

# EDUCATION AND GOVERNMENT:

## *Are 21<sup>st</sup> Century Students Winners or Losers?*

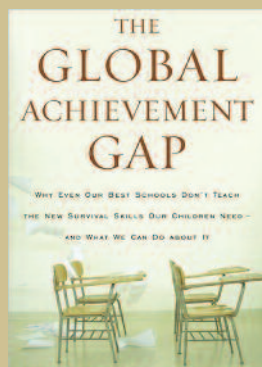
by Peggy Buffington, Ph.D., Superintendent of Schools, School City of Hobart

Thomas Jefferson developed an elaborate plan for making education available to every citizen and for providing a complete education through university for talented youths who were unable to afford it. He considered his most important accomplishment, after authoring the Declaration of Independence and the Statute for Religious Freedom, to have been the Father of the University of Virginia. He publicly supported education. *"I have indeed two great measures at heart, without which no republic can maintain itself in strength: 1. That of general education, to enable every man to judge for himself what will secure or endanger his freedom. 2. To divide every county into hundreds, of such size that all the children of each will be within reach of a central school in it."* —Thomas Jefferson to John Tyler, 1810.



As Thomas Jefferson so eloquently stated, man will secure or endanger his freedom through education. Without it, no republic can maintain its strength. The establishment of public education was a bold measure, and now the future of public education is filled with questions of survival. In order to improve the state of education, there continues to be calls for more accountability in education. The government called for educational reform efforts, which include the use of research-based strategies and high-stakes testing to assess how students are performing in the nation's schools. While No Child Left Behind (NCLB) and Adequate Yearly Progress (AYP) benchmarks measured the success of students in the country's schools, many have debated exactly what this educational reform legislation did for the sake of 21<sup>st</sup> century students. Do students come out winners or losers? This is absolutely a trick question, because the answer is "both."

Educators and legislators do care about the success of students. This is a win for students, because they recognize that our schools need to be high performing and offer opportunities for students to obtain high achievement. The question of high achievement is questionable from state to state as defined by their standardized metric. Is the quality of achievement attained by our students what they need in order to be leaders in the 21<sup>st</sup> century? Do students passing these series of high stakes tests ensure that they are ready to move forward in the 21<sup>st</sup> century with skills for college and career readiness and the global economy in which we live? Perhaps this is the most disappointing aspect of NCLB, because students have the potential for losing curriculum opportunities that provide rigor and relevance, because test genre has become such a critical aspect in the learning continuum. Educators all over the country dissect standards and tests to figure out how to help each subgroup population pass the tests. As students



**FIGURE 1** *The Global Achievement Gap.*

are not measuring the indicators deemed necessary to achieve globally?

In Tony Wagner's book, *The Global Achievement Gap: Why Even Our Best Schools Don't Teach The New Survival Skills Our Children Need—and What We Can Do About It* (see Figure 1), he describes how our nation's schools are dangerously obsolete and, instead of teaching students to be critical thinkers and problem-solvers, we are asking them to memorize facts for multiple-choice tests. He goes on to say that this problem isn't limited to low-income school districts: even our top schools aren't teaching or testing the skills that matter most in the global knowledge economy. He says, "Our teens leave school equipped to work only in the kinds of jobs that are fast disappearing from the American economy. Meanwhile, young adults in India and China are competing with our students for the most sought-after careers around the world."

Wagner conducted scores of interviews with business leaders and observed hundreds of classes in some of the nation's most highly regarded public schools. He discovered a profound disconnect between what potential employers are looking for in young people today (critical thinking skills, creativity, and effective communication) and what our schools are providing (passive learning environments and uninspired lesson plans that focus on test preparation and reward memorization).

pass these tests successfully, colleges and employers do not quite agree that they are coming to them better prepared. Why? Could it be that 21<sup>st</sup> century skills and today's standardized tests

Wagner explains how every American can work to overhaul our education system, and he shows us examples of dramatically different schools that teach all students new skills. In addition, through interviews with college graduates and people who work with them, Wagner discovers how teachers, parents, and employers can motivate the "net" generation to excellence. He explains that there are **Seven Survival Skills for Careers, College, and Citizenship** which include:

- 1. Critical Thinking and Problem-Solving**
- 2. Collaboration Across Networks and Leading by Influence**
- 3. Agility and Adaptability**
- 4. Initiative and Entrepreneurialism**
- 5. Effective Oral and Written Communication**
- 6. Accessing and Analyzing Information**
- 7. Curiosity and Imagination**

As Wagner suggests, the "net" generation is motivated by the following:

- **Being accustomed to instant gratification and "always-on" connection**
- **Using the web for: 1) extending friendships, 2) interest-driven, self-directed learning, and 3) as a tool for self-expression**
- **Constantly connecting, creating, and multitasking in a multimedia world—everywhere except in school**
- **Demonstrating less fear and respect for authority—accustomed to learning from peers; wants coaching, but only from adults who don't "talk down" to them**
- **Wanting to make a difference and do interesting/worthwhile work**

It is this "net" generation that the School City of Hobart has been working diligently to engage to become successful citizens in the 21<sup>st</sup> century. Through Small Learning Communities and



Career Academies, students are being empowered to be successful life learners. “A New Day” for Hobart High School students was the dream of the community’s citizens. This was realized with the completion of a 21<sup>st</sup> century state-of-the-art facility that opened in January 2009 (see Figure 2).

Creating the vision involved students, staff, and the community establishing a design filled with personalization of the school’s interior spaces. The school’s academic learning goals guided planning, resulting in flexible learning spaces and open areas with ubiquitous computing throughout the school to facilitate teamwork and encourage project-based learning. The curriculum includes five schools for experiential education: School of Communication and Fine Arts, School of Business Services and Information Technology, School of Health and Natural Sciences, School of Engineering and Industrial Technology, and School of Human Services (see Figure 3).



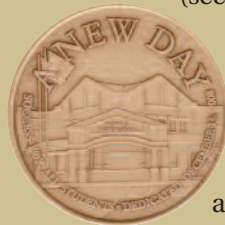
**FIGURE 3** Banners in the locker bays invite students to explore career pathways and clusters.

The high school has the feel of a small community college and promotes students to be college- and career-ready. A day in the life of the students attending the new Hobart High School is engaging and filled with opportunities. Broadcast Media students’ program continuous video, incorporating items, including school event coverage and various project-based curriculum activities, including public service announcements. Business and Marketing classes run their own student credit union and cookie business in “The Brickie Stop.” Information Technology (IT) classes assist with deploying technology and running the wireless network, as well as running their own local business. The Emergency Rescue Technology



**FIGURE 2** A new day at HHS with the opening of the 21<sup>st</sup> century high school.

Academy offers senior citizens free blood pressure screenings. The Criminal Justice class assists in finger printing elementary school children. The Blackbox Theatre hosts an intimate evening of poetry reading. The student-run Brickie Kidz pre-school is studying early childhood development with the community’s youngest citizens. Project Lead the Way (PLTW) BioMedical students are presenting grant opportunities for curing breast cancer through gene and nanotechnology research. PLTW Engineering students are distant learning with other students on the design of a cell phone charger for student lockers. It is definitely “A New Day” (see Figure 4).



**FIGURE 4** The commemorative coin from the dedication of the new HHS.

To assist in understanding the impact of career pathways on 21<sup>st</sup> century students and achievement, we will explore two of the five career pathways at Hobart High School (HHS), which include the following: the School of Engineering and Industrial Technology and the School of Human Services. In addition, we will hear from former HHS graduates as to how their high school pathways contributed to their being ready for college and the careers they have chosen (see Figure 5).

The School City of Hobart joined Project Lead The Way’s (PLTW) Network in 1999. It is a career cluster in our School of Engineering and Industrial Technology (see Figure 5).

**Figure 5**



PLTW’s mission is to ensure that America succeeds in the increasingly high-tech and high-skill global economy by partnering with middle schools and high schools to prepare students to become the most innovative and productive in the world. PLTW is the nation’s leading provider of rigorous and innovative Science, Technology, Engineering and Mathematics (STEM) education for middle schools and high schools.

#### CURRICULUM & APPROACH

PLTW’s approach, called activities-, project-, and problem-based (APPB) learning, centers on hands-on, real-world projects, helps students to understand how the information and skills they are learning in the classroom may be applied in everyday life. PLTW offers three different programs, and the School City of Hobart has all three of them, including the following:

PLTW Gateway To Technology (GTT) is a middle school program offered in six independent, nine-week units designed to help students explore math, science, and technology. This activity-oriented program challenges and engages the natural curiosity of middle school students and is taught in conjunction with a rigorous academic curriculum.

PLTW Pathway To Engineering (PTE) is a four-year high school sequence taught in conjunction with traditional math and science courses. PTE’s eight courses, including Digital Electronics, Civil Engineering, and Architecture, provide students with in-depth, hands-on knowledge of engineering and technology-based careers.

The PLTW Biomedical Sciences Program (BMS) introduces high school students to the human body, cell biology, genetics, disease, and other biomedical topics in a sequence of four courses. The program prepares students for the postsecondary education and training necessary for success in a wide variety of positions, including physician, nurse, pharmaceutical researcher, and technician.

#### RESULTS

- PLTW alumni are studying engineering and technology at five to ten times the average rate of all students.
- PLTW students have a higher retention rate in college engineering, science, and related programs, compared to other students in those areas.
- 97% of PLTW seniors intend to pursue a four-year degree or higher, whereas the national average is 67%.
- 80% of PLTW seniors say they will study engineering, technology, or computer science in college, whereas the national average is 32%.
- PLTW students achieve significantly higher scores in reading, mathematics, and science than Career and Technical Education (CTE) students in the same schools in similar CTE fields.

The results are evident with Hobart High School graduates. Learn about what PLTW in high school has meant to HHS graduates in terms of college and career readiness in Figure 6.

**Figure 6 The School City of Hobart's graduates praise Project Lead The Way (PLTW), the career cluster at HHS's School of Engineering and Industrial Technology.**

**Meet Regina**

Currently, I am a senior at Purdue University pursuing a bachelor's degree in civil engineering with an emphasis in structures and a minor in psychology. I frequently discuss my engineering qualifications and unique experiences in interviews, due to the fact that I am graduating in December. For instance, within the past four years at Purdue, I have traveled to China (see Figure 7) to study green build and sustainability and to London to observe engineering and construction issues pertaining to large-scale infrastructure projects. Thanks to Bechtel, CH2M HILL, and Fugro in the UK, I was given the opportunity to analyze some of the world's largest and most interesting constructions sites, such as the 2012 Olympic Park, Thames Tideway Project, and Crossrail (see Figure 8). I received further civil engineering knowledge through my four summer internships, three of which were for Teng and Associates in Chicago. I was also an intern for Rieth-Riley Construction Company's estimating department. My role included assisting a project engineer on an I-80/94 construction site. Interviewers are commonly interested in what led me to civil engineering. As a female, I can honestly say the Project Lead The Way (PLTW) curriculum introduced me to a new world I knew very little about, engineering. Eventually, I participated in a course based on civil engineering and architecture, which led to my present day passion.

**Meet Aaron**

I will be graduating in May with a bachelor's degree in aeronautics and astronautics engineering from Purdue University. I am very excited about going on to the "real world," however, and I thank PLTW for giving me the initial tools to allow me to follow my dreams. I was among the first students to have taken PLTW, having graduated from Hobart High School in 2006. PLTW was definitely the most beneficial during my first year of college. At Purdue, all engineering students are in the first-year engineering program together before splitting into their respective disciplines starting with their sophomore year. A few of the courses you need to take involve learning engineering problem-solving skills and generally learning exactly what engineering is (see Figure 9). I felt that I had a leg-up on everyone, as I knew what engineering was and had already taught myself the outside-the-box mentality that is required by engineers. Even though I wasn't entirely sure which discipline I was going into when I got to Purdue, I really feel that PLTW helped me know which fields did what and also made my freshman year a little less stressful than most people had it. I know of many people who had no clue what engineering was when they got here and left the School of Engineering after a semester. I have also met people who did PLTW in other schools, and they share the same feelings about it that I do.

**Meet Melanie**

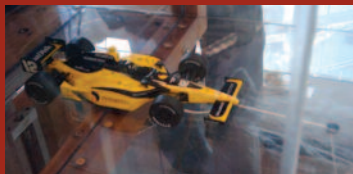
I am a sophomore in electrical engineering. PLTW classes are a great way to get started on a STEM-related career path. They've helped me tremendously with my engineering courses at Purdue University. I feel like, when I came to Purdue, I had experiences in high school that other kids did not. I had already worked with design software and worked in teams, which was a big help, because that was all we did the first year in engineering—work on projects with teams of three or four people (see Figure 10). The critical thinking and problem-solving skills I learned in my high school PLTW courses carried over into my college courses as well. The PLTW classes also helped me decide what discipline to pursue in college. The classes point you the in the right direction if you are looking for a challenging, but fun career. At Purdue, there are many organizations and programs to get involved in that deal with increasing the female population in STEM-related careers.



**Figure 7** Regina travels to China for an internship.



**Figure 8** Regina in London at a construction site for the Olympics.



**Figure 9** Aaron experiments with a Hot Wire Anemometer for an Indy Car Wake Profile.



**Figure 10** Melanie participating in the Rube Goldberg Competition with the Society of Women Engineers at Purdue University.



The School of Human Services at Hobart High has an Emergency Rescue Technology Academy. The students in this Career and Technical Education class complete the Indiana Emergency Medical Technician Curriculum. The state curriculum mandates 140 hours of instruction. Our program delivers 421 hours of instruction. This includes 24 hours of ambulance clinicals and 12 hours of clinical hours in the emergency room. Students earn their Indiana Emergency Medical Technician (EMT) certification. They also receive many life-savings certifications (see Figure 11). In addition, dual credits and post-secondary success is evident (see Figure 12).

**Figure 11 Lifesaving Certifications**

- American Heart Association (AHA) Basic Life Support for the Healthcare Provider certification (CPR)
- **AHA Airway Management** Certification
- CEVO II Ambulance Operator from the National Safety Council
- **FEMA NIMS 100, 200, 700 and 800** (ACE accredited courses)
- **Technical Rescue Awareness Certification**, Indiana Dept. of Homeland Security
- Geriatric Education for Emergency Medical Services (GEMS) certification from the American Geriatrics Society
- Pediatric Emergency Assessment and Rapid Stabilization (PEARS) from the American Heart Association
- **Hazmat Awareness and Bloodborne Pathogens** from Michigan State University School of Criminal Justice
- AWR-160 Terrorism Awareness for Emergency First Responders from Texas Engineering Extension Service, The Texas A&M University System
- 08-004 START Triage and 09-001 Autism Spectrum Disorder from the Indiana Dept. of Homeland Security
- Community Emergency Response Team (CERT) certification from FEMA

**Figure 12 Dual Credits**

**Articulation**

Students receive 6 credit hours (5 lecture hours, 4 college laboratory hours, 3 clinical hours) from Vincennes University for Emergency Medical Technician-Basic EMT212 and 7.5 Credits from IVY Tech.

All certifications, in addition to the EMT, can earn students anywhere from 6 to 12 college credits.

**Post Graduation**

Our students have demonstrated a 96% first time pass rate for the Indiana written EMT exam. This is one of the highest pass rates of any EMT program in the state.

- six students are currently pursuing EMS degrees from Vincennes University
- seven students are working full time in EMS, while attending local universities
- three students are utilizing their EMS skills, while pursuing careers in military medicine
- four students are employed by Superior Ambulance, Inc. Superior has 1,600 employees in Indiana, Illinois, and Michigan. Superior considers our program a feeder program for their recruitment and has hired our graduates on the spot



The students in this class do not hesitate to use what they have learned (see Figure 13). They are first responders. Because of direct actions taken by our students while in high school, there were two lives saved. We are confident that many more people will benefit from the level of care and expertise our students will provide. In addition, some of these students decide to cross over into the health care profession, desiring to become nurses and doctors. We are appreciative to the City of Hobart and the Hobart Fire Department for their generous partnership, as well as the Porter County Career and Technical Education Center for the success of our students in this career pathway.

The School City of Hobart started its quest for Career Pathways in 1999. It is important for other school corporations to note that Career Pathways take time to build and sustain. While a new high school provided modern infrastructure, school systems cannot let this stop them from providing the best for their students. It has taken years to get where we are today. Start small and add a class or two every year. Write grants. Present to your local school board. Upgrade and retrofit your interior spaces. Market to students. You will be astonished at the level of motivated, engaged students who are definitely achieving.

We cannot deny that it is a winning situation for students when there are so many people working hard to ensure their success. Accountability in education is necessary. The thought of our students losing opportunities due to the very tests that are used to measure their success would not be an intended outcome desired by anyone. In order for our students to be winners in global achievement, they need activities-, project-, and problem-based (APPB) learning, which centers around hands-on, real-world projects that help students understand how the information and skills they are learning in the classroom may be applied in everyday life. This type of learning requires that

**Figure 13:**

**The School City of Hobart's graduates elevate the Emergency Rescue Technology Academy from the career cluster at HHS's School of Human Services.**

#### Meet Maria

I am 18 years old and a 2010 graduate of HHS. I am currently working full time for Superior Ambulance out of the Valparaiso base and also attend Purdue North Central full time. I took the ERTA class my junior year, and it has helped me so much with my job at Superior Ambulance Service and the life lessons I use every day. Robert Lamprecht, teacher of the ERTA class, prepares you for not only working as an EMT, but also how to have patience and care for people as human beings. During my job training for Superior, people asked me where I took my EMT class, and when I told them I took it at HHS, they actually knew where it was. I did my training in Elmhurst, Illinois. I felt I was more prepared mentally and physically for my job because of this class. The class taught me how to be patient with the older generation and that, no matter what, if someone is angry or rude, you just have to smile and treat them like they are the only people in the world and their attitudes will almost always change. It's contagious! I am currently going to Purdue North Central for pre-med, and I am working on joining the Army National Guard to be a combat medic. I would recommend this class to anyone, even if they have no desire to go into a medical field. It's a great way to make friends and learn lessons you will use for life. It gives you a different outlook on how you treat people, yourself, and life (see Figure 14).



**Figure 14** Maria working for Superior Ambulance.

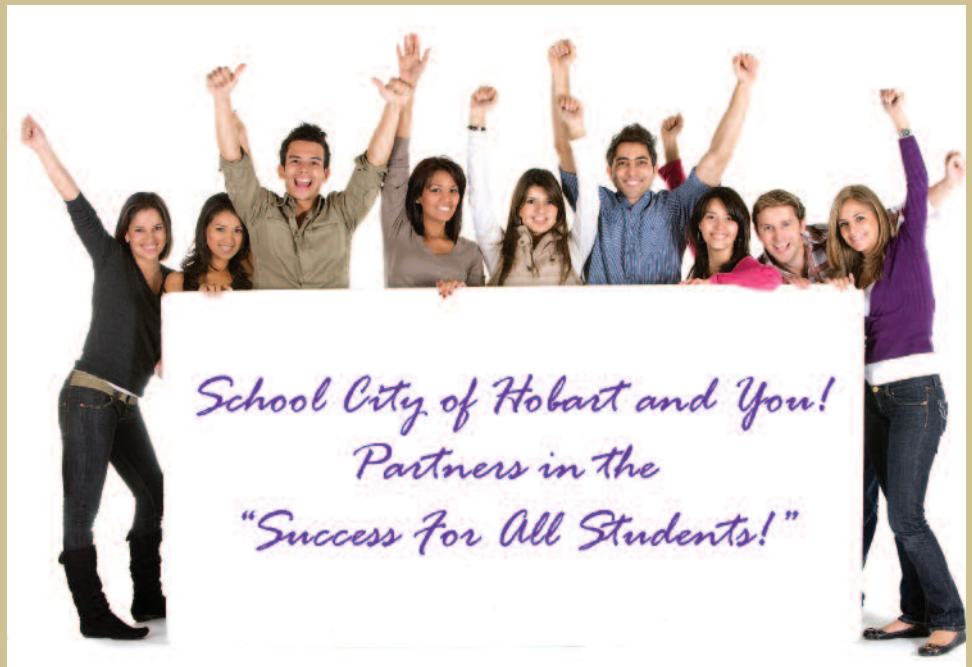
#### Meet Angelica

I am currently pursuing a nursing degree as a full-time student at Purdue North Central and work full time with Superior Ambulance out of their Merrillville base. My partner and I spend long periods of time waiting to be called into action, and when we are, the pressure is on. The coursework that Lt. Lamprecht gave us throughout the EMT course gave me a basis for understanding what I would be doing in the career I chose; however, no class can completely prepare you for what you will encounter in the real workplace. That's what Lt. Lamprecht knew, and he took a different approach to teaching us the skills we would need to know in this fast-paced environment. He found out each of our different learning styles and gave us the most realistic training opportunities. What I learned in this class were life-long guidelines that I started using my first day on the job. I felt that I was well-prepared when I was hired by Superior Ambulance Service. I learned communication skills that not only help me as an EMT, but also as a person. I can more efficiently talk to nurses about what is going on with patients, then I can turn to the patient and treat him or her with the empathy each deserves. In Lt. Lamprecht's class, I learned that, no matter how much you think you know, there is always something new to learn. I constantly find myself talking to people at work, trying to get them to teach me new tricks or techniques that they use, and I find that so helpful. During the course, Lt. Lamprecht set up a field trip to the Cadaver Lab at Purdue University North Central, and I will never forget that day, because that's when I realized how much of an interest I take in learning about the human body and how I so badly wanted to be in his class. Now, two years later, I find myself sitting in the front row of Dr. Lange's Anatomy & Physiology class. Taking the Emergency Rescue Technology Academy was one of the best decisions I have made in working towards my ultimate goal in the medical field. I recommend this class to anyone who wants to become not only an EMS provider but also a better-rounded person (see Figure 15).



**Figure 15** Angelica practices first response techniques.

the metrics we use to assess achievement be different. It also requires that we support public education with the resources needed to provide our classrooms with a world-class curriculum that has rigor and relevance, along with the professional development of faculty members. As Wagner suggested, let's give the "net" generation the motivation to achieve by providing learning environments that help them "stay constantly connected, creating, and multitasking in a multimedia world. We want them to make a difference and do interesting/worthwhile work." *There cannot be any losers in this type of school, only winners.* 🎓



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