

innovation  
education  
incubator





## 1912

As early as 1912, Henry Ford was collecting “relics” such as wagons and threshing machines that represented American industrial progress as well as objects that reflected a world that was vanishing with every Model T that rolled off the assembly line. In 1919, he contemplated the importance of his own birthplace when a road improvement project required that the farmhouse be either moved two hundred yards from its original location or destroyed. Ford decided to move the house and restore it to the way it looked at the time of his mother’s death in 1876, when he was 13.

Greenfield Village opened as a campus for the private Edison Institute Schools in September 1929. Thirty-two students began classes at Scotch Settlement School, launching Henry Ford’s unique educational vision, which combined progressive education, 19th-century traditional schooling and “learning by doing.” Ford’s philosophy of education was “learn by doing.” It was a way of learning that Ford had experienced during his own childhood and the way, in fact, that he himself learned best. Ford was committed to “functional education” that gave young people experiences with ways of making a living. In Henry Ford’s Edison Institute Schools, students would learn not only from books but also from objects and experiences. Standard academic subjects like reading, arithmetic, geography and science were at the core of their studies. Ford gave the Edison Institute students free run of the village and museum. Even after the village formally opened to the public, Henry Ford made it clear that, despite the presence of paying guests, there was no place off limits to the schoolchildren. Pupils used the artifacts and many of the historic buildings for practical, hands-on learning.\*

\* Excerpted from “Telling America’s Story: A History of The Henry Ford”



## 2012

Even today, in a world that runs on instant access to information and rapid technological advancements, we are continuing the legacy of our founder’s spirit of innovation by leveraging the stories of innovators past and present, developing innovative educational solutions and offering relevant engagement strategies.

The educational vision of The Henry Ford is to be a catalyst for change in American education.

We are putting our vision into practice by taking an interdisciplinary, real-world approach to education, creating game-changing online educational modules and forging win-win partnerships with educators.

Our goal is to spark young minds by equipping them with 21st-century skills so that they are ready for the workforce and global citizenship.

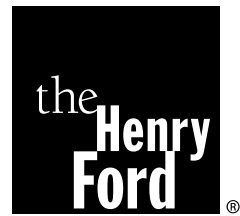
### Mission

The Henry Ford provides unique educational experiences based on authentic objects, stories and lives from America’s traditions of ingenuity, resourcefulness and innovation. Our purpose is to inspire people to learn from these traditions to help shape a better future.

### The Henry Ford Vision 2020

The Henry Ford will be a nationally recognized destination and force for fueling the spirit of American innovation and inspiring a “can-do” culture.

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## Innovation Education Incubator

The Henry Ford's Innovation Education Incubator (IEI) tests the new teaching and learning content and methods of The Henry Ford that will contribute to positive change in American education.

- IEI is a dynamic research and development project designed to generate evidence that The Henry Ford's innovation curricula and learning processes are effective, compelling and inspiring.
- The Henry Ford has developed paradigm-shifting digital teaching and learning tools that will help schools nationwide teach 21st-century skills such as critical thinking and problem solving, collaboration, communication, creativity and innovation, all of which students need to be successful in today's ever-changing workforce.
- The IEI pilot project, launched in 2011-2012 with funding in part from Meritor, Inc. and explore.org, a direct charitable activity of the Annenberg Foundation, evaluated the experiences of 40 teachers and more than 600 students nationwide. The feedback and data will help us course-correct our curricula and define a critical road map for wider distribution.
- The Henry Ford's goal is to "scale up" the distribution and adoption of these teaching and learning tools nationwide.

**"Coming together is a beginning;  
keeping together is progress;  
working together is success."**

**Henry Ford**



## Pilot Project Summary

The Henry Ford launched the Innovation Education Incubator in April 2011 with an awareness-building effort among K-12 teachers in Michigan and across the nation. More than 1,200 teachers and 700 education stakeholders were made aware of The Henry Ford's new resources and the IEI project. Four key products were chosen from The Henry Ford's game-changing educational lineup to be field-tested during the pilot phase: Innovation 101, Reading Inspiration, Educator DigiKits and ExhibitBuilder (see descriptions on page 5).

We extended an invitation to teachers from The Henry Ford's large national teacher database to voluntarily field-test any or all of the products and then to participate in a third-party evaluation to share their observations, challenges and recommendations for improvement.

Two cohorts participated in the evaluation. The "participating" group included teachers from Michigan, Massachusetts, New York, California, Pennsylvania and Texas. The second "independent" group included teachers from a nationwide pool who had downloaded the Innovation 101 curriculum from the OnInnovation website.

These teachers taught various subjects: social studies, English language arts,

U.S. history, science, educational technology, entrepreneurship, art and design, physical education and English as a second language. They came from many types of schools: rural, urban, suburban, public, charter, parochial. They taught all grades.

The IEI educators were natural leaders who were able to garner enthusiastic support from their administrators and parents to participate in the pilot testing. They took time to go through the training provided by The Henry Ford education staff. They were encouraged to use the curriculum to best suit their own instructional needs, their schools' academic goals and the needs of their learners. Each teacher procured needed resources and implemented the curricula in his or her own way.

At the end of the project and evaluation, The Henry Ford staff organized a debriefing meeting so that participants could share their experiences. According to the teachers who were present, this gathering was an incredibly enriching professional development experience. This report provides an overview of the demographics of the participants, highlights of the evaluation findings, examples of student feedback and insights from participating teachers.



**Paula Gangopadhyay**

Chief Learning Officer, The Henry Ford  
Project Director, Innovation Education Incubator

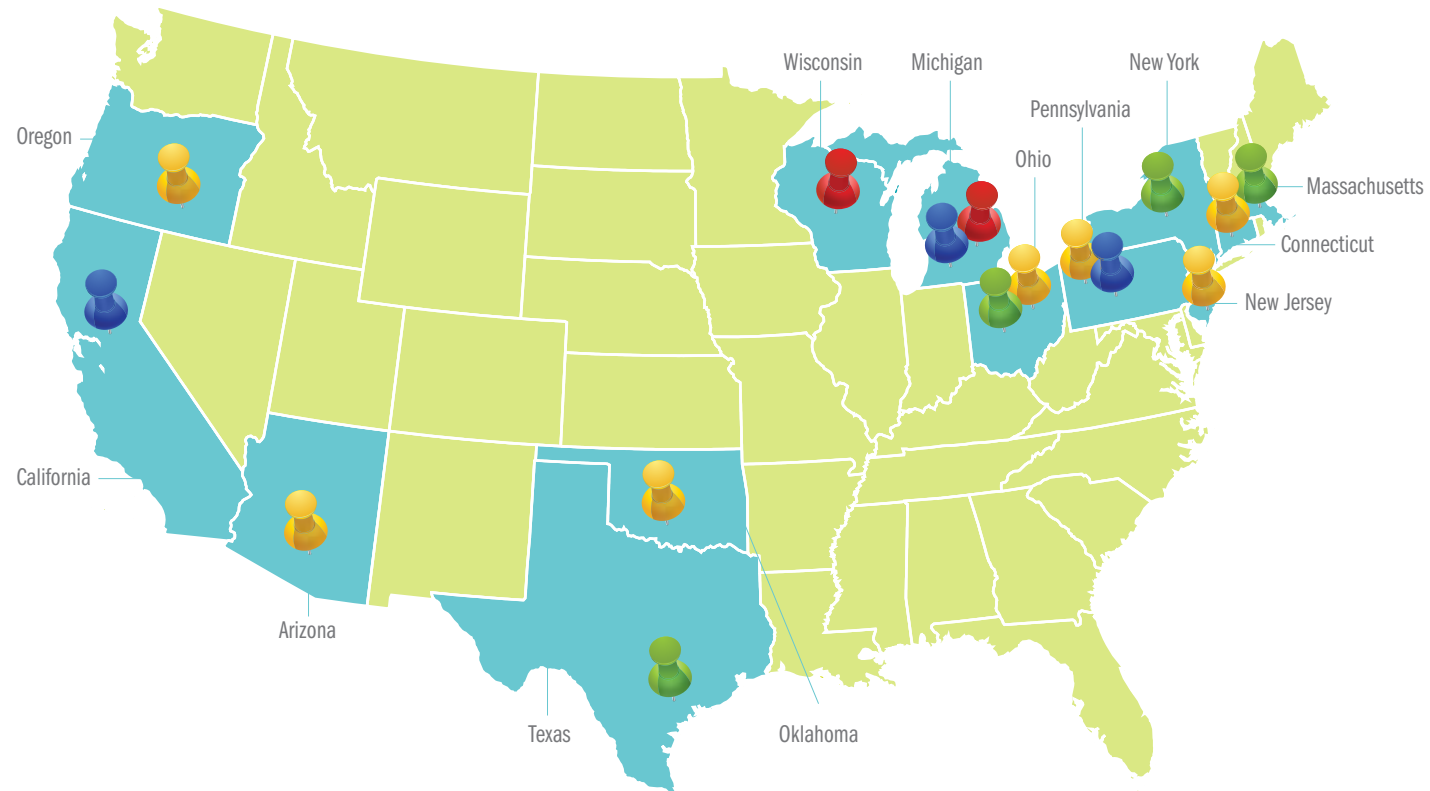
**Philip Grumm**

Digital Education Specialist, The Henry Ford  
Project Coordinator, Innovation Education Incubator



## Geographic Distribution of Participating and Independent Teachers, n=40 teachers (27 participating and 13 independent) and approximately 1000 students

Innovation Education Incubator Pilot, 2011-2012



### Map Key

- ≥ 2 Independent Teachers
- ≥ 2 Participating Teachers
- 1 Independent Teacher
- 1 Participating Teacher

### Participating Teachers by State and City

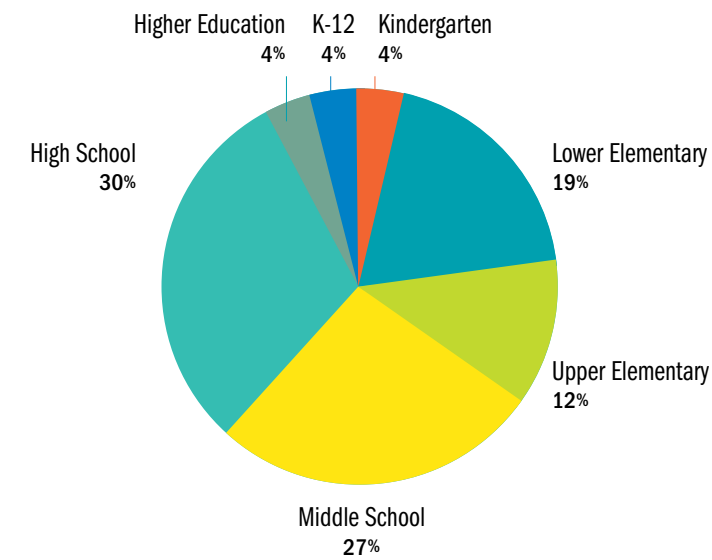
<b>California</b>	<b>Michigan</b>	Novi	<b>Ohio</b>
Corte Madera	Battle Creek	Redford	Defiance
Torrance	Bloomfield Hills	Southfield	<b>Pennsylvania</b>
<b>Massachusetts</b>	Dearborn	Waterford	Erie
Watertown	Detroit	Whitehall	State College
	Dexter	<b>New York</b>	<b>Texas</b>
	Hillsdale	Binghamton	Houston
	Jackson		

## Participating Teachers Breakdown, n=27

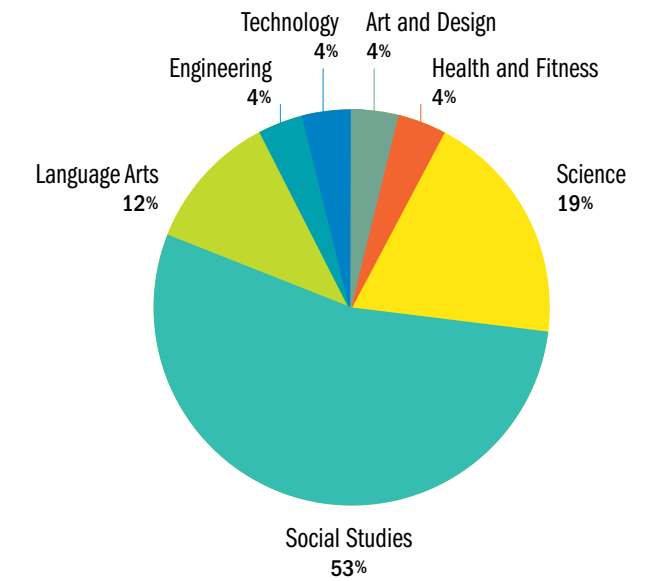
Innovation Education Incubator Pilot, 2011-2012



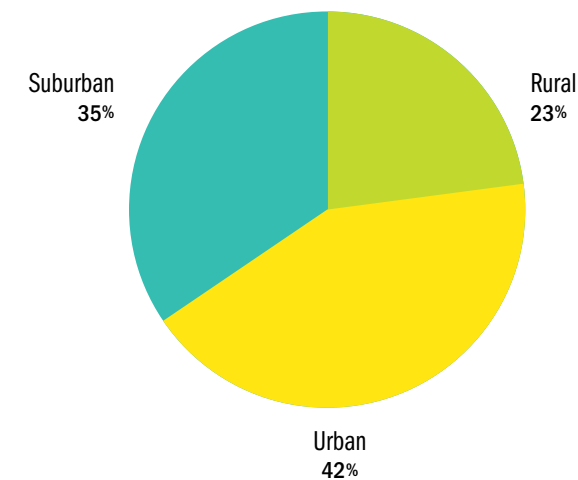
### By Grade Level



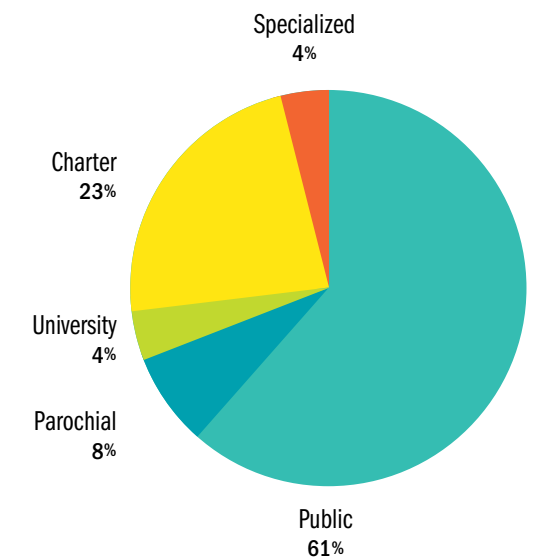
### By Subject



### By Geographic Area



### By School Type



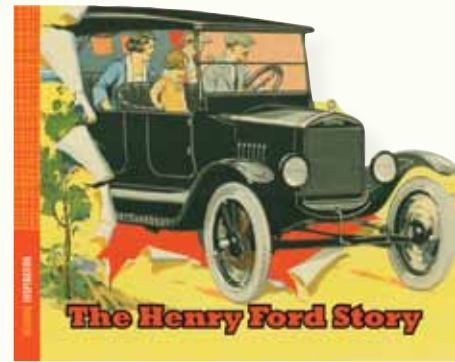


# The Henry Ford's Curricular Products

Innovation Education Incubator Pilot, 2011-2012

# Third-Party Evaluation Highlights

Innovation Education Incubator Pilot, 2011-2012



**Innovation 101** is a unique and dynamic online education module that uses oral history interviews and assets of The Henry Ford's OnInnovation website. It introduces participants to the basic tenets of innovation as they explore various traits and processes used by innovators past and present.

**Reading Inspiration** "The Henry Ford Story" is a unique student activity book that uses historical facts and primary sources in a fun, engaging manner to inspire a love of reading and learning about innovation.

**Aspiring Innovators Summer Hands-on Workshop Prototype** was designed to inspire high school students to start thinking and acting innovatively. Through a contextual learning environment and innovation curriculum, students participated in hands-on "making" experiences and had the opportunity to meet with real-life STEM practitioners. This workshop helped students view the world through a new perspective and create their own innovative prototype to solve a problem.



**Educator DigiKits** offer a comprehensive teacher guide and a full-length unit plan with page after page of supplemental resources. The DigiKits are equipped with digital media to support curriculum.



**ExhibitBuilder** is a build-your-own online exhibition module that works as a great self-directed learning tool. It helps students to think critically, synthesize and apply their learning in creative online portfolios, and helps teachers to assess what their students have learned. Teachers, too, can create their own exhibits and use them as teaching tools in media labs.



Moore & Associates, Inc., a national research and evaluation firm headquartered in Southfield, Michigan, conducted a comprehensive third-party evaluation of The Henry Ford's Innovation Education Incubator program pilot. A full report is available upon request. The following are highlights from the report findings.

### Innovation 101

Among the different curricula tested in IEI, Innovation 101 was the product used most often. These materials were adopted at the elementary, middle and high school levels. The Innovation 101 materials were used in conjunction with several subject areas, including English/Language Arts, Health and Fitness, Entrepreneurship, History, Technology, Social Studies and Visual Arts. Teachers felt these materials were an important curriculum support tool. They also felt the instructional guide and lesson plans that accompanied the materials were very satisfactory. Most teachers reported there were no other materials like this available.

- Virtually all of the teachers indicated the Innovation 101 module promoted critical thinking and creativity. It reinforced skills students would need in the future. Teachers felt their students learned a lot.
- On a scale of 1 to 10, where 10 equals "excellent" and 1 equals "poor," eight out of 10 participating teachers and independent teachers rated the informational content of the Innovation 101 materials a 9 or 10.
- Ninety-two percent (92%) of the independent teachers felt that the Innovation 101 lesson plans were sufficient in detail and instructions.
- Seventy percent (70%) of participating teachers felt Innovation 101 promoted computer-based learning and acquisition of new knowledge.

continued...



## Third-Party Evaluation Highlights Continued

Innovation Education Incubator Pilot, 2011-2012

### Reading Inspiration

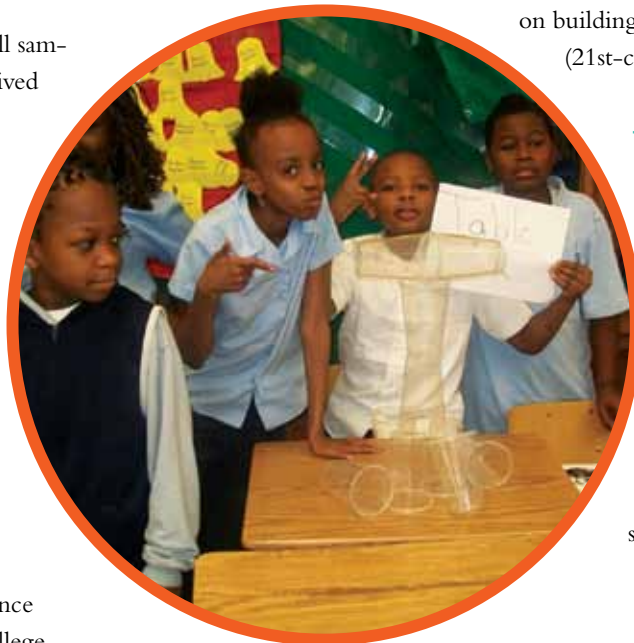
Teachers felt this module helped introduce students to the concept of innovation and that students were “anxious” to read the book. They reported that the materials promoted critical thinking. In some classrooms, the Reading Inspiration materials were used in conjunction with parts of the Innovation 101 module. Virtually all of the students enjoyed the Reading Inspiration model. Three out of four students said they discussed these materials with other students. Approximately half of the students said they discussed the Reading Inspiration materials with their parents. Approximately half of the students felt Reading Inspiration materials helped them “a lot” in learning new things, changing how they think about things and learning things they will need in the future.

### Aspiring Innovators Summer Hands-on Workshop

The Aspiring Innovators Summer Workshop was viewed as an outstanding and unique experience by the students who participated. This program component should be expanded. Combining learning materials, guest speakers and hands-on activities appeared to be a very effective strategy for developing students’ understanding and appreciation for the innovative process and the role it plays.

### Educator DigiKits

Educator DigiKits were tested by a small sampling of the participants but were perceived as valuable in terms of content and packaging. Each of these teachers felt that the Educator DigiKit materials promoted critical thinking and improved creativity. They also felt the use of these materials encouraged students to communicate among themselves. The materials were well-designed compared to other online curriculum resources they had used. However, they felt this component had some technical issues such as accessing the materials online. Students indicated participating in this program will influence courses they take in high school and college.



### ExhibitBuilder

Teachers felt ExhibitBuilder had limitations with regard to classroom use. Students could not save outside information to their presentations. It was difficult to access the materials. It was viewed as not being user-friendly. They felt the materials needed to be improved and would be amazing if they could be made truly functioning, but right now they were not ready. Half of the students indicated that they would like to use these materials in the future. Eight out of 10 of the high school students felt the materials were helpful and they learned new things.

### Student Engagement

It was apparent IEI resources increased student engagement and involvement in classroom activities. The feedback regarding student engagement focused on two products: Innovation 101 and Reading Inspiration. Teachers reported their students were very interested in the lessons. The Innovation 101 materials generated great discussions among students. There was also increased interaction among students as they discussed the materials. The activities and worksheets that accompanied the modules encouraged teachers and students to approach the learning process in a more creative manner. Focus group participants said their students enjoyed the activities involved with the Innovation 101 module. They indicated student engagement was extremely high when working on building a tower with rubber bands and cups (21st-century skills reinforcement activity).

### Teacher Professional Development

As the IEI program evolves, additional emphasis should be placed on teacher professional development as it relates to the utilization of IEI materials. Evaluation findings clearly indicated that the impact of the materials on students was closely linked to teacher interest and understanding of the materials.



## Select Participating Student Feedback Comments

Innovation Education Incubator Pilot, 2011-2012



“I would like teachers to use these types of materials in the future because they are a fun and interesting way of learning.”

“We usually work on history in government or military, not innovation. ... I think innovation made me think more creatively and differently.”

“These materials changed my mind on how I approach the world today. It help[ed] me to think more clearly on the innovation in this world so that there is a better future.”

“We usually don’t learn stuff like this so it was very interesting. ... Everything taught will be useful and I got a lot out of this. ... It could change what you want to do in your future.”

“At first I didn’t even know the definition of innovation until the first day of this workshop, but now I could explain it back and forth and how it applies to our everyday life.”

“This experience was okay. It wasn’t really fun but it wasn’t boring either. I think it changed my views on like my future and stuff so it helped.”

“I learned about STEM and the process of innovation. I broadened my idea of what really makes an innovator what it is.”

“Attending this workshop has really opened up doors for me and what I will do with my career in the future.”

“It helps by making you think differently.”

“If any teachers taught how we learned today, our classes wouldn’t be so boring like always.”

“It taught me that failure is good. Failure is a way to learn from your mistakes and even make your innovation better than what you dreamed before.”

“I really want to learn more about computers and technology because I don’t have a deeper sense of knowledge in that area and I really need to because of how useful it is in society nowadays.”

“It was different from the classwork that you usually do ... It was interesting to know how they made it and their creativity.”



## Select Participating Teacher Feedback Comments

Innovation Education Incubator Pilot, 2011-2012



### Mostly on Innovation 101 and Reading Inspiration

One teacher felt the lessons offered different and unique techniques on how to be a problem solver. “Problem solving ... offered a couple very different techniques ... seeing problem solvers in various different fields and hearing from those experts ... I think my kids walked away ... with pushing their boundaries on what they are willing to do to become problem solvers ... engaging them in a creative way ... in terms of 21st-century learning.”

One teacher indicated that “flexibility is the biggest skill today ... jobs are not secure ... it showed them to think outside [the box].”

“Creativity. They are going to need that in the 21st century.”

“They felt like innovators themselves ... exercised their creativity, their imagination and their divergent thinking ... to me those are 21st-century skills ...”

“My students, by the end of the course ... they had a very good solid understanding of innovation and invention. They even took it a little further than what was presented in Innovation 101 ... the two things the kids walked away with ... creativity, because they were creating the exhibits, or taking the material and creating something real world ... definitely learned the foundations of innovation.”

Another teacher reported having to rearrange the materials to meet her classroom’s needs. “I tore the thing to shreds. Pulled it off the shelf, completely disassembled it ... I love the product. I am always a bit suspicious of off-the-shelf educational kits to begin with. This one I found far better than most and incredibly easy to use. ... One of the things I liked about it was that I could take it, disassemble it, break it apart and use bits and pieces, rearrange chunks in a way that was far easier than most of the canned stuff that I’ve used over the years. We already do so much in terms of creativity and critical thinking and analytical thinking. To pull it off the shelf

and use it as is just wasn’t going to work for our students, so I had to rearrange it and change it. In that aspect, it worked really well. There were parts of it that ... have done what I would have done, but way better and way more efficiently. I was extremely pleased with it.”

“There was no disconnect with the kids. They were engaged with the project. I didn’t have to fight kids. They were pretty motivated to do this assignment, and we did three of the Innovation labs in one consecutive day ... we didn’t start losing them until the last 20 or 30 minutes ... kept them pretty engaged ... I think the different uses of the multimedia helped to keep them engaged. It’s not the same thing for each one.”

“Putting a face behind an innovation, like PayPal or eBay or Mozilla Firefox, made an impression on the students and helped them to remember the lessons they learned because they could relate to the topic.”

## Participating Teacher Profiles and Testimonials

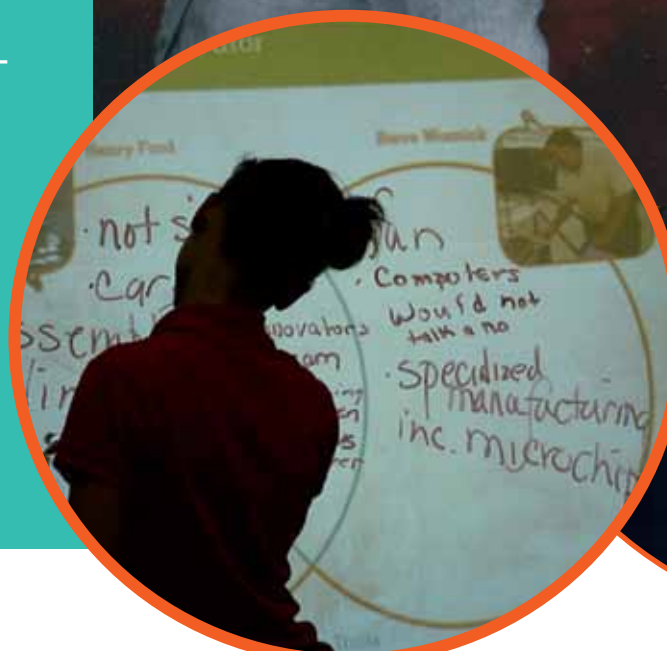
### IEI Pilot Testing, 2011-2012



# Ramona Bogerty

Upper Elementary, Education Technology

“I enjoy the mysteries of the unknown. I feel that as an educator, just like a student, we need to leave the comfort zone and experience new ways to make learning exciting. By doing this we create opportunities to allow learning to become more meaningful for the student. The ultimate payoff is that we stretch as educators and make a difference in the way students approach the unknown waters of learning. I find the need to introduce and foster the concept of innovation for kids today exposes them to the possibilities that they can make a difference in how to interact with the world around them. It provides a forum which allows kids to become partners with society on a personal basis.”



# Kenny Gechter

Middle School, Language Arts

“Today’s students have to be highly adaptive and innovative to not only compete but to thrive.”

## School Facts

**School** Burns Elementary-Middle School  
**City** Detroit  
**State** Michigan  
**Principal** Jacquelyn Caldwell  
**Enrollment** 611  
**Number in IEL program** 63

## Comment on the IEL curricula tested: Reading Inspiration and Innovation 101

“I found the curriculum to be comprehensive and led the way for students to understand and view STEM in a whole new light. It led the way for opening up the minds of youth. They became the experts as they tested their own worthiness.”

## Observational feedback on student engagement

“One of the things I found important and was really exciting for me was to see the children come alive. When I see that the children grasp something, then I can do more with it ... and when we talked about innovation, it became very important to them. I found that the students actually knew the vocabulary and began to use the various terms as if they had invented the terminology themselves. They took it upon themselves to learn more about several of the innovators/inventors, e.g., Steve Wozniak’s ideas and restructuring the computerized world to take on a new playing field or how PayPal could be used to supplement education, etc., and compared them with how things are done today.”

## Three words to describe the experience of participating in IEL

“Exciting - Interactive - Timeless”

## Comment on the IEL curriculum tested: Innovation 101

“Excellent and high quality — easy to adapt to my personal style and student population.”

## Observational feedback on student engagement

“Students really understood the concepts and were able to manipulate their learning due to the visual nature of the IEL curriculum.”

## Three words to describe the experience of participating in IEL

“Real-time learning.”

## School Facts

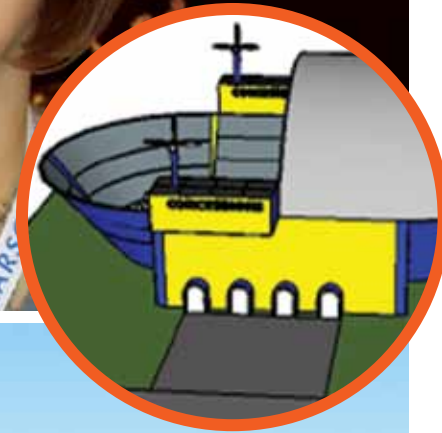
**School** East Hills Middle School  
**City** Bloomfield Hills  
**State** Michigan  
**Principal** Jason Rubel  
**Enrollment** 563  
**Number in IEL program** 100



# Susan Tate

Middle School, Science and Technology

“It is critical for our students to learn to be innovative in order to be prepared for 21st-century education and careers. We are not training these kids for jobs in the industrial age. We are preparing them for jobs that require a new set of skills for the information and conceptual age. Innovation is a key job skill for the present and the future.”



# Liza Mathews

Kindergarten, Language Arts

“Students today have access to more information than ever before, and they know how to access that information. What they don’t necessarily have are the thinking strategies, analytical skills and risk-taking creativity to take that information and apply it to other situations or make connections. Learning to be innovative develops powerful thinking!”



## School Facts

School	Whitehall Middle School
City	Whitehall
State	Michigan
Principal	Bill O'Brien
Enrollment	450
Number in IEl program	60

2012 Michigan Science Teacher of the Year

## Comment on the IEl curriculum tested: Innovation 101

“I am continually looking for innovative digital products for my students, and Innovation 101 was an extremely effective tool for me to use. It continues to inspire me to look for new digital resources as well as to use the OnInnovation interview clips in other projects.”

## Observational feedback on student engagement

“I was really blown away by how much my students enjoyed working collaboratively on the Innovation 101 lessons. We did a team approach to the entire cadre of lessons as well as the innovation project my students were assigned as the summative assessment piece.”

## Three words to describe the experience of participating in IEl

“Engaging, convenient, unique.”

Student drawings using Google SketchUp from Ms. Tate’s Innovation 101 class.

## Comment on the IEl curriculum tested: Innovation 101

“My overall experience implementing Innovation 101 was exciting and rich; it ignited further learning and exploration not only for my students but for me as well.”

## Observational feedback on student engagement

“‘Look Ms. Mathews, I know how to design a roller coaster that no one has even seen before!’ Austin’s passion for roller coasters expanded greatly throughout learning about innovation. As a result of Innovation 101, he independently designed and drew over 20 different roller coasters, all intricately engineered. For a child who typically never stopped moving, he exhibited a tremendous growth in focus. His parents were astounded by his growth and knowledge!”

## Three words to describe the experience of participating in IEl

“Engaging, creative, easily adaptable.”

## School Facts

School	Neil Cummins Elementary
City	Corte Madera
State	California
Principal	Michelle Walker
Enrollment	K-4, 800+
Number in IEl program	22



# LaTrelle Leonard Pierre

Lower Elementary, Social Studies

“It is imperative that our students must be surrounded by opportunities to be innovative. There is a huge digital divide between urban schools and suburban districts ... my students [are] constantly challenged by our lack of technology and resources. As a classroom teacher, I want my students to be prepared for our ever-changing world and to embrace their inner innovator.”



## School Facts

School	Bunche Academy
City	Detroit
State	Michigan
Principal	Marvin Franklin
Enrollment	600-700
Number in IEI program	32

## Comment on the IEI curriculum tested: Innovation 101

“Paula [Gangopadhyay] has been my catalyst for embracing this innovation revolution in public education. IEI has provided me the chance to look more critically at the future and my role in making innovation real for my pupils. IEI was a refreshing change to our normal curriculum that integrates living, real-world role models. I really believe that I have seen the power of technology, and it increases my desire to add more creative tinkering.”

## Observational feedback on student engagement

“One of my students made a comment that being different and challenging to others is fine because [Apple co-founder] Steve Wozniak and [architect William] McDonough said you don’t have to just listen to others, but be different ... make things better. Dayvon said I can do things my own way.”

## Three words to describe the experience of participating in IEI

“Modeling, inspiring, collaborative.”



# Mary Foulke

Lower Elementary, Social Studies

“I was amazed at the level of understanding my students achieved concerning innovation and innovators. That it’s OK to fail at things as long as they keep trying, to try new things, to think outside the box. ... It was so encouraging to them. It’s so important to get students to think creatively.”

## Comment on the IEI curriculum tested: Innovation 101

“My experience was very positive and rewarding. It’s totally worth the time and effort! It really does change some of the students’ views of themselves when they realize some innovators had problems and had to try again and again, just like them!”

## Observational feedback on student engagement

“My aha moment was when one of my students became so interested in innovation and Thomas Edison that he started reading, reading and reading. He grew from a level 16 to level 38 by the end of the year. ... His negative attitude of ‘I’m stupid’ began to change, and he ended up being a different student by the end of the year.”

## Three words to describe the experience of participating in IEI

“Enlightening, eye-opening, enriching.”

## School Facts

School	Bailey Elementary School
City	Hillsdale
State	Michigan
Principal	Lois Foster
Enrollment	230
Number in IEI program	24



## Keith A. Rosko

High School, Art & Design

“We live in a unique period in time when society is rapidly moving from an economy of material goods to an economy of ideas and concepts. Our future will be based not on our ability to make ‘things,’ but our ability to innovate ‘ideas.’ In order to be successful in the future (as both individuals and as a society) people will need to develop the ability to solve old problems in new ways as well as quickly and efficiently develop solutions to new problems.”

### School Facts

School	Chenango Forks High School
City	Binghamton
State	New York
Principal	John Hillis
Enrollment	1,600
Number in IEL program	25



**PBS Teachers.**

**2011 Innovation Award Winner**

### Comment on the IEL curriculum tested: Innovation 101

“As a teacher, I found that the materials provided by [The Henry Ford] — especially in the manner that they were organized — allowed me to alter my teaching from a more passive demo/lecture mode to a more hands-on, interactive and project-based methodology that used multiple materials to differentiate my instruction while at the same time keeping students active via a wide variety of resources and materials — all pointing students in the same direction. In addition, I strongly believe in the idea that showing students how content areas are interconnected (the way they are in ‘the real world’) is imperative to the educational process in the 21st century, and these materials allowed me to do this.”

### Observational feedback on student engagement

“The most satisfying moment for me as an educator was when students began to take the resources I had provided, and the connection we created between seemingly unrelated knowledge bases, and began to extrapolate themselves, finding even more wider-ranging connections, related topics and, finally, in doing so, grasp the fact that innovation is a mental process that can happen anywhere at any time, but never happens in isolation.”

### Three words to describe the experience of participating in IEL

“Explore, connect and expand.”



## Maryann Dreske

High School, Social Studies

“This is a very different world than the one in which I was a student. Students need to think out of the box and be able to use the ideas they are presented with in new ways in order to be successful.”

### Comment on the IEL curricula tested: Innovation 101 and Reading Inspiration

“My overall experience was excellent! I love the materials — from OnInnovation to the Reading Inspiration program. I found that there are many ways to integrate these products into the social studies curriculum. I used part of the OnInnovation program when I was teaching entrepreneurship in economics class to 10th-graders and OnInnovation modules as an introduction to a field trip to The Henry Ford. With regard to the Reading Inspiration, I found the book, which I used in my high school English as a second language U.S. history class, matched the research I had been reading from Marzano’s book ‘The Art and Science of Teaching.’”

### Observational feedback on student engagement

“Every experience a teacher has changes that teacher and the classroom! But, for me, the biggest thing was working with the other IEL teachers. There are so many different applications for these products — and listening to the other teachers gave me new ideas and applications that I used in my classroom. When I was listening to my colleagues, I saw how the Reading Inspiration product that I really love to use with my ESL students could be used just as effectively with students from kindergarten to middle school with minor adjustments. It really made me see how important the teacher is in tailoring these products to the student! Teachers know how to take great products and make them work in so many ways!”

### Three words to describe the experience of participating in IEL

“Just try them!”

### School Facts

School	Novi High School
City	Novi
State	Michigan
Principal	Carol Diglio
Enrollment	2,100
Number in IEL program	80

# Cedar Lowe

High School, Language Arts

“Students today are entering a global marketplace where information and data are key elements. They must be innovative to succeed. They have to stand out from other candidates.”



# Jamita Lewis

High School, Social Studies

“Learning to be innovative is important for today’s students because the world we live in is continuously changing and students need to have a creative mind to solve problems society will be faced with now and in the future. Learning to be innovative is important because it makes students competitive with the global workforce and economy.”

## School Facts

School	Detroit International Academy for Young Women
City	Detroit
State	Michigan
Principal	Beverly Hibbler
Enrollment	750
Number in IEI program	75

## Comment on the IEI curricula tested: Educator DigiKits and Innovation 101

“I did begin to connect innovation to literature and writers. I had students apply the traits of innovators to authors and characters in books.”

### Observational feedback on student engagement

“I was very excited when one of my ninth-grade students wrote in her journal that she wanted to know how to innovate.”

### Three words to describe the overall experience of participating in IEI

“Connections, analysis, excitement.”

## Comment on the IEI curricula tested: Educator DigiKits and Innovation 101

“My overall experience in implementing the IEI products in my classroom was fun for both the students and the teacher because we were able to work and learn together while staying engaged with design-based thinking. Using the products of The Henry Ford has allowed me to incorporate more projects-based and higher-level thinking assignments into instruction. Also, I rely on more technology in the classroom.”

### Observational feedback on student engagement

“My aha moment during the entire IEI experience was having a wealth of resources at my fingertip which were able to guide the students in instruction and allow me to serve more as a facilitator of the resources available to teachers.”

### Three words to describe the overall experience of participating in IEI

“Engaging, fun, innovative.”

## School Facts

School	Henry Ford Academy
City	Dearborn
State	Michigan
Principal	Cora Christmas
Enrollment	525
Number in IEI program	60



## Alyson Jones

Middle School, Technology

“Students need to have many ways to process information and use knowledge to meet the needs of the future. I wanted to bring a new thinking process to students.”



## Beverly Hill

National Board-Certified Teacher  
Upper Elementary, Science

“Learning to be an innovator helps students to be creative and great thinkers.”

### School Facts

School	Nataki Talibah Schoolhouse of Detroit
City	Detroit
State	Michigan
Principal	Melita Smith
Enrollment	370+
Number in IEI program	40

### Comment on the IEI curricula tested: Reading Inspiration and Innovation 101

“The ... products helped me to get better with integrating technology for lessons.”

### Observational feedback on student engagement

“My aha moment was when the students wanted to return to the Reading Inspiration book while studying another subject. The students participating in Innovation 101 enjoyed learning about the chair design — as a result wanted to see more chairs online.”

### Three words to describe the experience of participating in IEI

“Engaging, problem-solving, 21st-century skills.”

### Comment on the IEI curriculum tested: Innovation 101

“Innovation 101 exceeded my expectations and was a great addition to my curriculum.”

### Observational feedback on student engagement

“I had a few autistic students and one that did not verbalize, and he wanted to present, and I was excited about his presentation. ... When the second to the last presentation came, it was my nonverbal student, and he seemed like he didn’t want to present, but all of a sudden he ran to the front of the room in excitement. My heart dropped because I wanted him to feel good about this presentation in the last weeks of school. He had made presentations before, but I or someone else read the material that he had worked on so he could be part of the class. Now he was in front of the room, smiling, as everyone was watching. All of his classmates were smiling, too. When the presentation finished, he made a verbal statement for the first time, and the immediate reaction from everyone was to stand up and cheer. Many of us also had tears in our eyes!”

### Three words to describe the experience of participating in IEI

“Exciting, enhancing, challenging.”

### School Facts

School	Creekside Intermediate School
City	Dexter
State	Michigan
Principal	Hyeo Park
Enrollment	650
Number in IEI program	60



# Monica Nick

*Lower Elementary, Social Studies*

“It’s important for students to learn to be innovative today, because nothing stands still in business, technology and day-to-day living. Students need to have the skills to brainstorm, innovate and create in order to compete in a workplace that thrives on change and a consumer who demands it.”

## School Facts

**School** Jefferson Elementary School  
**City** Redford  
**State** Michigan  
**Principal** Deb Greenwood  
**Enrollment** 335  
**Number in IEI program** 57

## Comment on the IEI curriculum tested: Educator DigiKit

“The unit opened my eyes to how you can teach about a particular historical figure — in this case, Henry Ford — and inspire students to innovate using his examples.”

## Observational feedback on student engagement

“My aha moment was when students told me that Henry Ford was not famous for making cars or inventing the assembly line, but that he was famous for producing a car that most people could afford. That was what he was really known for!”

## Three words to describe the experience of participating in IEI

“Engaging, comprehensive, experiential.”



# Joy M. Catania

*Middle School, Social Studies*

“Innovators have the traits to solve problems, whether material or ideological. The success of our collective futures depends upon developing innovative skills in our students.”

## Comment on the IEI curriculum tested: Innovation 101

“Sharing critical skills with the students through this well-designed program allowed all of us to grow and recognize our strengths.”

## Observational feedback on student engagement

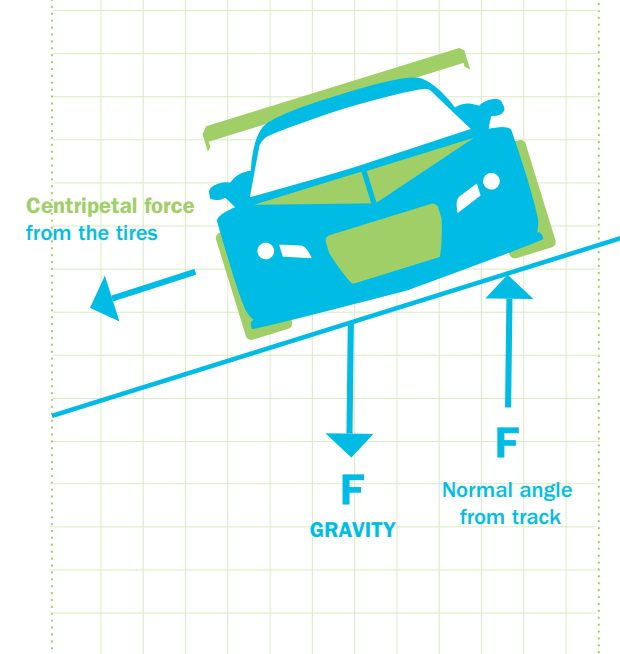
“While I knew high achievers often pressure themselves, I did not know how paralyzing the fear of failure was for many, which the Innovation 101 program alleviated.”

## Three words to describe the experience of participating in IEI

“Challenging, proactive, pertinent.”

## School Facts

**School** Walnut Creek Middle School  
**City** Fairview  
**State** Pennsylvania  
**Principal** Darcie Moseley  
**Enrollment** 600  
**Number in IEI program** 10



engine provides a large force the tires. The car begins to ac = F / m, (the larger the mass, the larger the force the The driver turns the steering to change the direction of th

- How much force would b a 900-kilogram racecar 1 0 meters/second to 65 10 seconds?
- $F = ma = m * \Delta v / \Delta t$
- $F = ma = 900 \text{ kilograms} * 0 \text{ meters/second} / 10 \text{ sec}$

**Lesson 4 Ground Effects Innovations in Automobile Racing**  
Background Information Sheet for Students 4A  
(page 3 of 3)

**AIR**  
Air strikes the front of the car.  
Some of the air rises up over the car.  
The force of some of the air is transferred downward, helping the car down for better traction.

**Airfoils**  
Sometimes the airfoil itself is tilted so that the air transfers force directly downward to the car. When the air strikes the tilted airfoil, there are two forces produced. Not only is Bernoulli's principle in effect, but the tilt of the airfoil causes a transfer of the force downward. The angle of the airfoil can be adjusted for different racing conditions. If the track has more straight sections, the foil is kept level with the track. If there is a lot of cornering, the foil is tilted to produce more downforce. Notice the airfoils on the Texaco One-Car (March 84C Race Car, 1984 (side view ID# THF9368)).

Notice how the air moves in from the left. The air strikes the front of the airfoil, which is slanted downward on this side. The angle of the air against the foil causes a push, or force, downward. The airfoil is attached to the hood and therefore forces the car downward onto the track, allowing greater traction for cornering.

The drawback to using the airfoil angled downward is that it increases the force against the front of the car, slowing it down. This represents a trade-off: the car gains cornering ability but loses overall straightaway speed. An airfoil angled downward would only be useful on tracks with short straightaways and a higher percentage of curves.

**Venturi Effect**  
Another method of achieving downforce is through the Venturi effect. When air, a fluid, travels through a space that changes from a large cross-section to a smaller cross-section, the same amount of fluid (air) must pass through the constriction, so the air gains speed there. Faster-moving air causes a decrease in pressure, so there is a force, or pressure, created toward the faster moving air.

If the Venturi section is placed beneath the race-car, the car will be forced down for greater traction.

**Jim Hall, Aerodynamics Innovator**  
Automobile racing has not always taken advantage of aerodynamics in the way described here. Jim Hall, an engineer and former racecar driver from California, pioneered a new way of thinking about and using aerodynamics in the 1960s and 70s. Rather than trying to prevent aerodynamics from hurting the car's performance, Hall began searching for methods of using aerodynamic force to help the car. He especially worked on increasing the downforce on his cars, which would help them hold the road better, particularly on turns. He did this with wings and the shapes of car bodies. His cars won a number of races, both in the United States and in Europe, and profoundly influenced race car design. Hall's next innovation was to suck air from underneath the car instead of using air to press down on the car from above. He did that with a fan driven by a separate motor from the car's motor. It worked so well that his competitors got the innovation banned. Racing rules makes often outlaw new innovations, just to give other race teams a chance. Wings were also banned after competitors did a poor job of imitating Hall's wings, resulting in racing accidents. Even though his original solutions were banned, Hall inspired others to keep looking for a positive way to use aerodynamic forces, leading to the development of ground effects.

Physics, Technology and Engineering in Automobile Racing | Unit Plan 55

# Marcela Vidaure

K-12, Science

“Many students today need to experience more than what is presented in books. All students need the opportunity to be creative and use their talents to bring in many inventions and ideas to build confidence and contribute to the sciences (or other fields). Students’ critical thinking skills and their curiosity is nurtured through innovation and learning new things.”



**Eve Evans**  
Lower Elementary, Social Studies

“Innovation is essential to growth, and students need to know that it is important to question, challenge and think outside the box. They also need to learn to take risks, accept failure, learn from it and go on.”

## School Facts

<b>School</b>	Center for Learning Unlimited (special needs school)
<b>City</b>	Torrance
<b>State</b>	California
<b>Principal</b>	Virginia Mathews
<b>Enrollment</b>	25
<b>Number in IEI program</b>	20

## Comment on the IEI curriculum tested: Educator DigiKit

“Some of my teaching techniques did change, as I am now using some of the physical science formulas with a more hands-on approach, and my experience was a positive one.”

## Observational feedback on student engagement

An aha moment was “when I saw the students building their cars as they liked what they saw and learned from the curriculum. Seeing them participate in the activities brought new light to the sciences and brought a bigger group that is now interested in physical science.”

## Three words to describe the experience of participating in IEI

“Innovative, nurturing, exciting.”

## Comment on the IEI curriculum tested: Innovation 101

“The enthusiasm of the students far exceeded my expectations. The students became more in command of their own learning, self-directed.”

## Observational feedback on student engagement

“One of my favorite quotes came from a parent who said, ‘I’m learning things and being taught about people and things from my kid. I didn’t expect that to happen so soon (from a fifth-grader). He’s got me doing research on some of these innovators so I can keep up.’”

## Three words to describe the experience of participating in IEI

“Adaptable, current, well-received.”

## School Facts

<b>School</b>	Corl Street Elementary
<b>City</b>	State College
<b>State</b>	Pennsylvania
<b>Principal</b>	Scott Matto
<b>Enrollment</b>	308
<b>Number in IEI program</b>	23

# Beth McLaren and David LeDuc

Middle School, Social Studies

“America is known for ... great innovators. The students that we have worked with and will work with all have great potential for changing the world with their own innovations. Perhaps they will be part of a small team that creates some landmark innovation or part of an even larger team that invents a product or service that changes the world. We want to create a student that can compete not only on a domestic level but also an international level. Innovative thinking must be a part of education for students to compete.”



## School Facts

School	Pierce Middle School
City	Waterford
State	Michigan
Principal	Yvonne Dixon
Enrollment	1,200
Number in IEI program	24

## Comment on the IEI curriculum tested: Innovation 101

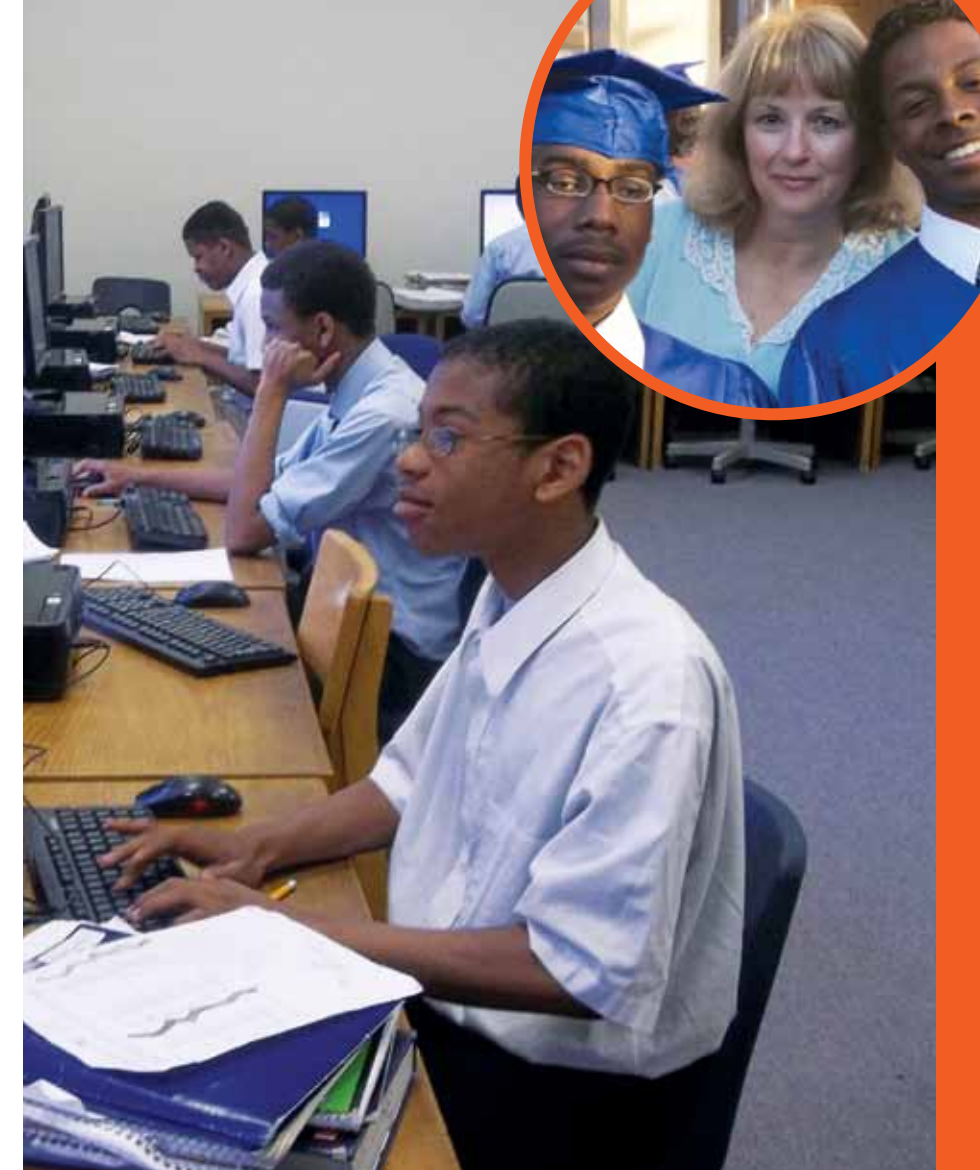
“The Henry Ford products for the classroom are very well thought out and take into consideration the large social and economic diversity we have in metro Detroit. Tying real-world connections to student learning is a necessity in education. Having a unit like Innovation 101, where students study innovators that invented tools that they actually use, helps make those connections. We found the students to be very engaged because the real-world connections were made.”

## Observational feedback on student engagement

“The students [were] really impressed [about] Steve Wozniak telling his dad he would live in an apartment after his dad predicted the cost of a mini-computer. Most of the students in Waterford come from a working middle-class family and were very motivated that most of the innovators they reviewed came from very similar backgrounds.”

## Three words to describe the experience of participating in IEI

“Interactive, relevant and inspirational.”



# Kathryn Gross

High School, Social Studies

“If students are not innovative, then learning becomes bland and dry. Innovation encourages student engagement at the highest level – in determining the methodology and outcomes of the project.”

## Comment on the IEI curriculum tested: Innovation 101

“Paula [Gangopadhyay] presented this program as a unique way to engage students. I am always looking for creative methodologies to use with my students. My expectations in the Innovation 101 project were met. I really liked the short videos to stimulate learning before and after each project. This is something I am developing in other areas now as well.”

## Observational feedback on student engagement

“The aha moment was when I was being observed by my principal and assistant principal for evaluation. I asked the students to identify one of the innovators they felt they had the most in common with and why. The answers the students gave and the positive way they viewed themselves were truly like a ‘Hallmark moment’ as a teacher because they began to see what they really could do in life and not limit who they are!”

## Three words to describe the experience of participating in IEI

“Learning, adventure, relationship.”

## School Facts

School	Loyola High School
City	Detroit
State	Michigan
Principal	DeLisa Jones
Enrollment	155
Number in IEI program	28





## Ann King

High School, Health & Fitness

“In order to prepare all of our students for real-world careers, we MUST use innovative teaching strategies. Employers look for hires that are able to collaborate and think outside the box.”



## Karen Washington

High School, Social Studies

“Students rely on technology. They need to know how the devices they rely on came to be and what factors led to their creation.”

### School Facts

School	Westchester Academy for International Studies
City	Houston
State	Texas
Principal	Dr. Natalie Blasingame
Enrollment	977
Number in IEI program	20



**PBS Teachers.**  
2011 Innovation Award Winner

### Comment on the IEI curriculum tested: Innovation 101

“Anything that Paula [Gangopadhyay] and [The Henry Ford] develop, I want to be part of the program. I knew about the lessons as I was at [The Henry Ford] last summer and wanted to implement them in my classes. Participating in IEI allowed me to reach students in an engaging way to stimulate thinking. Inspiring minds, changing traditional mind-sets and learning are the result of implementing [The Henry Ford’s] products in classroom.”

### Observational feedback on student engagement

“It’s OK not to succeed at the first attempt. This was the overlaying theme throughout all the lessons. Students were learning creative ways to work together for a final product. The actual product is not the important piece, but rather HOW to use these thinking strategies.”

### Three words to describe the experience of participating in IEI

“Engaging, hands-on, thought-provoking.”

### Comment on the IEI curriculum tested: Innovation 101

“I wanted to get a chance to truly use the materials available from The Henry Ford. I also wanted something different for my students. With the exception of technology glitches here and there (our system has been SLOW), I would say I am happy with what students came up with.”

### Observational feedback on student engagement

“I did not know how great these resources were until this project. I can incorporate pieces into what I already do. It was a great way to try something different and take a break from the same stuff all the time.”

“I was impressed with some of the work my kids did. They showed their creativity, and it allowed me to have a break to just talk to kids, get their ideas, keep them focused, work on technology issues. I got to know them a bit better. ... I also realized that just because it is a fun project, make sure that the kids know they still have to work. There is a difference between making learning fun and having fun while learning.”

### Three words to describe the experience of participating in IEI

“Critical thinking, challenging, rewarding.”

### School Facts

School	Watertown High School
City	Watertown
State	Massachusetts
Principal	Steven Watson
Enrollment	800
Number in IEI program	31

# Matthew Pazur

High School, Science

“STEM education is the portal for innovation in the 21st-century classroom. Students are immersed in authentic career simulated environments where skill, critical thinking and creativity in action are paramount to their success in solving global issues.”



# Tara Robinson

Lower Elementary, Social Studies

“Learning how to be innovative is an important tool for 21st-century learners. This tool can and will push students to not be afraid to think outside the box. It also empowers students to have the faith that they can do whatever they want.”

## School Facts

School	Henry Ford Academy
City	Dearborn
State	Michigan
Principal	Cora Christmas
Enrollment	525
Number in IEl program	13

## Comment on the IEl curriculum tested: Educator DigiKit

“The racing DigiKit definitely supported the high school content expectations in physics ... Students gained new knowledge about Bernoulli’s principles, Venturi effect and made cross-curricular connections about the history and physics of American auto racing.”

## Observational feedback on student engagement

“The verbiage and vocabulary of the racing DigiKit was right at par with the level of most of the physics students at Henry Ford Academy. ... The most engaging activity for students was when I assigned each group a topic and required them to construct an exhibit involving the physics concepts and the digitized artifacts. ... The unit allowed the students to partake in self-directed learning with digitized artifacts supplemented by student worksheets.”

## Three words to describe the experience of participating in IEl

“Refreshing cross-curricular experience.”

## Comment on the IEl curriculum tested: Reading Inspiration

“I had a very good experience implementing Reading Inspiration. It changed my way of thinking in that I need to start earlier in the year with letting and coaxing my students to think outside the box.”

## Observational feedback on student engagement

“I observed some of my shiest students have some of the greatest innovations. My students were ‘caught’ sharing/talking about the books during other work or quiet work time. This book really got them excited about learning.”

## Three words to describe the experience of participating in IEl

“Inspiring, change, worth it!”

## School Facts

School	Northwest Elementary School
City	Jackson
State	Michigan
Principal	Valerie Shelters
Enrollment	650+
Number in IEl program	31



## Carrie Krontz

Upper Elementary, Social Studies

“We live in an innovative world, and our students need to be leading the way. Teaching students to be innovators moves many of the students out of their comfort zone, while encouraging others to try because failure is OK, as long as you try!”

### Vocabulary Parade

• Because we are a small, private preschool through 12<sup>th</sup> grade school (all in one building), we often do all school activities. Since the preschool and elementary observe March as Reading Month, we decided that since the last day of March was a half-day and the day before Spring Break, we would do an all school activity. Every student (and staff) was given a vocabulary word with the instructions to create a card with the definition of the word and to create an outfit to illustrate the word. Middle school students were given words from the “innovation glossary.”

### School Facts

School	Calhoun Christian School
City	Battle Creek
State	Michigan
Principal	Bill Spier
Enrollment	142
Number in IEI program	36

### Comment on the IEI curriculum tested: Innovation 101

“Innovation 101 was a great relief from the day-to-day assignments the students are familiar with and was an excellent tool for teaching the students innovation.”

### Observational feedback on student engagement

An aha moment was “seeing students who normally are not willing to share what they have learned willingly give an oral report about an innovator they had researched.”

### Three words to describe the experience of participating in IEI

“Innovative, exciting, easy to use.”



## Amber Franzdorf

Middle School, Science

“Our students need to learn the traits of innovators so they can become the innovators of the future. I also believe it is important for students to understand that innovation is a journey, not a destination. That journey will be difficult at times but ultimately rewarding.”

**Can you teach Innovation?**  
We think you can. By helping youth as well as lifelong learners understand the traits of innovators and processes of innovation, we can create more problem solvers, critical thinkers and collaborators for the 21st century.

**How can you ignite the imagination of future innovators?**  
Explore OnInnovation Powered by **The Henry Ford** [www.oninnovation.com](http://www.oninnovation.com) and Innovation 101, [www.oninnovation.com/education/innovation-101.aspx](http://www.oninnovation.com/education/innovation-101.aspx), a unique online downloadable module that engages participants in active learning.

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**OnInnovation**  
Visionaries thinking out loud!™

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Get the FREE online downloadable version OR purchase a hard copy!

### Comment on the IEI curricula tested: Innovation 101 and Educator DigKit

“I participated in IEI to help my students understand that innovations do not happen by themselves and that failure is a part of innovation. My expectations were met [as] my students were learning about different innovators and began to think of themselves as innovators.”

### Observational feedback on student engagement

“Listening to my students’ responses to Lesson 4 (Keys to Innovation) after watching the videos of their choice and how they viewed the innovators was my aha moment. I had students coming in during study hall so they could watch all of the videos and doing their own research on their favorite innovators. I enjoyed seeing my students so passionate about learning.”

### Three words to describe the experience of participating in IEI

“Exciting, enriching, innovative.”

### School Facts

School	Defiance Middle School
City	Defiance
State	Ohio
Principal	Richard A. Peters
Enrollment	650
Number in IEI program	120



## Innovation 101 Whole-Day Session Prototype

Innovation Education Incubator Pilot, 2011-2012



“The Aspiring Innovators/Innovation 101 curriculum, developed by The Henry Ford, was recently used as part of Henry Ford Academy’s Design Challenge. The curriculum not only taught our students a process for which to follow when solving a problem, but through the use of interviews with legendary designers, examination of artifacts and other activities, our students learned how to think like a designer. Whether it’s brainstorming, prototyping or questioning techniques, the lessons learned through the Aspiring Innovators/Innovation 101 curriculum are valuable in and outside of the classroom. About a dozen students were selected from the freshman class to learn more about the Aspiring Innovators process. They participated in a summer workshop, giving up a couple of weeks of summer vacation to say the least. Several students have told me how much they learned and how much they enjoyed the experience. In fact, one of the students, Royal Dunlap, was so inspired by the summer workshop that he will continue learning more as an intern with the Education Department of The Henry Ford.”

**Cora Christmas**, Principal, Henry Ford Academy

“Innovation 101 was a series of interactive lessons that I co-taught with the Education staff at The Henry Ford. We had roughly 40 students in the activity, and there were some striking results. Student interactivity was very high with all students participating in all activities. This was evident in not only participation but completion of feedback surveys. Students’ interest peaked during the videos of innovators and during the hands-on activities. Students were able to internalize some of the innovative traits of the innovators presented and really used those innovative skills when producing items like their marshmallow towers.

“This approach was a different approach to design learning than students had been presented in the past at our school. I found it to be straightforward, very organized and interactive. Students participating were highly engaged and maintained their motivation level through the activities.”

**Michael Flannery**,  
Henry Ford Academy, Social Studies

### Henry Ford Academy Student Comments

“I listen[ed] to Paula say things about innovation I never knew before like, innovation can be used to better somebody else’s idea or product, and I compared my traits with other innovators.”

“This experience has really been fun. I enjoyed it and I think the rest of the kids enjoyed it, and it helps you think, opens up your mind.”

“This was a great experience for me. I got to learn more about innovation and learn about innovators who have influenced the world around me.”

“These materials changed my mind on how I approach the world today. It helped me to think more clearly on the innovation in this world so that there is a better future.”

“It was engaging because we did many activities, used different technology and watched videos of true innovators.”

## Aspiring Innovators Summer Hands-on Workshop Prototype

Innovation Education Incubator Pilot, 2011-2012



The Aspiring Innovators workshop was organized and facilitated by The Henry Ford’s education team to inspire ninth-graders in Henry Ford Academy to start thinking and acting like innovators. The two-week program featured multiple ways to engage students: a contextual learning environment and innovation curriculum, team discussions on the topic of innovation, visits to local hackerspaces, tons of hands-on experiences with local “makers” and an unduplicated opportunity to meet with real-life designers and engineers. The workshop helped the students view the world through an innovative lens, develop a can-do attitude and create their own prototype of an innovation that could solve a problem facing the world today. The participants eventually exhibited their innovative ideas and prototypes at Maker Faire Detroit to more than 20,000 visitors.



### Participating Student Comments

“Attending this workshop has really opened up doors for me and what I will do with my career in the future.”

“It showed me that an idea can come out of anything and that when you fail it’s not really failing it’s making you see what changes you need to make in order to be successful.”

“It was very hands-on and diverse. We learned a lot about many different things. Overall I had a lot of fun and will always remember my time I spent here.”

“I will take a liking to the manufacturing and engineering fields. It has been proven to me that basically engineering and innovating expands into many different fields.”

“At first, I wanted to go to U of M [University of Michigan] to study law enforcement and mechanical engineering, but now I’m thinking of going to the College of Creative Studies to be better at art and study mechanical engineering in order to make my own idea.”

### A Student Further Inspired

“I saw Royal grow a little more this summer thanks to ... the AI’s [Aspiring Innovators] workshop. The program allowed him to be a little more serious about his writings and to be more proactive about how his creative writing can go from paper to a real prototype. I watched and listened to Royal and Mrs. G. have a VERY grown up conversation about the program and I was very impressed. Royal is looking forward to AI’s program [internship] this September. Thank you Mrs. G.”

**Maybelline Williams**,  
Royal Dunlap’s proud Grandmother





## Innovation 101 College-Level Prototype

Innovation Education Incubator Pilot, 2011-2012



## Innovation 101 College-Level Prototype

A weeklong summer camp prototype was developed by Lawrence Technological University in Southfield, Michigan, and The Henry Ford, and administered to undergraduate engineering students in the Dynamic Compass Network, a partnership in which six American universities collaborate on ways to instill an entrepreneurial mind-set in engineering education. At The Henry Ford, students focused on exploring creativity, innovation and ingenuity as they relate to the American experience and manufacturing. They toured Henry Ford Museum, Greenfield Village and the Ford Rouge Factory Tour with “Through the Lens of Innovation” itineraries. They also participated in a pilot version of the new Innovation 101 curriculum.

“Innovation 101 is a great educational tool for introducing what it means and what it takes to innovate and create. The material encourages and impels the students to dig deep into understanding the background to innovative new products and services. Throughout the lessons, the students gain some wonderful insight from famous innovators, and important messages are revealed. One example that my engineering students noted: Failure may happen often in the pursuit of new ideas, but we should learn from it and move on to better ideas. ... I believe that the partnership (with The Henry Ford) was a huge success ... and we would like to pursue it for the future. ... Many of the students saw its value, enjoyed it and took a lot away from it. ... The students that attended the camp came from engineering programs that were heavily focused on innovation and the entrepreneurial mind-set. So for them it was too elementary, but I don't know if that would be the case in the future. A lot is dependent on which schools the students came from and potentially even what class level (e.g., freshmen or juniors) ... The interviews are an important feature ... The students especially want more on copyright, patenting, etc.”

**Andrew Gerhart, Ph.D.,**  
associate professor of mechanical engineering,  
Lawrence Technological University

“I have a new mind-set after learning everything. I will try to be more innovative in engineering.”

**Samantha Chan,** Boston University

“I think everyone should actually be able to or required to go through this course [Innovation101] before the beginning of junior year [before students declare final major].”

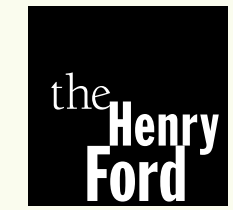
**Chloe Rose Jackson,** Bradley University





## IEI Debriefing Session at The Henry Ford

Innovation Education Incubator Pilot, 2011-2012



### IEI Debriefing Session

A two-day debriefing and sharing of “lessons from curriculum implementation” was held at The Henry Ford in July 2012. Fourteen IEI educators came together and presented their experiences, aha moments and, best of all, new adaptations of the IEI curriculum. (Everyone was invited, but some could not attend due to other commitments.) As per the participants, this debriefing session and discussion of “what worked,” “what did not work” and “how to make it work better next time” was a valuable professional development experience they will cherish. Teachers went back recharged to carry on the innovative work they started. All of the attendees shared that they will keep using The Henry Ford’s resources and will tell other teachers about their value.

#### Paula:

“Thank you” does not seem to be enough to express my deep appreciation for the opportunity you provided me this past week. Your passion for innovative education is contagious, the team you assembled remarkable. It is an honor to have been an Innovation incubee!!! You have touched many students through your materials, which will expand exponentially this next year. How terrific! ... But none of that would have been possible without you. You are an inspiration, Paula. The leadership you exhibit, the passion for excellence, the respect for educators you bestow combine to make you truly unique. ... Please also extend my thanks to the persons responsible for funding this project. Their generosity will help inspire thousands of children!

#### Joy Catania

Erie, Pennsylvania

#### Paula:

I am still dancing with joy and enthusiasm about being around you and all the others this week and ready to head back to the classroom with more tools for teaching. Coming to [The Henry Ford] and working with other colleagues is such a boost. I love networking with other teachers around the country and hearing what they are doing in their classrooms. We formed bonds that will last a lifetime ... unbelievable how two days of working together can bind us as if we have known each other for a lifetime. ... We all walked away with empowerment to make changes in our classes and to spread the word about [The Henry Ford] and its education program. ... You have no idea what this has done to ignite us all and give each other support.

#### Ann King

Houston, Texas

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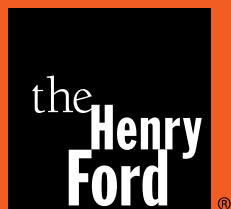
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