect project to build the STEAM thought process into every core content area without coding an App.

**Facilitator:** Teresa DeFlicht, Special Projects Manager; Frank Kruth, South Fayette School District, Middle School STEAM Teacher; and Anthony Mannarino, South Fayette School District Middle School Technology Education Teacher

**Description:** Unleash your entrepreneurial spirit in this fast-paced, human centered design AppJam! As a member of a design team you will take on one of the following roles: computer programmer, artistic director, marketing/business specialist, or education content specialist. You have less than six hours to develop a mock-up of a prototype for an app and pitch-it to a panel of judges. Think SharkTank! Your design team will be immersed in creating an app for a non-profit, to provide a service for social good. Your team will travel to a non-profit and be immersed in every aspect of the business as you problem-solve to develop an app to help improve services and communication provided through this non-profit. You will create wire-frames for your app, develop a core message, and a marketing plan for distribution. But don't feel overwhelmed. To help you with this challenge you will be assisted by software engineers, game designers, and others in the field during the day. So what are you waiting for? Let's get to it! It's the perfect project to implement in your school to build STEAM into every core content area.

**Date:**

Session I: Monday, June 15

**Schedule for Inspired Learning One-Day Sessions:**

8:30am – 4:00pm

**Class Size:** limited to 15 participants

**Grade Level:** Teachers grades 6<sup>th</sup> – 12<sup>th</sup>

**Class Size:** Limited to 30 participants

**Location:** Off-site at a local non-profit



Click on this link to register for Session I: <https://www.surveymonkey.com/r/AppJam111>

**Important Note:** Participants enlisted as programmers on the design teams are given first consideration to register for the follow-up three-day workshop, Making Apps with App Inventor. Our hope is to provide teachers with the human centered design skills during AppJam and then teach skills for creating an app for their classroom in the follow-up session.



Personalized Learning through Unique STEAM Lessons such as App Design

## The Awe Factor: Designing a Mobile App for Your Classroom with App Inventor

During AppJam you learned how to think through the process of building an app. Now for those of you interested in building one for your classroom – this is the next step!

**Facilitator:** Frank Kruth, South Fayette School District, Middle School STEAM Teacher; and Anthony Mannarino, South Fayette School District Middle School Technology Education Teacher

**Description:** Most likely you have thought about the perfect app for your classroom but it just doesn't exist. Why not get started now, and learn to create an app that will be useful to your students, to help them learn those difficult concepts they have been struggling with or to simply engage them in learning to create and invent on their own? App Inventor, developed by MIT Media Center, is a block-based app development tool that actually mimics the computational thinking process used in text-based code. It's an important and very powerful tool for building a vertically aligned computer science initiative. In this three-day inspired learning session, you will bring your ideas to life as you begin to develop an app for a mobile device. It may not be that million-dollar idea that launches your career as an entrepreneur, but it may be just the thing that gets you --- and your students -- started. The cool factor lives here!

**Date:**

Session: Tuesday, June 15 through Thursday, June 18

**Schedule for Inspired Learning Three-Day Session:**

8:30am – 11:30am: In session

11:30am – 1:00pm: Lunch (Off-campus on your own)

1:00pm – 4:00pm: In session

**Class Size:** limited to 15 participants

**Grade Level:** Teachers grades 6<sup>th</sup> – 12<sup>th</sup>

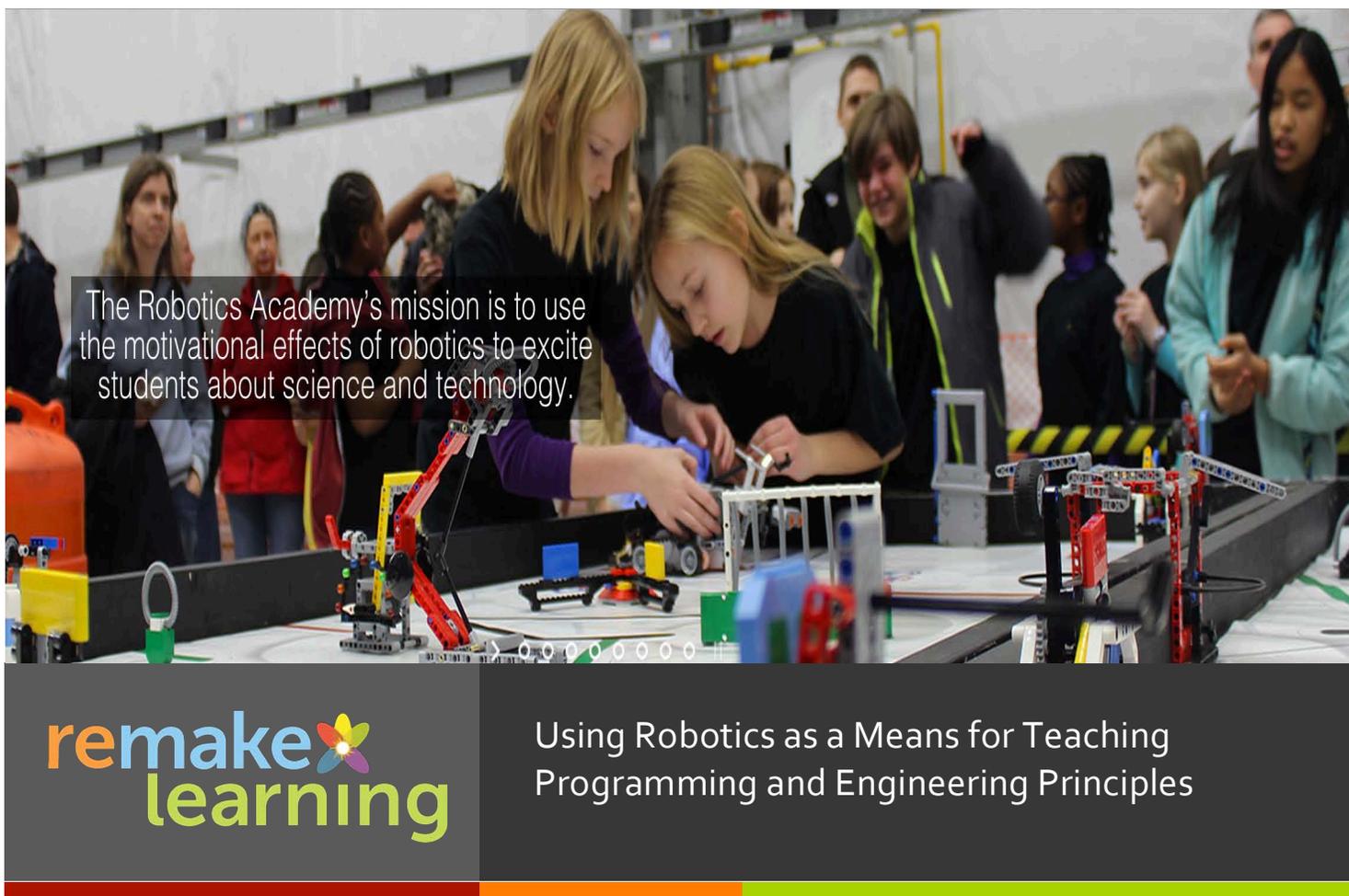
Click on this link to register for this session: <https://www.surveymonkey.com/r/AppInventor112>



**Important Note:** Participants enlisted in AppJam as programmers on the design teams are given first consideration to register for the follow-up three-day workshop, Making Apps with App Inventor. Our hope is to provide teachers with the human centered design skills during AppJam and then teach skills for creating an app for their classroom in the follow-up session.



Computational Thinking is the New Literacy: The Thought Process of Thinking Logically, Algorithmically, Abstractly, and Recursively



Using Robotics as a Means for Teaching  
Programming and Engineering Principles

## Changing Culture in Robotics Classrooms with Guidance from Carnegie Mellon Robotics Academy

**Facilitator:** Robin Shoop, Director of CMU Robotics Academy

**Date:** Monday, June 15 – Thursday, June 18

**Schedule for Inspired Learning Four-Day Session:**

8:30am – 11:30am: In session

11:30am – 1:00pm: Lunch (Off-campus on your own)

1:00pm – 4:00pm: In session

**Grade Level:** 5<sup>th</sup> – 8<sup>th</sup> and beyond

**Class Size:** Limited to 15 participants

**Description:** On a grant from the NSF and The Grable Foundation, The National Robotics Center provides teacher training designed to change the culture in the robotics classroom. This inspired learning session focuses on developing innovative curriculum that places students from grades 5- 12 into activities that promote computational thinking practices as it teaches creativity, abstraction, algorithms, and programming. Often hardware costs for robotics are prohibitive therefore participants will have the opportunity to rigorously test the Robot Virtual World software. An exciting opportunity for all!

**Click on this link to register:**

<https://www.surveymonkey.com/r/Robotics113>



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Embed Creativity and Interactivity in all  
Curriculum Areas through Arts & Bots

## Arts & Bots: Design and Animate Unique Robotic Inventions using Paper, Hot Glue, and a Little Imagination

**Facilitator:** Dr. Tom Lauwers, founder of BirdBrain Technologies, maker of the Finch Robot and Hummingbird Robotics Kit.

**Date:** Monday, June 15 – Tuesday, June 16

**Schedule for Inspired Learning Two-Day Session:**

8:30am – 11:30am: In session

11:30am – 1:00pm: Lunch (Off-campus on your own)

1:00pm – 4:00pm: In session

**Grade Level:** 3<sup>rd</sup> – 8<sup>th</sup> with opportunities from 8<sup>th</sup> – 12<sup>th</sup> and beyond

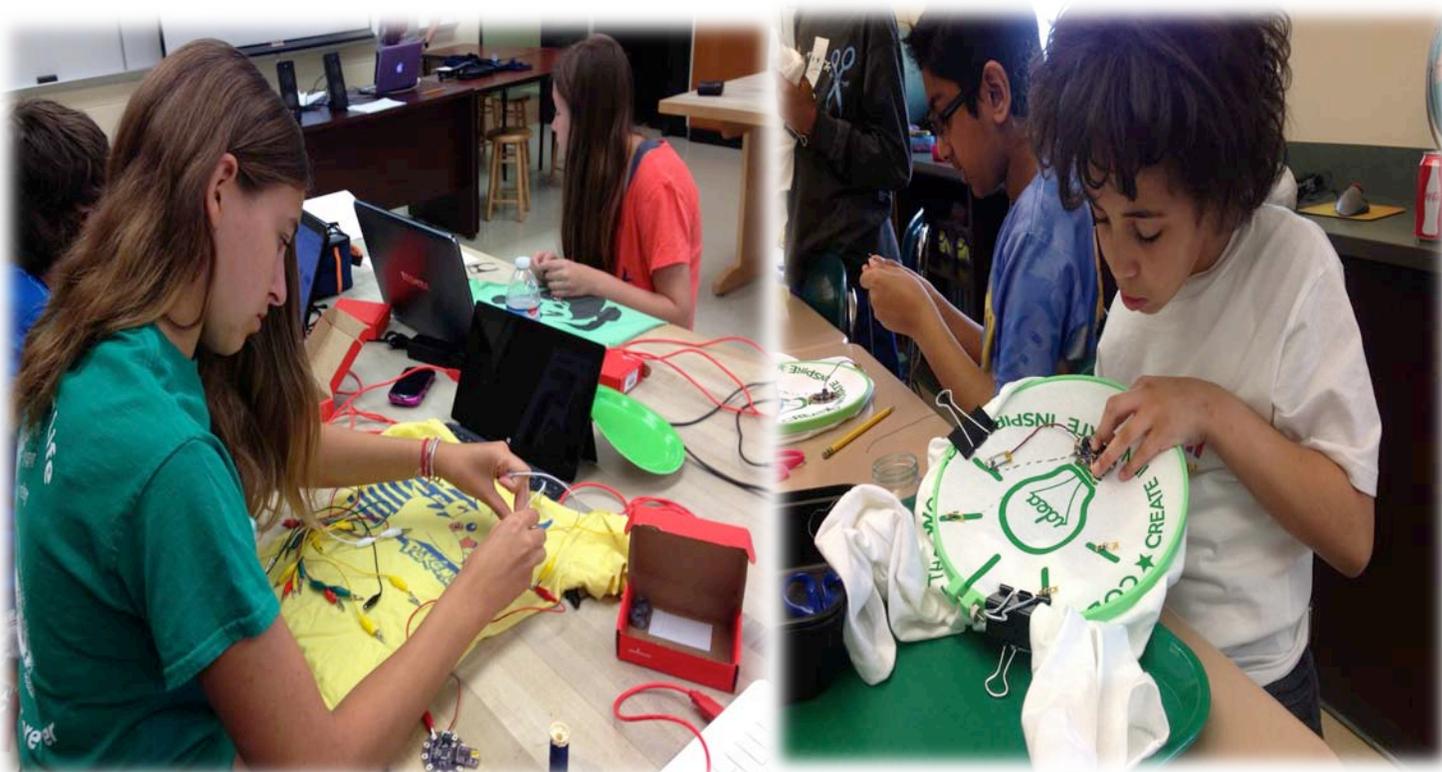
**Class Size:** Limited to 15 participants

**Description:** Developed by the Community Robotics, Education and Technology Empowerment Lab (CREATE Lab) at Carnegie Mellon University, Arts & Bots is a program where students combine craft materials, robotic components and various programming tools to build and animate their own robotic creations. You will learn to use a Hummingbird kit, a customized control board with a variety of lights, sensors and motors, and program your creation

through an easy-to-learn, drag-and-drop environment. The value of this program is that students will learn to become inventors of technology rather than users of technology – and that is a very powerful life-changing experience. You don't want to miss this!

**Click on this link to register:**

<https://www.surveymonkey.com/r/ArtBots114>



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Learning Computational Thinking by Doing and Making through eTextile Design

## Human Centered eTextile Design Challenge: Project Runway Meets SharkTank

**Facilitator:** Kylie Pepler, Director of Creativity Labs, Indiana University, Bloomington and Team; and Aileen Owens, Director of Technology and Innovation, South Fayette Township School District

**Date:** Monday, June 15 – Thursday, June 18

**Schedule for Inspired Learning Four-Day Session:**

8:30am – 11:30am: In session

11:30am – 1:00pm: Lunch (Off-campus on your own)

1:00pm – 4:00pm: In session

**Grade Level:** 6<sup>th</sup> – 12<sup>th</sup> and beyond

**Class Size:** Limited to 15 participants

**Description:** In this Human Centered Design approach to STEAM Learning, design teams must create an eTextile clothing line, company branding, and marketing plan and then build a prototype of their clothing line. Participants test their understanding of electrical circuitry and computer programming as they program Arduino boards to make LED lights blink on and off to accentuate their unique designs. During a pitch fest, teams must sell their ideas to a panel of judges from local design firms. After this session your next stop just might be SharkTank!

Click on this link to register: <https://www.surveymonkey.com/r/115eTextiles>

## The Fundamentals of Game-Based Design through Zulama

**Facilitator:** Nikki Navta, President, Creator and CEO of Zulama

**Date:** Wednesday, June 17 – Thursday, June 18

**Schedule for Inspired Learning Two-Day Session:**

8:30am – 11:30am: In session

11:30am – 1:00pm: Lunch (Off-campus on your own)

1:00pm – 4:00pm: In session

**Grade Level:** 3<sup>rd</sup> – 8<sup>th</sup> with opportunities from 8<sup>th</sup> – 12<sup>th</sup> and beyond

**Class Size:** Limited to 15 participants



**Description:** The South Fayette STEAM Innovation Summer Institute will partner with Zulama, a spin-off company from Carnegie Mellon's Entertainment Technology Center, to offer two days of professional development to educators to innovate through the use of games in education. In this hands-on BYOD inspired learning experience, for those new to game-based learning, educators will learn the basics of game design with opportunities and strategies to effectively integrate games into quality teaching in their professional roles. We are certain you will enjoy this experience!

**Click on this link to register:** <https://www.surveymonkey.com/r/116Games>

**Prepare Your Students For Tomorrow's Jobs** 

Bring Innovation to Your District and Provide Opportunities that Make Students Want to Learn

The advertisement features a background image of four diverse students smiling. A green banner with white text and an arrow icon is overlaid on the image. Below the image, a dark grey box contains the text 'Bring Innovation to Your District and Provide Opportunities that Make Students Want to Learn'. The entire advertisement is framed by a decorative bar at the top and bottom with segments in red, orange, and green.

## Rapid Prototyping with 3D Printing

**Facilitator:** Brian Garlick, South Fayette School District, Education Technology Teacher Grades 8-12

**Description:** Why is 3D printing such an important contribution to innovation? It's because 3D printing is remaking product development and the manufacturing process. Manufacturing can now be done without a factory. 3D printing allows for rapid prototyping and gives DIY designers and inventors a competitive edge. In this session we will help you learn the value of rapid prototyping as part of the engineering and design problem-solving process and as an aspect of such diverse industries such as aerospace, automotive and healthcare. There are so many ways to apply this process in your classroom. You will have the opportunity to become familiar with Inventor software and create the first design and 3D printed prototype. Through this STEAM learning initiative, educators will find many connections to a variety of curriculum areas. The course will connect educators to designers in the field to learn how to make activities in the classroom relevant to real world opportunities. The next industrial revolution is bringing manufacturing to the world. Don't be left behind. Start today.

**Date:**

Session I: Monday, June 15 - Tuesday, June 16

Session II: Wednesday, June 17 – Thursday, June 18

**Schedule for Inspired Learning Two-Day Sessions:**

8:30am – 11:30am: In session

11:30am – 1:00pm: Lunch (Off-campus on your own)

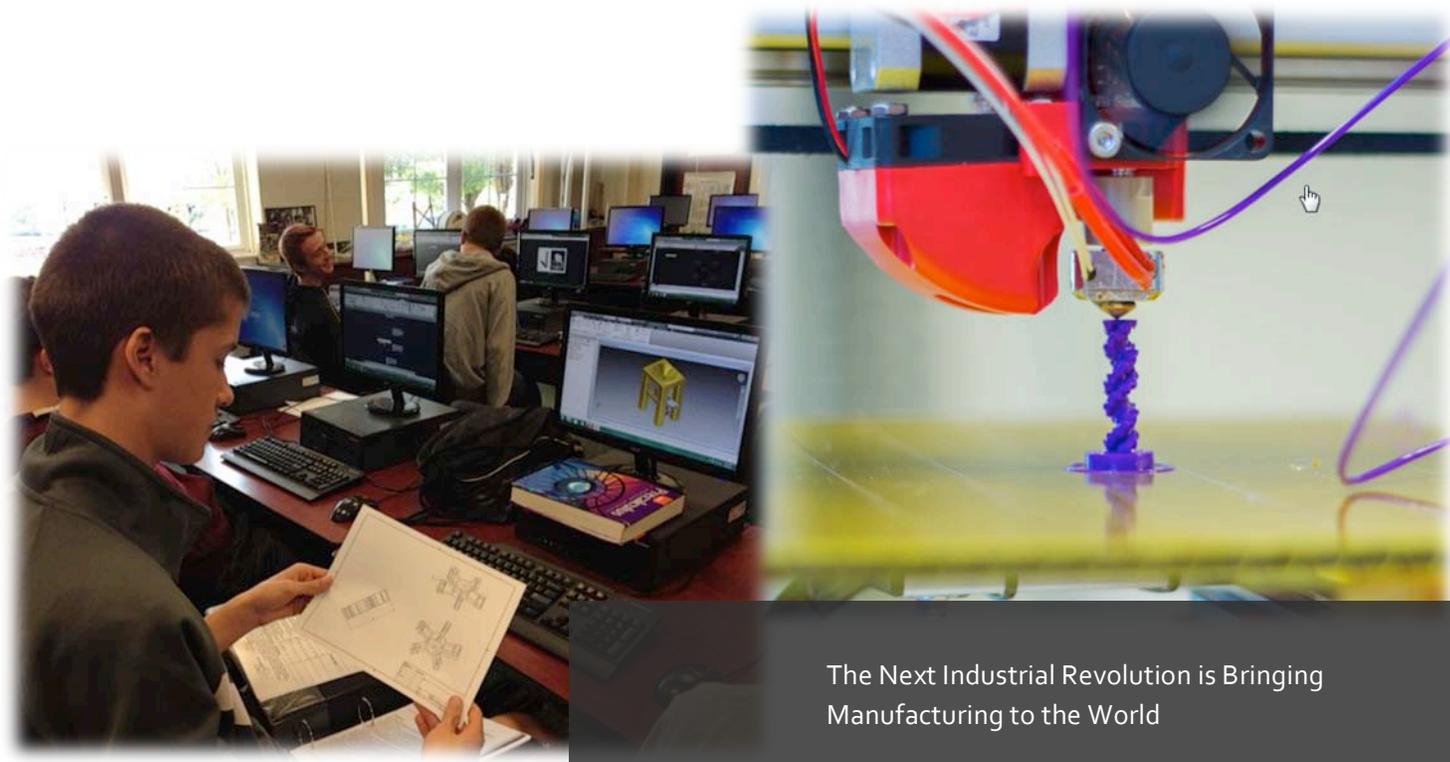
1:00pm – 4:00pm: In session

**Class Size:** limited to 15 participants

**Grade Level:** 6<sup>th</sup> – 12<sup>th</sup>

Click on this link to register for Session I: <https://www.surveymonkey.com/r/117Print>

Click on this link to register for Session II: <https://www.surveymonkey.com/r/118Print>

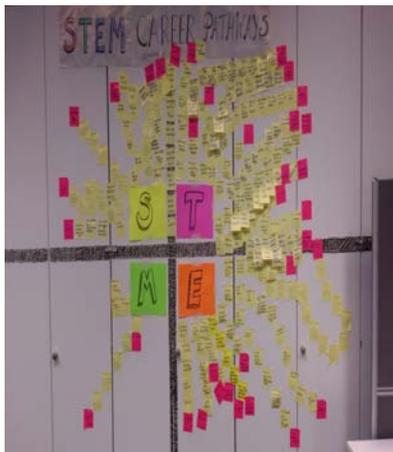


The Next Industrial Revolution is Bringing  
Manufacturing to the World

## Enhancing the Classroom Experience through Game Design

This series of one-day inspired learning sessions is devoted to embedding game design into your classroom.

### Visual Curriculum Design and Badge-based Curriculum Design



**Facilitator:** Lucas Blair PhD, Educational and Therapeutic Game Designer, Little Bird Games

**Date:** Monday, June 15

**Schedule for Inspired Learning One-Day Session:**

8:30am – 11:30am: In session

11:30am – 1:00pm: Lunch (Off-campus on your own)

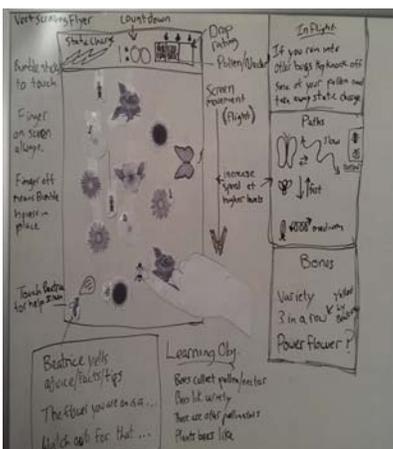
1:00pm – 4:00pm: In session

**Class Size:** limited to 20 participants

**Description:** Learn the steps for visualizing your curriculum as a way to enhance the student experience and make your own process more manageable. In addition, with a few more steps you can turn your curriculum into a badge pathway that can be incorporated into digital badging platforms.

Click on this link to register: <https://www.surveymonkey.com/r/104GameVisual>

### Applying Game Design Techniques to Improve Student Engagement



**Facilitator:** Lucas Blair PhD, Educational and Therapeutic Game Designer, Little Bird Games

**Date:** Tuesday, June 16

**Schedule for Inspired Learning One-Day Session:**

8:30am – 11:30am: In session

11:30am – 1:00pm: Lunch (Off-campus on your own)

1:00pm – 4:00pm: In session

**Class Size:** Limited to 20 participants

**Description:** Participants will learn techniques to improve student engagement via improved feedback, goal setting, autonomy, and identity. The session will also explore examples of these techniques from games.

Click on this link to register: <https://www.surveymonkey.com/r/105GameVisual>

## Enhancing the Classroom Experience through Game Design *(continued)*

This series of one-day inspired learning sessions is devoted to embedding game design into your classroom.



### How to teach game design and development

**Facilitator:** Lucas Blair PhD, Educational and Therapeutic Game Designer, Little Bird Games

**Date:** Wednesday, June 17

**Schedule for Inspired Learning One-Day Session:**

8:30am – 11:30am: In session

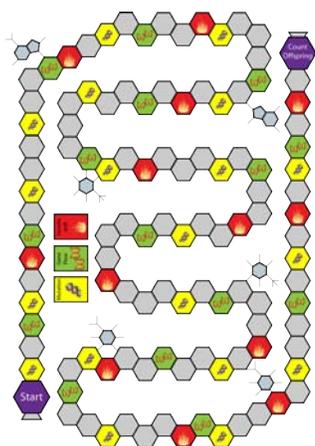
11:30am – 1:00pm: Lunch (Off-campus on your own)

1:00pm – 4:00pm: In session

**Class Size:** limited to 20 participants

**Description:** Learn methods for teaching game and simulation design to your students. These methods can be used for teaching workshops, curriculum units in your classroom, or expanded to implement for an entire semester. If this is something you have been considering, now is a great time to discovery through the help of an expert in the field.

Click on this link to register: <https://www.surveymonkey.com/r/106GameVisual>



### Using Games in the Classroom

**Facilitator:** Lucas Blair PhD, Educational and Therapeutic Game Designer, Little Bird Games

**Date:** Thursday, June 18

**Schedule for Inspired Learning One-Day Session:**

8:30am – 11:30am: In session

11:30am – 1:00pm: Lunch (Off-campus on your own)

1:00pm – 4:00pm: In session

**Class Size:** Limited to 20 participants

**Description:** You can use instructional game design to teach specific topics. Your students will be more engaged than ever. This session will also include using off-the-shelf games to teach specific topics or to enhance lessons.

Click on this link to register: <https://www.surveymonkey.com/r/107GameVisual>

## Meet the STEAM Innovation Summer Institute Inspired Learning Facilitators



### **Melissa Unger, STEAM Teacher K-2, South Fayette Township School District**

Melissa teaches students about computer programming helps them design, build, and bring their ideas to life as they conduct experiments, create inventions, and use technology to animate their projects. Melissa sponsors after school and summer enrichment activities related to technology.



### **Shad Wachter, Technology Literacy Teacher, Grades 3-5, South Fayette Township School District**

Shad prepares his 3rd, 4th, and 5th grade students with technology skills to be successful in a global society. Shad teaches digital citizenship, multimedia production, desktop publishing, robotics, and computer programming. With the understanding that computational thinking is the new literacy, he uses technology to facilitate student creativity, collaboration, communication, and critical thinking. Shad sponsors after school and summer enrichment activities related to technology and performing arts. He provides support and outreach to the Western Pennsylvania region and beyond through the STEAM Summer Institute and staff development.



### **Melissa Drake, STEAM Teacher Grades 3-5, South Fayette Township School District**

Melissa teaches STEAM classes for grades 3-5 at South Fayette Intermediate School. She has also taught in other non-traditional settings while serving as an Elementary Mobile Educator for Westminster College's Science In Motion Program and as an Environmental Educator at the McKeever Environmental Center. Melissa is a recent recipient of the Unboxed Teacher Award.



### **Laurie Ruberg, Assistant Professor, College of Education and Human Services, WVU**

Laurie received her Ph.D. in Curriculum and Instruction at Virginia Tech and is currently serving as a visiting assistant professor in the College of Education and Human Services at WVU. Previously, she worked as senior instructional designer and associate director for the NASA Classroom of the Future at Wheeling Jesuit University. Her research interests include instructional design, program evaluation, and STEM innovation. She has served as principal investigator for a diverse range of K-12 STEM curriculum, educator professional development, worker safety and health research, design, and evaluation projects. She has received awards for her multimedia curriculum design (AXIEM1999) and program evaluation work (AERA 2007) and was a finalist for the 2014 Brock Educator Prize. In March 2013, Laurie launched a new business called PLANTS, LLC to support hydroponics education activities for kindergarten through college level projects and received funding from *TechConnect West Virginia* and the *Sprout Foundation*.

## Meet the STEAM Innovation Summer Institute Inspired Learning Facilitators



**Tess Sheppard is a senior at Wheeling Jesuit University.** Tess has been involved in undergraduate research as a research assistant in the hydroponics lab at Wheeling Jesuit. In her junior year she provided part-time support for the Tech-Connect WV project titled, *Hydroponics for Appalachian Schools and Communities*, which was a partnerships project co-lead by Dr. Ruberg, representing PLANTS, LLC, and Dr. Mary Railing, Associate Professor, Chemistry and research liaison with the Wheeling Jesuit's Appalachian Institute. In her senior year and under the direction of Dr. Railing, Tess conducted a research study called, *Analysis of Metal Ion Absorption Compared to pH and Conductivity Changes in Hydroponic Growing Systems*, which she presented at the Apr 14, 2015 Wheeling Jesuit University Student Research Symposium.



**Teresa DeFlicht, Special Projects Manager, Children's Museum Pittsburgh**  
Teresa holds a Master of Arts in American History from Syracuse University Maxwell School of Citizenship and Public Affairs and a Bachelor of Arts in History from Saint Vincent College. She specializes in leading cross-sector teams to design and implement positive change in education, particularly in creating learning ecosystems that connect formal and informal learning. Teresa has developed an expertise in taking a holistic, systems approach to change and excels in strategic thinking and visioning. Additional passions and expertise include museum education, public history, digital learning, and community outreach. Current topics of exploration and research include the art of creating and maintaining effective collaborations and building internal capacity for systems change and external partnerships within organizations.



### **Frank Kruth, STEAM Coordinator, South Fayette Middle School.**

A veteran teacher for 13 years, Frank holds his National Board Certification in Career and Technical Education. He has been teaching mobile app design using App Inventor, to students in 6<sup>th</sup> grade and is implementing, through a grant with Digital Promise, a grant to deepen computational thinking through VEX IQ robotics. He is an expert at incorporating Project-Based Learning into all classes and will sit on the National Assessment of Educational Progress (NAEP) Technology and Engineering Standard Setting Panel this June in San Antonio, Texas.



### **Anthony Mannarino, Technology Education Teacher, South Fayette Middle School**

Anthony graduated from Cal U- Magna Cum Laude and has teaching Technology Education for 2 ½ years. In 2014, Anthony was selected by the Technology Education faculty at California University of Pennsylvania as the recipient of the Cole McMahon Recent Graduate Award. He has been teaching mobile app design using App Inventor, to students in 6<sup>th</sup> grade and is implementing through a grant with Digital Promise, a grant to deepen computational thinking through VEX IQ robotics. Anthony was a presenter at Three Rivers Educational Technology Conference in November of 2014 and recently presented at Robert Morris University Teaching and Learning Conference on Creating Innovative Classrooms.



### **Dr. Tom Lauwers, Founder of BirdBrain Technologies, Maker of the Finch Robot and Hummingbird Robotics Kit**

Dr. Tom Lauwers is the founder of BirdBrain Technologies, maker of the Finch Robot and Hummingbird Robotics Kit. The Finch is a small robot designed to promote an engaging introduction to the art of programming. Hummingbird is a kit of electronic & robotic parts that allows students to create and program robots built from kit components and craft materials. Together these products are in use in more than one thousand classrooms. Finch and Hummingbird are the result of separate NSF-sponsored research programs at the Carnegie Mellon Robotics Institute's CREATE lab. Tom received his PhD in 2010 for developing the hardware behind Finch and Hummingbird while at the CREATE lab. Tom lives in Pittsburgh with his wife, two kids, and a small army of robots.

## Meet the STEAM Innovation Summer Institute Inspired Learning Facilitators



### **Kylie Pepler, Associate Professor of Learning Sciences & Director of The Creativity Labs at Indiana University Bloomington**

An artist by training, Kylie engages in research that focuses on the intersection of arts, new media, computation, and informal learning. Her current work examines the media arts practices of urban, rural, and (dis)abled youth in order to support literacy, learning, and the arts in the 21st Century. This research is currently or has been supported by the National Science Foundation, the US Department of Education, the Wallace Foundation, the Spencer Foundation, the Moore Foundation, and the MacArthur Foundation's Digital Media and Learning Initiative.



### **Nikki Navta, Founder and CEO of Zulama, Digital Learning Evangelist**

Nikki is the founder and CEO of Zulama, a company that worked with faculty at Carnegie Mellon University's Entertainment Technology Center to develop a program that schools use to teach programming, art, and design skills to middle and high schoolers. The platform immerses students in the same technology used to design today's most popular video games. The program combines Science, Technology, Engineering, and Math with the Arts (STEAM) to give students both the skills and creativity they need to thrive in the new global digital workplace.



### **Brian Garlick, Technology Education Teacher, South Fayette High School**

Brian combines human centered design, problem-based learning, and STEAM as he works with students to design and innovate for local businesses and the community. Brian has facilitated many after-school activities such as BOTS IQ, Technology Student Association, Team America Rocketry Challenge, and the Governor's PA STEM Challenge. He has also partnered with businesses to have students solve real world problems for companies such as All-Clad and EAFab. The Consortium for Public Education recently awarded Brian the 2015 Champion of Learning Award.



### **Dr. Lucas Blair, Co-founder Little Bird Games**

Dr. Lucas Blair co-founded Little Bird Games, a serious game development company that specializes in educational and therapeutic games, in 2011. Prior to founding Little Bird Games Lucas was lead game designer and co-manager of RETRO Lab at the University of Central Florida. He received a M.S. in Instructional Technology from Bloomsburg University and a PhD in Modeling and Simulation from the University of Central Florida. His doctoral research explored the use of video game achievements to enhance player performance, self-efficacy, and motivation.



**Robin Shoop, Director of Carnegie Mellon Robotics Academy** With over 30 years experience in public education and over 10 years experience in project management, he has developed an expertise in educational research, curriculum development and project management. Robin manages multiple educational research projects that focus on finding ways to teach algorithmic and systems ways of thinking to middle school and high school level students in computer science and STEM education. He also coordinates and manages multiple project teams that develop tools for teachers in formal and informal education designed to make teachers more effective in the classroom.

## Meet the STEAM Innovation Summer Institute Team



### **Aileen Owens, Director of the STEAM Innovation Summer Institute and Director of Technology and Innovation, South Fayette Township School District**

As Director of Technology and Innovation for South Fayette Township School District, Aileen is focused on embedding computational thinking and the engineering and design problem-solving process into the K-12 curriculum, and simultaneously into connected learning initiatives, to empower our students to be the innovators of tomorrow. Aileen was the recent recipient of the Digital Innovation in Learning, Administrator Trailblazer Award 2014; the Digital Innovation in Learning, Administrators Winners Choice Award 2014 and; PAECT Chief Technology Officer of the Year 2015. For more information see <http://www.aileenowens.net>



### **Norton L. Gusky, Coordinator, STEAM Innovation Summer Institute**

Norton has been an Adjunct Faculty Member at the H. John Heinz III School of Public Policy and Management and has been an adjunct professor at the University of Pittsburgh. Gusky was the Coordinator of Educational Technology for twenty-one years for the Fox Chapel Area School District in Pittsburgh, PA. He is currently an educational technology broker for his own firm, NLG Consulting, LLC. He currently manages the Three Rivers Educational Technology Conference and the STEM Summit for the Pittsburgh Technology Council. Gusky is a member of the International Society of Technology in Education; and the co-chair of the Emerging Technology Committee for the Consortium of Schools Networked (CoSN). He also serves on the Board of Trustees for the Manchester Academy Charter School. Gusky's degrees include a B.A. in History from Dickinson College and an M.A.T. in Elementary Education from the University of Pittsburgh. He has completed post-graduate work in Instructional Technology at Penn State, as well as post-graduate work in Gifted Education and Computer Education at West Virginia University.



### **Maureen Pedzwater, Career and Business Development, STEAM Innovation Summer Institute**

Maureen has 21 years of career and workforce development with adults and youth throughout Southwestern Pennsylvania. Since 2003, Maureen changed her focus to working solely with public school students and since then has provided guidance to thousands of students, parents, teachers and administrators through career awareness of existing and emerging careers and development of 21<sup>st</sup> Century Skills programs. Her passion to provide Southwestern Pennsylvania youth with real time career focused experiences through project-based learning has built extensive school to business partnerships for student teams and local, national and international businesses. This provides a win-win for the partners; students learn to apply their academic classroom experience to solve real time problems; businesses receive fresh, unbiased, solutions to problems in all aspects of the business as the students use their extensive experience with technology and analysis to present their solutions.



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## Directions for Registering for the STEAM Summer Institute

Thanks to the generous support from The Grable Foundation participants will pay only a minimal registration fee of \$50 per day. After registering for your sessions you may make a check out to South Fayette Township School District.

Checks should be mailed beforehand to Brian Tony, Director of Finance, Administration Building, South Fayette Township School District, 3680 Old Oakdale Road, McDonald, PA 15057, Attn: Summer Institute. If payment is not received before June 15, you must arrive 30 minutes before the official start of the session in order to make your payment.

Thank you for your interest in the Summer Institute. If you require additional information please feel free to contact Aileen Owens at [aowens@southfayette.org](mailto:aowens@southfayette.org). We can't wait to see you soon!