

Plan for an Innovation School:

Worcester Technical High School's

STEM Early Career and College

Initiative



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## Innovation School Information Sheet

**Proposed Innovation School Name:**

*Worcester Technical High School's STEM Early Career and College Initiative*

**Full/Partial Conversion or New:** *Conversion*

**Proposed School Address (if known):**

*One Skyline Drive, Worcester, MA 01605*

**Primary Contact Name:** *Principal, Sheila M. Harrity*

**Primary Contact Phone Number(s):** *508-799-1940*

**Primary Contact Fax Number(s):** *508-799-1933*

**Primary Contact Email Address:** [harritys@worc.k12.ma.us](mailto:harritys@worc.k12.ma.us)

**If conversion:**

**Existing School Name:** *Worcester Technical High School*

**Existing School Address:** *One Skyline Drive, Worcester, MA 01605*

**Proposed Innovation School opening school year:** *2012-2013*

**Proposed duration of innovation plan (up to five years):** *5 years*

**Projected enrollment:**

School Year	Grade Levels	Total Student Enrollment	Total Number of Staff
First Year	Planning		
Second Year	Alden 9-12	350	35
Third Year	Construction 9-12	350	35
Fourth Year	Allied Health 9-12	350	35
Fifth Year	IT/Business 9-12	350	35
At Full Enrollment	All Academies All Grades	1400	145

**Will this school serve students from multiple districts?** *No*

## **Innovation School Prospectus Certification Statement**

**Proposed Innovation School Name:** *Worcester Technical High School's STEM Early Career and College Initiative*

**Proposed City/Town Location:** Worcester, Massachusetts 01605

I hereby certify that the information submitted in this prospectus is true to the best of my knowledge and belief.

**Signature of Authorized Person:**

\_\_\_\_\_

Date \_\_\_\_\_

**Authorized Person Information:**

**Name:** *Sheila M. Harrity, Principal*

**Address:** *One Skyline Drive, Worcester, MA 01605*

**Phone Number:** *508-799-1940*

**Fax Number:** *508-799-1933*

**Email Address:** *harritys@worc.k12.ma.us*

## Executive Summary

Industry expectations are rapidly changing. In 1973, 72% of the nation's workforce was composed of people with a high school education or less. During this time, almost one third of the nation's 91 million workers were high-school educated or less. Manufacturing was the leading industry and it was possible for those with less education, but with a strong work ethic, to earn a middle-class wage. Present industry expectations suggest that education below a high school diploma will no longer be sufficient to provide a middle class income.

According to *Pathways to Prosperity* (2011), by 2007, employment opportunities had changed drastically. While the workforce had exploded nearly 70% to 154 million workers, those with a high school education or less had shrunk to just 41% of the workforce. Many of the newly created jobs require at least some post-secondary education. According to *Standards for What? The Economic Roots of K-16 Reform*, today's jobs require more education and training. Since 1973, there has been a 16% increase in jobs requiring some further college education including an Associate's Degree. There has also been a 16% increase in employer's needs for candidates with a Bachelor's Degree or higher (see Appendix A). In 2008, median earnings of workers with a bachelor's degree were 65% higher than those of high school graduates (\$55,700 vs. \$33,800). Similarly, workers with associates' degrees earned 73% more than those who had not completed high school (\$42,000 vs. \$24,300). In addition, hourly wage gaps are widening. In 1973, the hourly wage rate between a person with an advanced degree vs. a person with some high school experience was \$12.00 per hour difference in pay. In 2005, the hourly wage gap has widened to a \$24.00 per hour difference (see Appendix B).

While industry is demanding a highly trained workforce, college enrollment has more than doubled over the last thirty years. Over 14 million students now participate in some form of post-secondary education. Although there is a dramatic increase in enrollment, there is wide disparity in college access and completion rates. Socio-economic status, race, and ethnicity play a major role in this disparity. Presently, white adults in their late 20's, are twice as likely to earn at least a bachelor's degree as African-American and Latino students of the same age. Research shows that 77% of students from higher income families, who complete their high school education, are more likely to go to college immediately following high school than compared to 46% of their low-income peers.

High school academic preparation is one reason for these low enrollment rates. According to a recent United States Department of Education study, in 1992, only 47% of African-American and 53% of Latino high school graduates were academically qualified for college – compared to 68% of white students. Contrasting, participation in rigorous course work and programs is being identified as a contributor to college readiness between black students and their peers. According to *The Fourth Annual AP Report to the Nation*, Black students represent 14% of all graduating college seniors in the United States but only 7.4% of them took Advanced Placement (AP) examinations. In comparison White (64%) and Latino/Hispanic (14.6%) graduating seniors took 61.7% and 14% of the AP examinations in 2007, respectively. The disparities between students from high- and low-income widened as well. After 1980, almost all the growth in the number of graduates came from the top quarter of income structure. Graduation rates for

students from the top quartile of family income approached 70%, but graduation rates from the second quartile of family income remained in the high 20% range.

Lt. Governor Murray stated in *A Foundation for the Future: Massachusetts' Plan for Excellence and STEM Education* (2010), developing a pipeline of STEM (Science, Technology, Engineering, and Math) graduates is not only important for Massachusetts, it is critical to the success of our nation as a whole. With baby-boomer retirements expected to deplete the science and technology workforce by 50% over the next decade, we are at risk of losing our leadership in technology and innovation. Eighty percent of jobs created in the next decade will require math and science skills. Creating this new plan is a generational responsibility for the future of our children in the Commonwealth. Worcester Technical High School, a 2011 recipient of the National Association of Secondary School Principals' Breakthrough School Award, has the foundation and infrastructure in place to meet this need and to successfully train and prepare students for STEM careers through the Worcester Technical High School's STEM Early Career and College Initiative.

Worcester Technical High School has a great foundation on which to build an Innovation School. Student success has improved steadily over the past years. MCAS scores and graduation rates have continuously improved while the drop out rate has declined. Yet, it would be wrong to take this record for granted. High student success at WTHS depends on an equally high level of commitment, practice, and partnership. Furthermore, WTHS has room to grow as it strives to support students in their development as independent learners responsible to each other and to the larger community. Students need to be properly prepared with 21<sup>st</sup> century skills to not only qualify for post-secondary education, but to succeed once there. Becoming an Innovation School is important to ensure that WTHS stays on the cutting edge; properly preparing its students for STEM related careers.

Being an Innovation School will permit WTHS to make consistent and measurable gains towards both college acceptance and career success for every one of our graduates. Having autonomy in curriculum, instruction, and assessment will allow classroom teachers and technical instructors to carefully craft the content for their students. Freedoms in instruction will allow the faculty to have a shared definition of high quality teaching and learning. Further, instructional coherence will provide a consistent approach to learning incorporating the successful applied learning model that our technical programs so expertly utilize.

Autonomy in the area of budget will provide the school the opportunity to make critical resource decisions that best serve the students at the school, and the daily schedule will be created to ensure maximum learning time for students at all levels. WTHS will exercise important staffing autonomies that will afford the community of the school to determine who will be hired when openings exist. Panels of administrators and department heads will be involved in interviewing and vetting potential teacher candidates. Further, while evaluation of teachers will follow the current collective bargaining agreement, teachers will continue to receive feedback on the implementation of the common core standards and Worcester Public Schools' High Quality Teaching and Learning document.

The school will have a strong, imbedded professional development. Teachers will be provided with the necessary professional development to be skilled in the pedagogy of inquiry and problem solving. With the help of the advisory board teachers will also be prepared to

incorporate experiential and applied learning that integrates science, technology, engineering, and mathematics into coherent classroom instruction. In addition, professional development will target effective use of technology as tools for learning, recognizing its application as an essential resource for every 21<sup>st</sup> century STEM profession. Furthermore, teachers will seek out innovative ways to further improve their understanding of their students' strengths and weaknesses, through data analysis and the creation of active assessments.

In conclusion, Worcester Technical STEM Innovation Early Career and College High School has the potential to become the leading producer of qualified students going into STEM majors in college and careers. With the school's state of the art infrastructure, it is in a perfect position to become a STEM Innovation Early Career and College High School. Our natural connection with business partners and industry would allow us to continue to support student learning. Our students will be trained to fill the STEM needs in Central Massachusetts and across the Commonwealth.

## **Public Statement**

Worcester Technical High School, a Worcester Public School, is excited to announce that it has submitted a plan to the Worcester School Committee for consideration as a conversion model Innovation School. Located at One Skyline Drive and servicing 1400 students in grades 9 through 12, WTHS enrolls students from all areas of the City of Worcester. Status as an Innovation School represents the next important and critical step in providing STEM related instruction to our students to ensure their success in post-secondary STEM education and STEM careers.

### **I. Mission, Vision, Statement of Need, Primary & Proposed Partners**

#### **A. Mission**

*The mission of Worcester Technical High School is to educate and prepare our students, both academically and technically, to meet the challenges of a global society. Students will be provided with a highly supportive and academically challenging learning environment in the STEM initiatives to ensure our graduates are prepared for career and college and are able to compete globally.*

#### **B. School Philosophy**

*The philosophy of Worcester Technical High School is steeped in a proud tradition of providing excellence in technical and academic education. Administration, faculty, staff, and students work collaboratively to promote a school culture that fosters the expectation of excellence while respecting differences. All students are treated with respect and dignity and are provided diverse, extra-curricular experiences as they pursue their professional and academic goals in a multicultural environment. The educational climate serves to guide, assist and instill in each*

*student a commitment to lifelong learning and to develop productive, responsible, and well-rounded citizens. All programs are enhanced and supported by partnership with community, industry, and educational institutions, as well as through participation and recommendations of various advisory boards. This educational environment affords all students the opportunity to achieve to their fullest potential. Our philosophy is supported by clearly defined curriculum goals focused to meet or exceed current standards, yet flexible enough to meet the demands of an ever-changing world.*

## C. Vision

*The proposed vision for Worcester Technical High School's STEM Early Career and College Initiative is to provide a safe and rigorous applied learning environment with an integrated focus on preparing students with 21<sup>st</sup> century skills.*

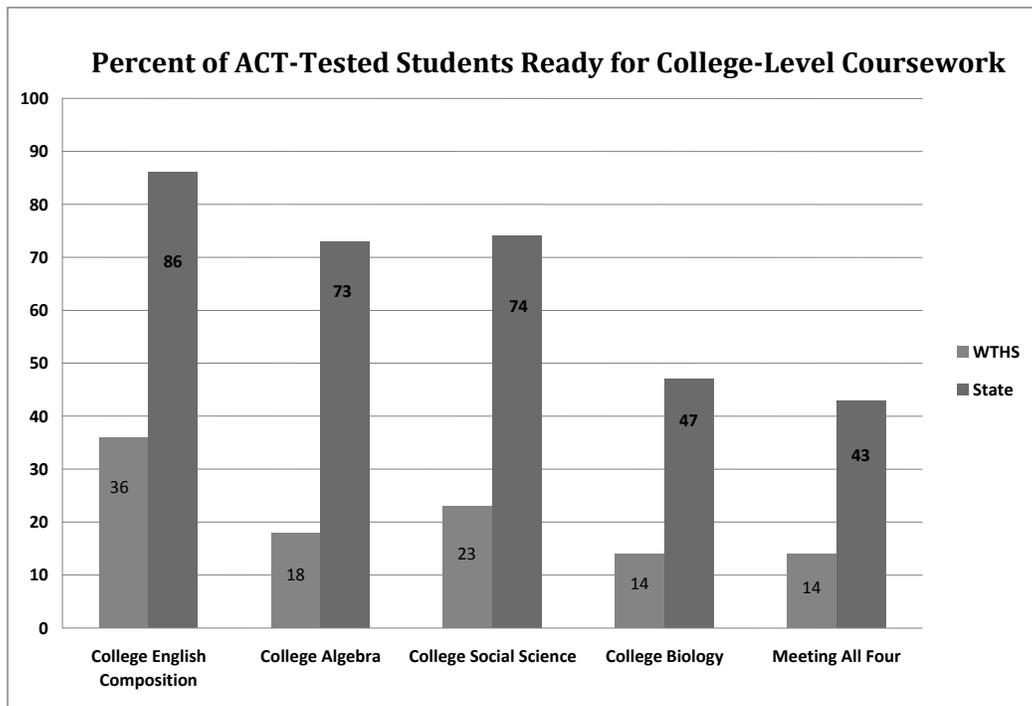
## D. Statement of Needs

Our country has a significant achievement gap with minority populations and has not been able to meet the demands and expectations of industry. Based on the National Assessment of Education Progress, between 1970 and 1980, black and Hispanic students made great strides in narrowing the achievement gap between them and their white peers. Subsequently, all the progress made during those years has come to a halt. Now, African-American and Latino high school seniors, on average, score at the same level as non-Hispanic, white 8<sup>th</sup> graders on NAEP math and reading tests. According to Sam Dillon from the New York Times, this was largely due to a shift in demographics; there are now far more lower scoring minorities in relation to whites. In 1971, the proportion of white, 17 year olds who took the reading test was 87%, while minorities was 12%. In 2010, whites had declined to 59% while minorities had increased to 40%.

Furthermore, the status drop out rate nationally declined from 14% in 1980 to 8% in 2008. Although the national average declined by 6%, the ethnic composition of these numbers (18.3% Hispanic, 8% black and 4.8% white) represents a growing achievement gap in minority populations (National Center For Education Statistics, 2010).

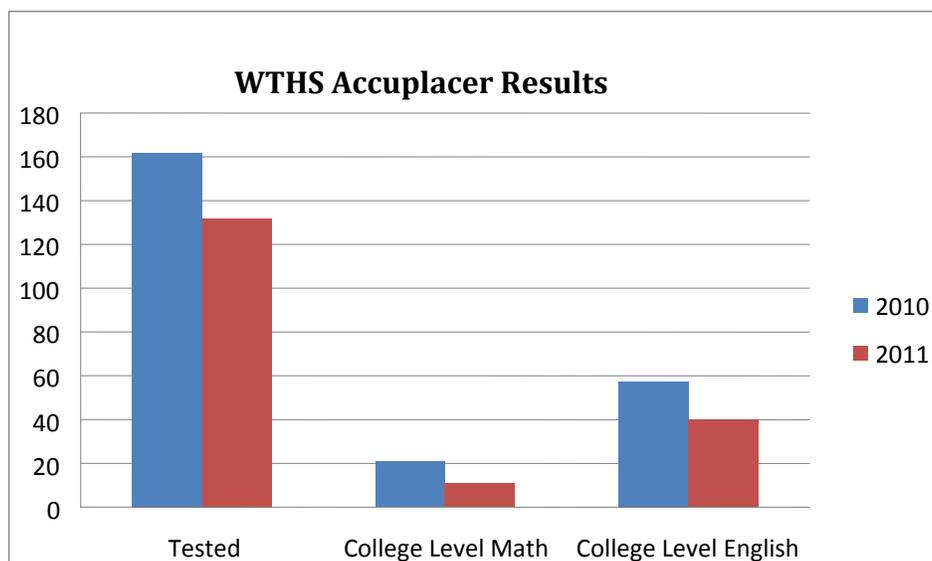
WTHS is serving approximately 1400 students. Fifty-two percent are female; forty-eight percent are male. Twenty percent of our students are on an Individual Education Plan and sixty-one percent of our students qualify for free or reduced lunch. According to the 2010 AYP Data Report, 89.4% of our white students met the state performance target in mathematics. The following sub-group populations did not meet any of the state targets (84.3%). They are as follows: 69.6% for ELL, 63.1% for Special Education, 81.6% Hispanic.

While students will pursue a variety of paths after high school, all students should be prepared for college and career. According to ACT our students are falling significantly behind their peers in the state regarding preparedness for college level work. The following graph illustrates the percentage of WTHS ACT-tested students ready for college-level course work compared to their state peers.



A study conducted by the Manhattan Institute for Policy Research estimates that in 2003, only 38% of Massachusetts teenagers finished high school with sufficient coursework and basic reading skills to be considered college-ready. This lack of preparation resulted in substantial rates of remediation in colleges, with over one in three Massachusetts high school graduates requiring remediation coursework in one or more subjects in their first year in the state's colleges and universities

Our students have had minimal success in Accuplacer testing. This test determines if students are able to advance directly into college level course work or need remedial courses. The graph below shows WTHS student Accuplacer results for the school year 2009-10 and 2010-11.



All tenth graders at WTHS take the PSAT exam in the fall. According to the 2010-2011 Summary of Answers and Skill Report generated by PSAT/NMSQT, out of 334 tenth graders, only 7.5% tested college ready based on PSAT/NMSQT college readiness benchmarks. In addition, 94 students of the Class of 2012 took the PSAT exam and only 3.2% were deemed college ready.

### 2011 SAT Scores

College Bound Seniors	Mean Score Critical Reading	Mean Score Mathematics	Mean Score Writing
WTHS	421	431	401
Total Group	497	514	489

Students at Worcester Technical High School are scoring approximately 80 points less than the national average on each portion of the SAT exams. Students are falling short in Critical Reading, mathematics, and writing portions of the exam. These areas will be supported through the STEM initiative to assist students with college acceptance.

In addition, according to *The Partnership for 21<sup>st</sup> Century Skills Report* (2006), 45% of 400 executives surveyed rated recently hired high school graduates as “deficient” in applied skills – the ability to use knowledge to perform workplace tasks. Another report released in 2006 titled *Are They Really Ready To Work?* stated, “Students with a high school diploma entering the

workforce do not have a single item in the Excellent List. All 10 skills that a majority of employer respondents rate as “very important” to workforce success are on the Deficiency List”.

The Partnership for 21<sup>st</sup> Century Skills (2006) has brought together business and educational leaders to outline the skills and content knowledge that students should master in order to be successful. The report, *Learning for the 21<sup>st</sup> Century* (2002), recommends schools to focus on six key elements of 21<sup>st</sup> century learning:

- Core Subjects – understanding the core academic content at a much higher level.
- Learning Skills – students need to know how to use their knowledge and skills by thinking critically, applying knowledge to new situations, analyzing information, comprehending new ideas, communicating, collaborating, solving problems, and making decisions.
- 21<sup>st</sup> Century Tools – incorporating information and communication technologies into education starting in the elementary grades.
- 21<sup>st</sup> Century Context – experiences that are relevant to student lives, connected to real world applications and based on authentic projects.
- 21<sup>st</sup> Century Content – global awareness; financial, economic, and business literacy; and civic literacy.
- New Assessments that Measure 21<sup>st</sup> Century Skills – high quality standardized testing for accountability purposes and classroom assessments for improved teaching and learning in the classroom (Partnership for Learning, 2002).

Presently, Worcester Technical High School is the largest high school in the city. Yet, it offers the lowest number of AP courses servicing the lowest number of students compared to the comprehensive high schools in Worcester Public Schools. Furthermore, our school has the lowest number of students earning a 3 or better, qualifying for potential college credit. With the Worcester Technical High School’s STEM Early Career and College Initiative Plan, additional AP courses will increase enrollment in AP courses as well as prepare more students for college level work. WTHS students have had limited college success. Many students have to take remedial courses and many do not advance to the second year of college. With the Worcester Technical High School’s STEM Early Career and College Initiative, autonomy and flexibility provided by the school will be necessary in order to carry out the objectives of the school. Curriculum and instruction autonomy will allow STEM focus, increase rigor and promote college readiness. Providing a STEM focus will also prepare students with the 21<sup>st</sup> century skills necessary to compete in our global society.

## **E. Primary and Proposed Partners**

The external partners that will contribute to the establishment and operation of the Worcester Technical High School’s STEM Early Career and College Initiative are many and varied. WTHS has a long history of working with external partners in the enrichment of the vocational technical education programs. As a Chapter 74 approved vocational-technical high school, WTHS has over 350 industry advisors that contribute to the direction and success of the school and its students. These 350 individuals create both the General Advisory Board and the Program Advisory Committees. The General Advisory Board, chaired by Mr. Edwin “Ted”

Coghlin, is composed of the chairpersons of the program advisory committees. The General Advisory Board meets a minimum of twice per year with the responsibility of advising the Worcester School Committee as to the planning, operation, and evaluation of vocational technical instruction provided by the programs under its control. The Program Advisory Committees are established for each approved technical program and meet more frequently to review the curriculum, equipment, internships/co-ops, and career trends of the respective programs. The program advisory committees consist of representatives of local business and industry related to the program, organized labor, postsecondary institutions, parents/guardians, students, and representatives from registered apprenticeship programs, if applicable. The program advisory committees are integral partners in the provision of a truly college-career ready curriculum. They are the front lines for the industries that they represent. They provide direction to the programs as to the trends in their fields in regards to training, equipment, certifications, licensure, education, and careers.

Worcester Technical High School is designed using the small learning community model. Funding from the Carnegie Foundation Planning Grant and a federally funded Small Learning Community Implementation Grant allowed our large high school to divide into four small learning communities (SLC's). Twenty-four technical programs are divided into four SLC's. The SLC's are: Alden Design and Engineering Academy, Allied Health and Human Services Academy, Coghlin Construction Academy, Information Technology Academy.

WTHS has established entrustments with industry leaders to ensure that each technical program is meeting the challenge of training students in the latest technology for 21<sup>st</sup> century skills. In the Information Technology Academy, Cisco Systems, Dell, and Microsoft have provided state-of-the-art servers, personal computing, and applications, including the latest cloud technology and WTHS website. Océ and ADOBE are providing Graphic Communication students the latest in design and printing technology. In the Alden Design and Engineering Academy, Saint-Gobain is ensuring that the students in Automotive Collision are using the newest technology in abrasives, and Harr is providing the Automotive Technology program with the most recent developments in the automotive industry. Students in Electro-mechanical and Machine Technology are using current HAAS CNC machines. As an innovation school, WTHS would work to expand and renew existing entrustments with industry leaders in all technical programs.

WTHS has established successful partnerships with post-secondary institutions through dual enrollment and articulation agreements. Quinsigamond Community College is an active partner offering Spanish I, Spanish II, and college Algebra for college credit, at our high school. By offering foreign language courses, students are fulfilling the two-year consecutive foreign language requirement needed for acceptance to four-year state colleges and universities. Another successful agreement is between Mount Wachusett Community College and WTHS' ISS&N Program. This program allows students, who successfully complete the designated telecommunications program courses, an opportunity to earn 24 college credits in Information Technology. Other articulation agreements with post-secondary technical institutions, as well as dual enrollment agreements with Quinsigamond Community College, Worcester State University, and Becker College, exist. WTHS will work with QCC to establish programs for each of the four academies in which pathways to careers in STEM are available. More specifically, WTHS will work on expanding the opportunity for students to take advantage of the Engineering 2 + 2 Program. This program allows students to attend QCC and earn an

Associate's degree in Engineering; students with a qualifying GPA can then continue their engineering studies at Worcester Polytechnic Institute for a Bachelor's degree.

The school's Allied Health Program has a strong partnership with St. Vincent's Hospital, and UMass Medical School. The vehicle for this partnership is the Worcester Pipeline Collaborative (WPC) which is a collaborative of the Worcester Public Schools, several local colleges, biotechnology businesses, and the University of Massachusetts Medical School. The long standing mission of the WPC has been to encourage, educate, and challenge under-represented, educationally, and economically disadvantaged students for success in biotechnology, biomedical research, and health care professions where they are traditionally under-represented. Building upon strong relationships will ensure expanded success for the early college high school initiative.

Quinsigamond Community College (QCC) has partnered with Worcester Public Schools (WPS) in a grant funded Vision Project. This innovative project will prepare students for success in college programs and careers. With WPS and Worcester State University (WSU), QCC will set in motion a three-year "best practices" strategy to (1) move students through Worcester's math pipeline (i.e. high school to community college to four year university), and (2) channel them into rigorous certificate and degree programs and careers in STEM.

Constituting 25% of QCC's full-time freshmen, WPS is Quinsigamond Community College's largest and most diverse feeder system. However, nearly 86% of the 500+ WPS students who attended QCC in 2010 had to take at least one non-credit bearing developmental math class. The data shows that students starting in MAT090 (the lowest developmental math class) have less than a 10% chance of graduating.

As the "M" in STEM, math is the foundation for access to higher education and careers in STEM and the single most formidable barrier to both. The Vision Project is both strategic and deliberate. It plugs the math pipeline leak moving students from high school to college through an ECHS model to ensure college-readiness. The Vision Project targets students that have taken the Accuplacer test and placed into MAT090, MAT095, or MAT099, with preference given to students on an EPP. QCC and WPS faculty will then develop junior and senior level math courses based on skill gaps identified in Accuplacer. The courses will satisfy the WPS math requirement and will be taught by WPS faculty. Data and results will be used to modify the courses. Students, enrolled in the grant funded project, will also take after school math boot camps. These camps will be offered to students after their sophomore, junior and senior years. MAT100 will also be offered at the high schools for those who are ready for college level work. QCC will also provide STEM career and college awareness activities.

The Vision Project initiative promotes college participation with WPS, college completion with QCC and WSU, workforce alignment through access to STEM Pathways, student learning with assessment and evaluation, and elimination of disparities through working with diverse populations. The overarching goal of the Vision Project is to clear the path to higher education and careers in STEM.

WTHS is seeking to continue this trend with post-secondary institutions through the development of Early Career and College High School STEM programs. WTHS is piloting an Early Career and College High School program with Northeastern University College of

Professional Studies. This program will align both school-based curriculum and college level courses in a way that provides students in the Information Technology Academy, with college credit that would apply to an Associate's or Bachelor's degree in Information Technology.

Additionally, Becker College and MassDiGI (Massachusetts Digital Gaming Institute) is seeking to partner with industry leaders and other educational institutions, such as the award-winning WTHS, on the Games Curriculum Alignment Model/Prototype Project (Games CAMPP). This partnership is seeking to develop guidelines or frameworks for the first national 'roadmap' to align digital game design and development curricula between high schools and colleges (2 and 4 year programs). Games CAMPP will advance student outcomes and academic progress relating to enrollment, persistence, completion, and ultimately employment and/or post-graduate study opportunities in the \$52.2 billion video game industry.

The chairperson of our general advisory, Mr. Edwin "Ted" Coghlin, supports Worcester Technical High School's Early Career and College High School Innovation School proposal. Please see Appendix C for his letter of endorsement.

## **II. Proposal for Conversion**

The Worcester Technical High School's STEM Early Career and College Initiative will be open to students who want to get an early start on their college career and to students who may not normally consider college (i.e. underperforming students, low-income, special needs, first generation college goers, etc.). We envision that, once at full capacity, all students would graduate from WTHS with a high school diploma, a technical certificate, and the opportunity to earn college credits.

The early career and college initiative should:

1. Ensure a higher college and career readiness success rate: Early college designs serve as a proven college and career ready strategy for students not already college bound and as a head start on college for those already committed to a postsecondary credential.
2. Improve alignment of standards and curricula: Early college designs support and reinforce alignment of postsecondary courses with career/technical competencies and college ready standards.

The staff of Worcester Technical High School's STEM Early Career and College Initiative will continue to align the Massachusetts curriculum frameworks to meet industry standard certificates or general education requirements of two and four year institutions. For example: high school students may be required to enroll in foundation or "gatekeeper" courses such as first college level math or English courses which, when successfully completed, are highly predictive of earning a credential. The expectation is that students will require and receive substantial comprehensive student support. Students will have the opportunity to earn college credits through articulations and dual enrollments with partner colleges or technical institutions. Early college designs for these populations can be a powerful strategy for ensuring that students are not only on track for high school graduation but also on a path to a post-secondary credential.

Science, Technology, Engineering, and Mathematics (STEM) are the lifeblood of the 21<sup>st</sup> Century education, workforce, and economic innovation. The ability to integrate STEM topics to solve abstract and concrete problems, to think critically and creatively, and to communicate and work in teams are all fundamental requirements of a civil society, the marketplace, and the military. WTHS is uniquely situated to expand the current Small Learning Community (SLC) model, integration projects, and career and college readiness programs to address the Commonwealth of Massachusetts' STEM initiatives. Governor Deval Patrick's Executive Order Number 513, Section 4, includes members to the governor's Advisory Council from 9 fields: Biotechnology, Clean Energy, Engineering, Healthcare, Information Technology, Manufacturing, Elementary and Secondary Education, Higher Education, and Vocational-Technical Education. These areas are all represented in WTHS's four established small learning communities: Alden Design and Engineering, Coghlin Construction, Information Technology, and Allied Health and Human Services. Furthermore, we have business and industry partners, higher education, parents, and community leaders as members of the General Advisory Board. Being an Innovation School will provide the flexibility and autonomy to plan, to implement, and to expand the current, successful model to include more STEM and Early Career and College High School programs to address the changing student profiles and business and industry needs.

Since 2006, our school has reached the benchmarks in ELA, mathematics, and every sub-group established by No Child Left Behind, five out of the past six years. MCAS scores in the Advanced and Proficient categories in ELA have increased by 50% and in mathematics by 39% in the past five years. Ninety-three percent of our students have passed the science MCAS exam as freshmen. Due to the significant increase, over 125 students now qualify for the state's John and Abigail Adams State Tuition Scholarship. The vision for WTHS is broken down into four phases.

- Phase One: building a brand new, \$90 million, state-of-the-art facility to support academic and vocational/technical education.
- Phase Two: focus on increasing the rigor of course work. We doubled the number of honors courses and offered advanced placement biology to increase post-secondary opportunities for students in the Allied Health and Human Services Academy.
- Phase Three: align curriculum to successfully prepare students for AP and college level course work. Last year, WTHS successfully secured Massachusetts' Math and Science Initiative (MMSI) funding to expand STEM AP courses. The MMSI grant is geared toward expanding the number of students selecting advanced placement courses and increasing their academic performance on these tests. WTHS chose to participate in this grant because increasing AP participation is linked to raising aspirations and giving students an understanding of the demanding nature of college level work. AP courses enable students to take college level courses and earn college credits or placement while still in high school. In addition AP courses help improve writing skills, sharpen problem solving, improve study skills, and promote time management skills. Furthermore, students who take AP courses are much more likely to graduate from college in four years. Taking AP increases eligibility for scholarships and makes candidates more attractive to colleges. WTHS has expanded AP course offerings to include: AP Biology, AP Literature, AP Language and Composition, AP Statistics, and for the 2011-2012 school year will be offering AP Environmental Science and AP Computer Science. Over 125 students last year completed AP coursework and WTHS students had a 60% increase in qualifying scores.

- Phase Four: WTHS will become an early career and college STEM high school to enable students to have a successful college experience. Although students at WTHS have made great gains, there is significant work to be done. The administration and staff at Worcester Tech would like to build upon this success to solidify student achievement. Aligning with the Worcester Public Schools' Compact, our goal is to have 100% of our graduates successfully completing high school coursework that prepares them for both college and career. Presently, WTHS has a 92.4% graduation rate with a 0.4% drop out rate. Only 73% of our students have college plans. Although our school is showing increased four-year college placement, becoming an Early Career and College High School will significantly increase graduation rates as well as two and four-year college placement.

<b>Post Graduation Plans 2011</b>					
<b>4 Year College</b>	<b>2 Year College</b>	<b>Other Post-secondary school</b>	<b>Employment</b>	<b>Military</b>	<b>No Plan Unknown</b>
32%	41%	4%	18%	2%	3%
<b>2010</b>					
27%	42%	6%	22%	2%	1%
<b>2009</b>					
15%	53%	1%	28%	2%	1%
<b>2008</b>					
9%	53%		34%	1%	3%
<b>2007</b>					
13%	45%	1%	31%	5%	5%
<b>2006</b>					
18%	53%		23%	4%	2%

### **III. How will autonomy and flexibility be used to improve school performance and student achievement?**

#### **A. Preliminary Assessment of the Autonomy and Flexibility**

Being an Innovation School will permit WTHS to make consistent and measurable gains toward both college acceptance and success for every one of our graduates. Having autonomy in curriculum, instruction, and assessment will allow classroom teachers to carefully craft the content for their students, while adhering to Massachusetts frameworks. Freedoms in instruction will allow the faculty to have a shared definition of high quality teaching and learning. Further, instructional coherence will provide a consistent approach to learning for all classes irrespective of course content. Both formative and summative assessments will be used to assess student

learning. The school will use a variety of assessments to ensure that it is living up to the core values, vision, and mission set forth.

According to the Bill and Melinda Gates Foundation, “student achievement in STEM disciplines in high school is among the strongest predictors of success in college.” In addition, they believe that technology holds the promise of delivering learning solutions in a cost-effective manner. Furthermore, the Governor’s Science, Technology, Engineering, and Math Advisory Council states:

- Eighty percent of jobs created in the next decade will require math and science skills.
- STEM related jobs pay higher wages and have greater levels of job security during down economic periods than other sectors.
- STEM related positions are likely to lead to medical advances, the creation of new products, and a stronger national economy.

This State Advisory Council is working to move Massachusetts in a positive direction relative to a STEM-prepared workforce and jobs. Their goal is to ensure that all students are educated in STEM fields, which will enable them to pursue post-secondary degrees or careers in these areas, as well as raise awareness of the benefits associated with an increased statewide focus on STEM.

Our proposal is aligned with the *Massachusetts’ Plan for Excellence in STEM Education* and our goals strive to nurture students’ innate curiosity and spark student interest and excitement in STEM subjects through authentic, experiential learning. We will consult with the Regional STEM Collaborative to develop best practices and will strive to be an important link in the STEM Pipeline as we pursue excellence in our role within the core of the state’s “STEM Theory-of-Action” outlined in the *Massachusetts’ Plan for Excellence in STEM Education*.

At WTHS the collective efficacy is elevated; we truly believe that the efforts of the faculty as a whole has positive effects on students. It is this premise that supports the request for autonomy within curriculum and professional development. "Decades of research on school autonomy show that to really improve student performance, schools need not just freedom from central regulation, but the tools with which to exercise it." (Dillon, 2011) The School Accountability Plan, created by Central Administration, is a tool that WTHS has and continues to use to carefully reflect on our prior progress and plan for future successes.

The WTHS Instructional Leadership Team (ILT) evaluates multiple sources of data in order to compile targeted goals to accelerate student and faculty achievement. The data sources include: ELA, Math, and Biology MCAS results, MAP results, college acceptance and retention, career placement, teacher and student attendance records, and family/community participation. The MCAS data is closely analyzed in relation to the action steps of the previous year in order to determine the strengths and areas with room for improvement. From this information the ILT is able to decipher targeted goals with clear and concise action steps that support the students and faculty in achieving said goals.

From these actions steps a School Focus is carefully crafted and then three school-wide, research driven, and continuous best practices are shaped around this focus. In order to accelerate all learners towards this goal the necessary Professional Development (PD) for the faculty is planned. Built into this PD are initiatives that support faculty in successfully implementing the best practices. Modes of presenting this PD include additional support pieces offered throughout

the school day, scheduled half and full days, and departmental and faculty meetings. With input from the faculty, topics in the past included but were not limited to: clarity on the necessity and implementation of integration between technical and academic areas, acceleration of all students through AP, pre-AP, and AVID initiatives, ELL category training for all faculty, incorporating science fair research into the technical areas, morphological versus mnemonic vocabulary strategies, questioning techniques, inquiry based learning, close reading strategies, and technology training to provide faculty and students with skills needed to utilize these resources with discretion. As the school implements the STEM Early Career and College Plan, further work in the above mentioned trainings, as well as additional trainings targeting student success in the STEM initiative, will be incorporated.

An integral component of professional development is the function of the Focused Instructional Coach. The Coach supports high academic achievement by offering professional development to teachers, both individual and groups, modeling best practices, facilitating academic-technical integration programs, and conducting data analysis of MAP, MCAS, PSAT, SAT, and other standardized tests for continuous curriculum improvement.

## B. Curriculum

The Worcester Technical High School's STEM Early Career and College Initiative program will use the budget, staffing, policy, schedule, curriculum/instruction, and assessment autonomies to strengthen teaching and learning for all the students while increasing academic performance.

Students will become aware of how STEM impacts them through strong community engagement. Once student interest is initiated, the student must be properly supported, leading to increased levels of self-motivation. According to *A Foundation for the Future: Massachusetts' Plan for Excellence in STEM Education*, students then have the AIM (Awareness, Interest, Motivation) that is supported by experiential learning opportunities both informally and community based. Student AIM is the foundation that academic coherence is built upon. Curriculum must align and integrate experiences, but it must also incorporate the latest STEM pedagogy across subjects and grade levels. Instructors will be encouraged to create curriculum based on current industry practice and research in their practical fields:

- STEM focused curriculum to prepare students with 21<sup>st</sup> century skills.
- Intelligent integration of technology use in the curriculum.
- Personalized assessment and instruction.
- Rigorous college level courses
- Collaboration with Quinsigamond Community College and other local colleges to improve college readiness.

When planning the curriculum WTHS will follow principles expressed by Grant Wiggins and Jay McTigue. The curriculum should:

- Identify what students will understand, know, and be able to do at the conclusion of each unit and lesson (the standards-aligned outcomes/objectives).

- Identify the performance tasks and other assessments that will be administered to generate evidence of students' understanding/mastery of the outcomes/objectives.
- Identify the learning experiences, related materials, and instruction that will promote students' mastery of the outcomes/objectives.
- Utilize Bloom's taxonomy to create assessments that incorporate 21<sup>st</sup> century skills to measure higher order thinking.

In accordance to the Massachusetts Department of Elementary and Secondary Education, all Massachusetts Curricula Frameworks including Vocational/Technical Curricula Frameworks will continue to be the overarching curriculum documents that WTHS will follow.

## **i. Science**

The Science department at Worcester Technical High School plays a central role in preparing students for college and careers in STEM related fields. Two strategies support this initiative:

1. Insuring that science courses have sufficient rigor to prepare students for STEM related college and career pathways
2. Insuring that the science curriculum aligns with and supports the technical programs of study at WTHS.

Academic rigor in science begins with the freshman year. Students are made aware of the high level of achievement expected of them as evidenced by the results of the Biology MCAS test results. All freshmen at WTHS prepare for this high stakes exam to fulfill their Massachusetts science and technology graduation requirement. Worcester Technical High School Biology MCAS scores are the highest in the Worcester Public Schools. In 2011, 92 % of freshmen passed this exam. These test results approach state achievement levels. This high level of academic achievement in the freshman year sets the stage for academic rigor in successive years.

The science teachers at WTHS work collaboratively to develop effective teaching strategies that produce these outstanding results. A curriculum map was developed to allow individual instructors to pace their instruction to match that of their peers. A teacher generated common assessment tool allows them to compare the performance of their individual classes with that of the whole. After the common assessment is administered and analyzed, each student receives an individualized plan for MCAS preparation which includes a focused tutoring component. In this phase, each instructor selects an area of expertise in which to tutor students. Students from any class may attend any and all of these sessions, regardless of their primary instructor.

Additionally, science instructors incorporate the latest teaching technology in planning and executing their learning units. These include: ELMO document technology, SmartBoard technology, and PASCO Probeware laboratory data based investigations. Throughout science instruction, data collection, analysis and critical thinking skills are emphasized to support 21<sup>st</sup> Century skill requirements and prepare students for college and career.

The Science Projects Fair allows students to demonstrate their academic and technical skills in a real world setting by providing them with an opportunity to conduct original research and present their finding to a panel of judges for critical review. Students may participate in the Regional Science Fair (open to all high school students in Central Massachusetts), the City Wide Science Fair (sponsored by the Worcester Public Schools) and /or the WTHS Science Projects Fair (open

to all WTHS students). Successful participants may advance to the State and National competitions. The unifying theme throughout science instruction is to make connections between the abstract concepts of science and their real world application especially as they pertain to students' individual technical programs of study. Students participating in project fairs are encouraged to select investigations that make these connections.

The second STEM goal of the science department is to align the curriculum with the requirements of the various technical departments and colleges to insure that science instruction is relevant to their needs. Advanced Placement Biology was introduced to provide students in the health related programs with the academic foundation required for college study in nursing, biotechnology or bioengineering. Advance Placement Physics will be introduced as soon as possible to provide a similar foundation for students in engineering, design, and manufacturing related fields of study.

Preparation for AP course work begins in the freshman year. Potential AP students are identified and placed in sophomore honors level classes. The results of the PSAT AP Potential are reviewed when they become available to identify students in the sophomore class. To prepare students for AP rigor, numerous pre AP strategies are incorporated into the freshman and sophomore curriculum. Science instructors attend summer MMSI workshops to learn these strategies and then bring them back to their classrooms. Additionally, where possible, the curriculum is modified to allow for vertical integration of concepts. For example: sophomore chemistry is considered a pre requisite for AP biology. A unit on organic chemistry has been incorporated into sophomore chemistry course to align it with the needs of AP Biology.

## **ii. Math**

The Math Department's goal is to increase student experiences and exposure to a rigorous math curriculum ensuring that all students have maximized their mathematics education. Currently students take the core math courses in the following sequence: Algebra I, Geometry, Advanced Algebra (Algebra II). In their senior year, students are enrolled in either Advanced Algebra with Trigonometry, Pre-Calculus, or AP Statistics. In addition to these courses, Topics in Algebra and Geometry is offered as a remedial course prior to Advanced Algebra. This four-year sequence is unique to WTHS as Massachusetts public school students are required to successfully complete three years of math for a high school diploma. WTHS believes that students should be presented every opportunity to increase their math knowledge and skills.

To enhance and expand curriculum offerings to meet student demands for more rigorous course work, Pre-Calculus was offered during the summer of 2011. This allowed our students to take Pre-Calculus which created an opportunity to enroll in Advanced Placement Statistics in their senior year. Additionally, Worcester Technical High School created an agreement with Quinsigamond Community College to teach college level Algebra I, as an after school course at Worcester Tech, to students in their senior year. This allows our students a leg-up in their college preparation and an opportunity to earn three college credits free of charge.

For students currently excelling in mathematics, WTHS offers Geometry and Advanced Algebra during the sophomore year schedule to enable students to be properly prepared for Calculus

courses. This will enhance their ability to be successful in their technical programs and future career and college endeavors. We will continue to investigate and explore possibilities not limited to our school day to provide students with every opportunity to earn college credit and to graduate career and college ready. We will also explore the possibility of offering virtual courses to our students to meet their needs and to support the STEM initiative.

### **iii. English Language Arts**

Although the STEM initiative involves Science, Technology, Engineering and Mathematics, the foundation for all education is analytical reading and skillful writing. English skills are imperative in the formation of research papers, product requirement documents that drive engineering projects, and solving word problems. To achieve success in any field of study, one must recognize and understand the essentials of reading and writing.

According to the College Board, the role of English Language Arts is essential to a successful STEM Education Program. High school students are “increasingly expected to judge the credibility of sources, evaluate arguments, and understand and convey complex information in the college classroom and in the workplace.” Scientists, engineers, and mathematicians use reading and writing to share explanations, publish results, and give oral presentations. Students need a solid knowledge of reading and writing in order to communicate and collaborate with one another.

The Massachusetts Department of Elementary and Secondary Education (DESE) believes that students need to be proficient in “reading complex informational text” because most of the text required in college and in the workforce is “informational in structure.” To support this initiative, DESE released new ELA frameworks in January 2011 which include Common Core Standards. This new framework aligns and integrates reading and writing standards with History, Science and Technical subjects to help students understand and analyze complex informational texts. The use of technology, including the Internet, is also included in the new frameworks. Students are required to produce and publish writing, as well as having the ability to interact and collaborate with others during the writing process.

### **iv. Social Studies**

“We envision a community of learners that can see their lives as part of the global community and recognize themselves in both a global and historical context. We envision a community that understands that education is the great equalizer in American society. That in order to be prepared to be an American citizen, one must understand and participate in the democratic process.” (Worcester Public Schools History and Social Science Curriculum 2007- Vision Statement)

“The primary purpose of social studies is to help people make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world.” (National Council for Social Studies)

Although the STEM initiative involves Science, Technology, Engineering and Mathematics, the foundation for all education is core academic subject knowledge. To succeed in college, career, and life in the 21<sup>st</sup> century, students must master both content in academics and acquire technical skills. Many components of a social studies curriculum assist students to acquire those necessary skills for the 21<sup>st</sup> century. The social studies curriculum at Worcester Tech consists of the following courses: U.S. History I, U.S. History II, Civics and Government, and World Contemporary Issues. Our subjects foster global awareness, financial, economic, and government and civic literacy. The curriculum also assists students to become critical thinkers, problem solvers, acquire communication technology skills, decision making, analytical skills due to the review of data and analysis, thus providing many of the skills for student survival in the 21<sup>st</sup> century.

The social studies curriculum at Worcester Technical High Schools supports the STEM initiative. The department places great emphasis on academic rigor. Each year, students in Grade 9 and 10 are required to take the city wide common assessment exams in U.S. History I and II. These exams are part of the TAH- “Teaching in American History” grant initiative that is associated with the UMASS Donahue Institute. Also included are midterm exams in all grade levels. Item analysis is conducted on all exam questions. The department also regularly reviews local college syllabi’s to determine currency in the requirements for college freshmen.

The Massachusetts Department of Education feels that all students need to be proficient in reading writing, speaking and listening. With the implementation of Common Core Standards, emphasis in a typical social studies classroom is placed on the use of effective reading and writing skills. Students in all grades maintain writing portfolios that are aligned with the Common Core Standards in Reading, Writing and Speaking/Listening. Students are required to be able to write research papers, narratives on historical figures, compare and contrast essays comparing the point of view of two or more authors and the analysis of primary source documents. Students examine different documents and evidence to develop their own conclusions. Students are also required to interact and collaborate with others during the writing process through peer editing.

The department is also involved in initiatives relating to the integration of the shops and academics. A school wide project that is underway is “Industrial Giants”. Individual teachers are also involved in creating lesson plans and units that align the academics with the shop curriculums.

## **v. Special Education**

In all of the content areas mentioned above as well as in the technical/vocational areas the Special Education Department provides an inclusion model to increase achievement for students with special needs. The special education population is provided with the same curriculum as the general education population, but with appropriate modifications. Special education and ELL services are delivered in the least restrictive environment. In academic classrooms there are both full and partial inclusion models. In the technical areas a full inclusion model exists.

## **vi. Physical Education / Health**

The Massachusetts Comprehensive Health Curricula frameworks adopted in October 1999 is broken down into four strands: Physical Health, Social & Emotional Health, Safety & Prevention and Personal & Community Health. A significant component is scientifically based. Therefore, the current WTHS STEM Career and college preparation will continue to reflect the Comprehensive Health Curricula. According to the framework, *a Comprehensive Health education provides a foundation in public health, medical knowledge, and modes of inquiry.... Students learn information and develop skills for finding and evaluating information and resources, for making decisions, and for setting goals... Physical education focuses on body dynamics, movement, physical fitness, competition, and teamwork...they increase students' knowledge of health concepts, life management skills, and habits that can facilitate lifelong health for the individual and for others.* It is extremely important that students at WTHS get the full experience in health education in order to make them civic minded and productive members of society.

## **vii. Career/Vocational Technical**

The Office for Career/Vocational Technical Education administers Commonwealth of Massachusetts' General Law (M.G.L.) Chapter 74 governing vocational technical education programs in public school districts. The Massachusetts Vocational Technical Education Regulations 603 CMR 4.03 (4) require that vocational technical education programs “*be based on the applicable Vocational Technical Education Framework and the Massachusetts Curriculum Frameworks.*”

Vocational Technical Education Frameworks have been developed and are being implemented in all twenty four programs at Worcester Technical High School. The Vocational Technical Education Frameworks are organized under Career Clusters. Each Framework consists of six strands as follows:

- Strand 1: Safety and Health Knowledge and Skills
- Strand 2: Technical Knowledge and Skills
- Strand 3: Embedded Academic Knowledge and Skills
- Strand 4: Employability Knowledge and Skills
- Strand 5: Management and Entrepreneurship Knowledge and Skills
- Strand 6: Technological Knowledge and Skills

Career development, upon which vocational/technical education is founded, is a lifelong process through which students understand their place in the world of work and society. A student's career development can impact his/her educational, occupational, and lifestyle choices and outcomes. More often than not, student indifference, and resulting dropout rates stem from the perception that school has little relevance. The 21<sup>st</sup> century skills developed through career development education can play a key role in promoting student motivation and achievement. Therefore, career development education is integrated through all six strands of the vocational technical education curriculum as a means of promoting student success.

As previously stated, Science, Technology, Engineering, and Mathematics (STEM) are the lifeblood of the 21<sup>st</sup> Century education, workforce, and economic innovation. The ability to

integrate STEM topics to solve abstract and concrete problems, to think critically and creatively, and to communicate and work in teams are all fundamental requirements of a civil society, the marketplace, and the military. Consequently, sound career development (i.e. education, work readiness skills, etc.) is heavily reliant on strong STEM concepts.

Four of the six strands are standardized across all twenty-four technical programs at Worcester Technical High School. These standardized strands are 1, 4, 5 and 6. All four of the aforementioned vocational/technical framework strands involve the competencies that students must master for proper career and college readiness. Beginning with Strand 1, where students learn the Health and Safety skills required to ensure all workers return home safe and healthy each day. Advancing to the Strand 4, where the curriculum is designed to provide students with the knowledge and skills to obtain, maintain and advance their positions in their chosen vocations; whether it be obtaining a job after graduation (job interview skills) and/or the need for advanced technical/post-secondary education (college essay preparation). Moving on to Strand 5, which develops a student's understanding of all aspects that go into the opening, operation and growth of a business in today's economy (what businesses models are successful). Concluding with Strand 6, in which the skills and knowledge developed provides a student with the technology competencies to survive in this age of information. Students learn to operate, maintain, trouble shoot, and leverage technology to advance their lives and careers.

Strands 2 and 3 are more specific in nature and typically only apply to the technical program for which they were written. The technical competencies contained in Strand 2 are designed to be specific to the technical program in which a student is enrolled. Strand 3 contains competencies that are academic in nature yet are critical to a student that is enrolled in a particular program. More specifically it is the embedded academics for that program. For example a student in an electrical program will be exposed to curriculum specific to the Massachusetts Electrical codes and procedures for residential wiring. The curriculum is designed to include areas of English language arts (particular vocabulary, technical reading and writing), math (algebraic functions for the computation of electrical loads and proper wire size), science (Ohm's law for defining the relationship between Power, Voltage, Current, and Resistance) and engineering/technology (understanding the generation, distribution, and storage of electricity both traditional and green).

Instruction is scheduled on a program-by-program basis. It may very well be that for certain programs it is best to schedule certain competencies (strands) during the laboratory (shop) while other competencies are presented during related instruction (theory). Related instruction is that body of integrated academic and technical conceptual and theoretical knowledge purposely organized, sequentially presented, and linked to the program in which the students are enrolled. Related instruction introduces, explains, and strengthens the concepts, history, theory, business practices, ethics, and legal foundations of the technical knowledge and skills to be acquired by a student in vocational technical education. In any event, all instruction will be integrated with the Massachusetts Curriculum Frameworks and the Massachusetts Vocational Technical Education Frameworks.

## **viii. Cooperative Education**

Students in the Worcester Technical High School's STEM Early Career and College Initiative will benefit from participation in internship and co-op experiences. These experiences will help students understand what it is like to work in their chosen fields and will help them in defining their interests and strengths. Co-Op and Internship programs enable students to apply classroom and technical theory to actual work situations. Co-Op and Internships programs allow students to test out their interests and develop their long-range career plans, and to select course work which integrates their studies and career goals. Co-Op programs enhance the graduate's marketability by providing on-the-job training. Students enrolled in co-op programs show increased academic performance (higher G.P.A., fewer failed courses); better overall attendance and less discipline issues. In addition Co-op positions provide students with a source of additional income at a higher rate of pay per hour than those not on Co-Op. Co-op programs develop students' overall maturity by strengthening resourcefulness, problem-solving skills, self-confidence, self-discipline and sense of responsibility.

Employers are seeking the following skills and of equal importance a value system from their employees, students who are part of a Co-Op or Internship program get a chance to actually practice and receive mentoring that would enhance those required skills prior to entering the employment market or higher education. Once the students understand and are able to practice these skills along with their technical skills the world will be their oyster. This combination is what will set the students apart from others in the employment market. These skills are universal and with internship and Co-Op opportunities students can master these skills with the right mentoring and coaching.

In addition, employers are seeking critical employability skills such as communication skills, both verbal, written and listening, they are seeking analytical/research skills, computer/technical literacy, flexibility/adaptability/managing multiple priorities, interpersonal abilities, leadership/management, multicultural sensitivity/awareness, planning and organizing, problem-solving/reasoning and creativity. These skills can be introduced and practiced while a student is on Co-Op or Internship.

Employers are also seeking individuals who have personal values such as: honesty, integrity, morality, adaptability, flexibility, dedication, good work ethic, tenacity, dependability, reliability, responsibility, loyalty, positive attitude, motivation, passion, professionalism, self-confidence, self-motivation, ability to work with little or no supervision, and a willingness to learn.

## **ix. Guidance**

All students, grades 9-12, will have a college and career plan. This plan will be developed in conjunction with the course selection process. Course selection placement will be determined through the goals indicated on the students' individualized career plan in connection with their technical placement. In addition, several educational indicators and assessments such as pre-AP/AP, MCAS, EPP, PSAT, VHS, SAT, Accuplacer, and MAP will be considered. Also, teacher recommendation and parent/guardian input will be solicited as an effort to ensure students are reaching their full academic potential. Students will participate in group and individual meetings to review and update their career plans with their counselors.

Parents/guardians will have the opportunity to review and sign their child's career plan and course selection yearly.

In an attempt to improve the effectiveness of the school counselor we plan to introduce a computerized innovative assessment and career development system that helps students learn more about themselves and their career interests. This will assist the counselors in guiding students and families through the educational and career opportunities ahead of them. Our program of choice would include a comprehensive college and career management system.

### **C. Assessment**

Worcester Technical High School's STEM Early Career and College Initiative will use standard assessments, performance based exhibitions, student portfolios, and formative assessment. Worcester Technical High School's STEM Early Career and College Initiative will use the Accuplacer exam, Educational Data Warehouse, and TestWiz to assess student improvement, inform instruction and scheduling, and provide instructors with data relevant to their content area. The Instructional Leadership Team which consists of administration, the career/technical director, department heads, guidance, MCAS specialist and focused instructional coach work collaboratively to analyze data, review student strengths and weaknesses and develop an Accountability Plan focused on specific student outcomes. Formative assessments will be developed with the goal of individualizing instruction and promoting authentic learning opportunities. Students will be encouraged to write or draw conceptions and have the opportunity to revise and edit previous conceptions. Teachers will respond to students using probing comments which will encourage deeper connections to the material.

Worcester Technical High School's STEM Early Career and College Initiative uses and will continue to use a myriad of standardized tests, standards-based tests, performance assessments, as well as state and national certifications to inform instruction and assess student achievement of appropriate competencies.

#### **STANDARDS-BASED**

- MCAS (Massachusetts Comprehensive Assessment System)
- Common Assessments
- MEPA (Massachusetts English Proficiency Assessment)
- MELA-O (Massachusetts English Language Assessment-Oral)
- EPP (Educational Proficiency Plans/Test)
- Final Exams

#### **STANDARDIZED**

- Accuplacer (College Board-Computer Adaptive Test)
- PSATs (Preliminary Scholastic Aptitude Test)
- SATs (Scholastic Aptitude Test)
- AP exams (College Board Advanced Placement)
- NAEP (National Assessment of Educational Progress)

## NATIONAL CERTIFICATIONS

- OSHA (Occupational, Safety and Health Administration) Training
- ServSafe (Food safety certification)
- SP2 (Safety and Pollution Prevention Program for Automotive Students)
- A+ (to demonstrate competency as a computer technician)
- CNA (Certified Nursing Assistant)
- CPR/AED (Cardiopulmonary Resuscitation/Automated External Defibrillation)
- EMT (Emergency Medical Technician)

## STATE LICENSURE FOR INDIVIDUAL VOCATIONAL/TECHNICAL PROGRAMS

### INITIATIVE—CERTIFICATE OF RECOGNITION

- AYES (Automotive Youth Education System for training and hiring automotive technicians ) (National Automotive Technology Competition)

Worcester Technical High School's STEM Early Career and College Initiative uses and will continue to use informal assessments such as:

- AES (Applied Education System)
- *Skill Connect Assessment/Workforce Ready System* (with each assessment clearly tied to STEM competencies) to track vocational/technical competencies
- DECA (Distributive Education Clubs of America)
- Skills USA (A partnership of students, teachers and industry working together to ensure America has a skilled workforce)
- Performance assessments (VTE Frameworks-see strand 6 for technology performance)
- Performance Review for Cooperative Education and Internships that parallel the Vocational/Technical strands
- Research/I-Search papers
- Presentations (High stakes presentations to authentic audiences)
- Projects
- Interdisciplinary units
- On-line textbook assessments
- WTHS Technical Portfolio

### OTHER ASSESSMENTS:

An important component of assessment is the Science Projects Fair through which students demonstrate the connection between STEM concepts and their individual technical programs. In preparing for the Science Projects Fair, academic and technical faculty will employ inquiry based learning so as to afford students authentic learning experiences. The faculty will use mini inquiry units in varying degrees within their classroom and technical areas and then reflect on the lessons effectiveness using the Science Teacher Inquiry Rubric. The faculty will also utilize journals, formal lab reports, and rubrics that assess students on their ability to use critical thinking to solve problems and express their solutions in multiple media forms. The end goal will be for students to produce a successful inquiry project as defined by the Discipline Based Inquiry Rubric and enter the school, district, regional, and state Science Fair.

Worcester Public Schools supports the idea that writing is an essential skill and has developed the Student Writing Portfolio. The Student Writing Portfolio is a purposeful, cross-curricular, standards-based collection of student work over time. The purpose of the writing portfolio is to give students a record of their writing and to display their growth as writers. Following the philosophy that people learn best by doing, Worcester Public Schools believes the portfolio is the most effective way to intertwine content and process.

Worcester Technical High School supports the Student Writing Portfolio initiative and has taken steps to include additional ELA-specific writing assignments to support District-wide initiatives for improved MCAS success. In addition to the specific requirements in the Worcester Student Writing Portfolio, Worcester Technical High School added MCAS Open Response-specific assignments, multi-copy MCAS Long Compositions, character analysis assignments and other literary analysis assignments in the upper grades to support college readiness. In recent months, we updated the Student Portfolio Requirements to include Common Core standards effective January 2011. Our additional requirements include argument-based essays in each grade, narrative (including memoir) and synthesis-based research reports in each grade. This proactive initiative will help keep Worcester Technical High School at the forefront of learning and support our mission to provide successful college and career - ready students.

In addition, seniors will have an opportunity to create a “senior qualifying project” in their technical areas. Through these projects students will demonstrate mastery in their technical area and include mathematics application, written and verbal communication and 21<sup>st</sup> century skills. These senior projects will be evaluated by academic and technical instructors and other stakeholders including members of industry, future employers, and college representatives.

The report, *When Failure is Not an Option: Designing Competency –Based Pathways for Next Generation Learners* was released December 22, 2010 by the International Association for K-12 Online Learning (iNACOL). According to a new study supported by the Nellie Mae Education Foundation, student centered learning approaches are “based on the science of how people learn and are frequently characterized by: Innovative uses of time; inclusion of a wider variety of adults-to complement teachers-in all aspects of learning; measurement of skills and mastery of content using a combination of demonstration and traditional testing; learning that takes place both in and out of the classroom; and a persistent focus on the needs and interests of learners.” In support of the recent study, students in co-operative learning positions and externships will also be assessed. Students in Co-Op and Internship learning positions will be assessed using a newly created employer evaluation form which is aligned specifically with the Strands for Technical Knowledge and Skills, Employability Skills, Safety/Health Knowledge and Skills. This will be tailored to each individual technical program.

## **D. Professional Development**

According to *A Foundation for the Future: Massachusetts’ Plan for Excellence in STEM Education*, “A focus on training, recruitment, and retention are necessary to build and maintain a talented workforce in schools and universities throughout the Commonwealth.” Worcester Technical High School’s professional development plan will create a structure that recognizes teachers as professionals in their fields and provide opportunities for professional development that are teacher, curriculum, and data driven.

Recognizing that a comprehensive Professional Development Plan is critical to the success of the Innovation Plan, WTHS will continue to use the two professional development days built into the WPS school calendar as well as our annually scheduled early release days and other opportunities as they are presented. Professional development at WTHS occurs in many different ways in order to support school initiatives and the needs of both academic and technical departments. The ILT, Steering Committee, Administration and Department Heads will continue to support and expand our targeted Professional Development Plan. A primary goal is to provide teachers, both academic and vocational, an opportunity to work together to share ideas, effectively plan, design, and implement integration projects and embedded academic strands that support the Worcester Technical High School's STEM Early Career and College Initiative. This professional development will give the faculty the opportunity to earn PDP's to use towards licensure and recertification. This would include expanding the integrated common vocabulary and developing standard lesson plans which include embedded academic Technical Common Strands, specifically Strand 4 – Employability and Strand 6 – Technology. The lessons and units designed and implemented will support the state frameworks and the COPS. The plan will support technology strands thus strengthening the district's technology plan. Culminating events and products will be highlighted throughout the school year and on the WPS portal.

Professional Development opportunities offered at WTHS consists of, but are not limited to:

- ELL Category Training
- New Technology Training
- STEM Content Information
- Motivational Speakers
- Guest Lecturers
- Integrated Learning
- Teacher Externships and Job Shadowing in Industry
- Summer job opportunities for faculty
- Project Based Learning
- Development of Higher Order Thinking
- Skills Investigation
- Inquiry Based Learning
- Shop specific equipment and industry training
- Curriculum Principles from Grant Wiggins, Jay McTigue, and William Daggett
- 21<sup>st</sup> Century Skills

The Worcester Technical High School's STEM Early Career and College Initiative, with faculty input, will drive much of the professional development at WTHS. Educator development will address the need to prepare all STEM educators with the content knowledge and pedagogy supported by classroom resources to align experiential learning, coherent standards, content rich curriculum, including pre-AP and AP training, and vertical teaming through MMSI. Teachers will also receive the training necessary to create effective assessments to support student learning and motivation.

In addition WTHS will explore the possibility of becoming a host for MAVA professional development. Teachers will have the opportunity to take vocational/technical certification courses and college courses affiliated with Fitchburg State University. This will assist faculty

members in earning vocational certification, under-graduate degrees, and graduate degrees. This educational opportunity will enhance the STEM curriculum to support professional development in the teachers' technical programs.

## **E. Budget**

Worcester Technical High School brings a different level of uniqueness as a career/vocational/technical high school evidenced by the availability of federal Perkins funding as well as state Chapter 74 funding. While becoming an innovation school is budget-neutral, budget autonomy will allow WTHS flexibility in allocating funds in the current budget.

Having flexibility in how the local budget, as supplemented by the additional Chapter 74 and grant monies, is allocated will enable WTHS to build capital improvement plans to ensure that the equipment available in each of the 24 technical programs continues to be up-to-date. This flexibility is critical in the provision of a truly 21<sup>st</sup> century skills environment. Each year, the advisors provide a five-year forecast for each program. We must ensure that the students are learning in an environment that models their pathways.

In addition to the capital improvement plans for the latest in equipment and instructional technologies, WTHS will also build line items for the continued operation and maintenance of the current facilities at the highest levels. Each department, the 24 technical programs, 5 academic departments, physical education, guidance and administration, will be responsible for implementing a budget including the aforementioned line items. The process would require the department heads and other personnel to fully scrutinize their programs and evaluate the use of instructional media and other alternatives and pedagogy available to provide for the maximum learning experience.

School budgeting autonomy, creates an opportunity to fund the priorities identified by the WTHS leadership team. In addition, it focuses the school's attention on those priorities and expresses, in dollar terms, the policies of the team. Others in the school / district will gain an understanding of the budget process and come to appreciate the possibilities under the budgeting process. This leads to a buy-in of the priorities and eliminates the feelings of bewilderment, and powerlessness, that often occurs when things are done "to" people rather than "with" them. Through supporting the priorities with resources and focusing the limited funds on the most promising activities for achieving AYP/ STEM/ECCHS, there will be a direct positive impact on student achievement.

## **F. Schedule and Calendar**

Worcester Technical High School will follow the Worcester Public Schools' calendar and will maintain the same number of contractual school days (183) and 990 instructional hours (for 180 days for students) as required by state law. Worcester Technical High School will also follow the same school day schedule, per EAW Collective Bargaining Agreement Article XXVII – Work Year, Hours and Workload. Any changes to the work year, hours, and/or workload, require a two-thirds vote by faculty as governed by MGL Chapter 71, Section 92-Innovation Schools, paragraphs (k), (l). (see Appendix D)

The current “week about” model of scheduling has been highly successful at WTHS. The amount of time spent in technical studies allows the teachers to individualize and personalize learning. The schedule will continue to support this personalized learning model by ensuring that students are scheduled for their technical and technical related classes during both weeks of their schedule in order to stay connected to their technical program on a daily basis.

Worcester Technical High School’s STEM Early Career and College Initiative program will extend student learning time by using blended learning models. The instructional leadership team will carefully construct a schedule that will allow students an opportunity to earn college credit while maintaining the current amount of time students spend in their academic and technical areas. In addition to STEM courses, WTHS has dual enrollment and articulation agreement credits at two and four year colleges. Presently, QCC offers Spanish I and II and College Algebra for college credit during the school day. Worcester Technical High School’s STEM Early Career and College Initiative will work with QCC to establish programs in each of the four academies in which pathways to careers in STEM are available. Worcester Technical High School’s STEM Early Career and College Initiative will also work on expanding QCC’s Engineering 2+2 Program, ORT 100 Strategies for Career and College.

The length of college courses in virtual high school experiences will allow student learning to continue beyond the traditional school day. Virtual High School is a worldwide leader in online collaborative education. It is an innovative way to deliver rich learning opportunities to students without scheduling issues. VHS allows students to learn global, 21<sup>st</sup> Century skills while interacting with students throughout the world. Students can log in to their classroom 24 hours a day, 7 days a week from any computer with internet access. With almost 70 VHS classes offered in the STEM field (19 math, 14 technology, 36 science), students are provided the opportunity to develop their STEM skills, delve into richer content, and expand their knowledge.

All VHS classes are teacher facilitated. Class sizes are limited to 25, and there is an emphasis on interaction between teachers and students. Activities are student-centered, as discussion and group activities are a part of each VHS course. As a benefit to every VHS course, students improve their computer skills through the use of various software applications, discussion boards, online research, blogs, and journals. There is a site coordinator physically located at the school, so students have a contact, besides the virtual teacher, if they are struggling.

## **G. Staffing**

The current contractual hours/days will be maintained. Faculty from Mt. Wachusett Community College and Quinsigamond Community College will teach STEM college courses on the Worcester Technical High School’s STEM Early Career and College Initiative campus in Worcester.

If student enrollment in the high school increases significantly, new staff may be required as per state requirements, and as the budget and other planning considerations allow. Any new teachers hired for the Worcester Technical High School’s STEM Early Career and College Initiative will become members of the local teachers union.

Any additional staffing vacancies, including assistant principals, will be filled by a Hiring Committee which will be comprised of: Principal, Assistant Principal, Department Head, Director of Career & Technical Education. Applications from teachers interested in a teaching or administrative position in this school would be forwarded from Central Administration to the Hiring Committee for consideration. The Hiring Committee will interview candidates and review the applicant's qualifications, prior performance, recommendations, and willingness to support the vision and mission of WTHS. Applicants may be asked to teach a sample lesson, which will be observed as part of the selection criteria.

Staff at WTHS will keep their seniority status with Worcester Public Schools. If any staff member wishes to leave WTHS and bid into another Worcester Public School, their seniority, as outlined in the EAW contract under Title X - Transfers, will be followed.

The Instructional Leadership Team (ILT) will look to align support staff to maximize staffing with a focus on student needs and achievement. We will look to develop collaborations with the local higher education institutions which would allow college student volunteers to assist in STEM courses, allowing for more interaction between teacher and student.

Our ILT will continue to set goals, collaborate, and improve school culture.

## **H. District Policies and Procedures**

The Worcester Technical High School will operate within the district and state policies and will exercise autonomy in the areas of budget, schedule, and professional development as granted by the innovation school design. The ILT and the General Advisory Board will continue to be part of the governance of the WTHS mission and vision.

Autonomy in the area of budget will afford the school the opportunity to make critical resource decisions that best serve the students at the school, and the daily schedule will be created to ensure maximum learning time for students at all levels. WTHS will exercise important staffing autonomies that will afford the community of the school the ability to determine who will be hired when openings exist. Further, while evaluation of teachers will follow the current collective bargaining agreement, Article XIII, teachers will also receive feedback on their use of the school's common instructional framework and definition of high quality teaching and learning.

An admissions process is necessary in vocational/technical schools where space is a limiting factor. Vocational/technical shops are designed and equipped to serve a specific maximum of students safely. Consequently, a facility of such shops lacks both the space and flexibility to accommodate the possible needs and/or interests of all applicants. Therefore, a selection process is necessary to determine which applicants may most benefit from such educational opportunities. All applicants to grade 9 at Worcester Technical High School will be evaluated using the criteria described below.

Worcester Technical High School admits students and makes available to them its advantages, privileges and courses of study without regard to race, color, sex, religion, national origin, sexual orientation or disability.

Any eighth grade student who is a resident of the Worcester Public School District who expects to be promoted to the ninth grade is eligible to apply for fall admission subject to the availability of openings to Worcester Technical High School. Resident students will be evaluated using the criteria contained herewith.

Transfer students from other vocational/technical schools are eligible to apply for fall admission or admission during the school year to grades 9-12 at Worcester Technical High School provided they expect to be promoted to the grade they seek to enter by their current school. Transfer students will be evaluated using the criteria contained herewith.

Worcester Technical High School has an Admission Committee appointed by the Principal. The committee consists of a member from the following Worcester Technical High School Departments:

- Administration
- Guidance
- Special Needs
- Vocational
- Academic

Responsibilities of the Admissions Committee include:

- A. Determination of standards for admission
- B. Development and implementation of admission procedures
- C. Processing of applications
- D. Ranking of applications
- E. Acceptance of students in accordance with all state and federal regulations
- F. Establishment and maintenance of a waiting list of acceptable candidates

Worcester Technical High School will disseminate information about the school through a variety of methods:

1. An Open House during the fall is scheduled. Prospective students and their parent(s)/guardian(s) have an opportunity to visit all vocational/technical programs as well as view academic and other offerings (i.e. sports, clubs, student organizations, etc.).
2. All Worcester Public School and Charter School eighth graders tour Worcester Technical High School each winter. Buses are provided to the middle schools by Worcester Technical High School for this career awareness program.
3. Parent(s)/guardian(s) may schedule individual visits at a mutually convenient time.
4. Brochures, which describe vocational/technical programs including academic courses, sports, cooperative education, and special education resources, are distributed during the eighth grade visitations, posted on the School Fusion Web site and at Open House. All material is translated into five languages.
5. Applications are mailed to each of the Worcester Public School eighth grade students in the language of their family.

Worcester Technical High School will use the student admissions application form in compliance with the Vocational Technical Education Regulations 603 CMR 4.03 (6) and the

associated "Guidelines for Admission Policies of Vocational Technical Secondary Schools and Comprehensive Secondary Schools". Note that the guidelines are contained in the *Chapter 74 Manual for Vocational Technical Education Admission Policies*.

The admission application form will be used to admit ninth graders into Worcester Technical High School. The admissions criterion is as follows:

- academic grades,
- attendance record,
- discipline/conduct record,
- recommendation from sending-school personnel,
- may include a student interview

The admissions process will include forwarding a completed application to the Worcester Technical High School Admission Coordinator by April 1<sup>st</sup>. Complete applications will include:

1. A completed application form (including all signatures)
2. For ninth grade applications (fall admissions), the average of grade 7 and terms 1 and 2 grade 8 marks in English language arts, social studies, math, and science from the sending school report card – transcripts are required.
3. For ninth grade applications (fall admissions), the average of grade 7 and terms 1 and 2 grade 8 excused and unexcused absences from the sending school report card – transcripts are required.
4. For ninth grade applications (fall admissions), the average of grade 7 and terms 1 and 2 grade 8 assessments of behavior from the sending school report card or from the sending school guidance counselor's assessment.
5. For ninth grade applications (fall admissions), the sending school guidance counselor's recommendation is required.

If incomplete applications are received, the following procedures will be followed:

1. The Admissions Office at Worcester Technical High School will notify the sending school guidance counselor responsible for submitting the application that is incomplete and request the missing information.
2. The applicant's parent(s)/guardian(s) will be notified by the Worcester technical High School Admissions Office in the event that the problem is not resolved by the sending school guidance counselor.
3. If after notifying the sending school guidance counselor and parent(s)/guardian(s), the application remains incomplete for ten school days, the application will be voided.

Applications from students who are enrolled in a state-approved (Chapter 74) vocational/technical high school program in another school (transfer students) will be considered for admission (including admission during the school year) if they relocate away from their current school and wish to pursue the same program of study at Worcester Technical High School. All transfer applicants must attend an interview at Worcester Technical High School. Their applications will be evaluated according to the provisions contained herewith.

## **IV. Measurable Goals**

1. Attendance
  - a. Average daily attendance rate of, at least, 96%
  - b. 9<sup>th</sup> Grade attendance of 98%
2. Student Safety and Discipline
  - a. There will be a 5% decrease total out-of-school suspensions in a year
3. Student Promotion and Graduation
  - a. The four year adjusted graduation rate will be above 96% and the drop our rate will be less than 1%
4. MCAS
  - a. ELA - Grade 10: at least 79% of students will be proficient or advanced
  - b. Math - Grade 10: at least 77% of students will be proficient or advanced
  - c. Science - High School: at least 90% of all students will pass the high school science
5. Subgroups
  - a. Subgroup MCAS Performance: All subgroups will meet performance target for CPI score.
6. College and Career Readiness
  - a. 100% of graduating students will be college and career ready
  - b. Increase AP enrollment by 10%
  - c. Increase dual enrollment participation by 10%
  - d. Increase number of qualifying AP scores by 10%

## **V. Why the flexibility is desirable**

### **A. Why Flexibility is desirable to carry out the objectives of the school.**

The Worcester Technical High School's STEM Early Career and College Initiative program will use the staffing, budget, curriculum, instruction, schedule, and district policy autonomies to strengthen teaching and increase academic achievement and college readiness for students by focusing on the following:

- Integrate intelligent technology use into the curriculum and use blended-learning models to engage students and broaden technology access to all students and teachers.

- Exercise staffing autonomies by continuing to utilize Quinsigamond Community College faculty to teach on the Worcester Technical High School premises and forming articulation agreements with Quinsigamond Community College that allow students to take courses taught by our current faculty and receive high school and college credit at the same time.
- Engage in inquiry-guided, collaborative learning with a focus on problem solving.
- Hands-on, project based education will enhance creativity and insight.
- Build global awareness and skills to compete in a worldwide economy.
- Connect curriculum to experiences outside the classroom including expert/practitioner visits and presentations, internships/co-op, and projects involving real world challenges, i.e. community service.
- Create powerful communities that communicate and collaborate, including alumni, business, and parent network in STEM fields.
- Create a green focus committed to clean energy and sustainability using the school building as a teaching tool to engage students in solar energy, weatherizing, metering, and calculating energy use.

## **B. Components of the School's Innovation Plan**

The components of the Worcester Technical High School's STEM Early Career and College Initiative Innovation Plan are the external partners, the plan, measurements, and autonomy. Each one of the aforementioned items is integral to the success and sustainability of the plan.

External partners, such as the business/industry members of the General Advisory Board and Program Advisory Committees, will ensure that the school curricula and equipment are current with the latest trends; thus, providing the students with the skills and knowledge to succeed in their quest for higher education and gainful employment. Entrustments with leading industry businesses will provide the students with the essentials to become good citizens. One such entrustment, the Worcester Credit Union, will provide the essentials to meet the needs of personal financial literacy essential to preparing students for managing future college and life finances. Partnerships with local institutes of higher education will provide access to college level courses. More importantly these partnerships will provide students with the knowledge to develop clear and definitive pathways to the careers that they have chosen. A student engaged in the process is much more apt to complete their journey.

Just as important as the support and guidance of the external partners is the innovation plan. For the Innovation ECHS to be successful, the plan must be developed and implemented in a methodical manner. WTHS's plan is to establish STEM Early Career and College High School opportunities for each of the small learning academies. The plan committee will work with the school and external partners to develop comprehensive programs that provide college-level courses for students in each of the four academies. This will be accomplished through a combination of AP courses, dual enrollment, articulation agreements, and hybrid college courses (on-site/distance/virtual course work). The ongoing partnership with Quinsigamond Community College and the Allied Health Department will continue to enhance college preparedness while offering relevant college credit to our students. Mount Wachusett Community College will also continue to support the curriculum of the Information Technology Department by providing

cutting edge college credit for Worcester Tech students. Becker College and its commitment to the evolving field of Gaming will be a natural fit with Worcester Technical High School. The addition of the Tufts University small animal clinic will only underscore the emergence of the growing Veterinary Assisting program. In addition, partners such as WPI, Worcester State University, Clark University, and other Colleges of Worcester Consortium members will continue to assist in achieving the goal of making our students career and college ready. The development of the programs will then be deployed over the five year plan period; adding one academy each year.

CVTE Linkages (Career Vocational Technical Education) is a program of study which begins in high school, continues at a postsecondary institution and culminates in an associate degree, two-year certificate, apprenticeship, or further postsecondary study in a career and technical field. CVTE Linkages in Massachusetts is delivered through a state wide network of consortia, each comprised of secondary schools, postsecondary institutions, employment and training providers, and business and industry.

Collaboratively, consortium members develop and implement an integrated curriculum in applied academics, occupational education and workplace experiences.

The purpose of pursuing articulation agreements is to establish and foster the linkages by which college credit and advanced standing may be awarded to students who successfully meet the articulated criteria. The agreements provide a method by which students can continue their education from one level to another without delay or duplication.

#### CVTE Linkages Benefits For Students:

- Provides students with a jump start to a career pathway
- Presents an opportunity to pre-college students for articulated credits
- Ensures high expectations are established and satisfied for all students
- Provides courses that are challenging and exciting
- Prepares students for success in post-secondary education and occupational environments
- Encourages lifelong and applied learning
- Stresses the importance of the relationship between education and career based learning

#### Worcester Technical High Schools Current Articulated Courses:

- Automotive Technology: Mount Wachusett Community College, New England Institute of Technology, Central Maine Community College, Mass Bay Community College.
- Business Information Systems: Quinsigamond Community College, Bay State College.
- CAD/ Drafting Design: Berkshire Community College, Bristol Community College, Bunker Hill Community College, Cape Cod Community College, Greenfield Community College, Holyoke Community College, Mass Bay Community College, Massasoit Community College, Middlesex Community College, Mount Wachusett Community College, North Shore Community College, Northern Essex Community College, Quinsigamond Community College, Roxbury Community College, Springfield Tech Community College.
- Carpentry: Central Maine Community College
- Culinary Arts: Central Maine Community College, Johnson and Wales University.

- Early Childhood Education: Quinsigamond Community College
- Financial Services/Retail Marketing: Quinsigamond Community College
- Graphic Arts/Communication: Central Maine Community College
- Hotel & Lodging/ Restaurant Management: Quinsigamond Community College, Johnson and Wales University.
- HVAC: Mass Division of Apprentice Training
- Information Support Services and Networking: Mount Wachusett Community College, Bay State College, Central Maine Community College.
- Machine Tool Technology: Central Maine Community College
- Plumbing: Mass Division of Apprentice Training
- Sheet Metal: Local Union #63
- Welding: Mass Division of Apprentice Training

Current curriculum under review for articulation:

- Biotechnology Program  
Currently under curriculum review to obtain articulation credit toward Post-Secondary Biotechnology Programs: (Quinsigamond Community College, Worcester State University).
- Veterinary Assisting Program  
Currently under curriculum review to obtain articulation credit toward Post-Secondary Veterinary Technology/Animal Science Programs: (Becker College, Mount Ida College).
- Finance and Marketing Program  
Currently under curriculum review to obtain articulation credit toward accounting. (Quinsigamond Community College)

Many other Articulations are in progress pending approvals.

Dual Enrollment Courses Available at local College/Universities:

Assumption College, Quinsigamond Community College, Becker College, Northeastern University, Worcester State University.

Dual Enrollment Courses Available at Worcester Technical High School

EMT program-QCC  
Computer Hardware-QCC  
Spanish 1&2-QCC  
College Algebra-QCC  
Accuplacer Math-QCC  
Strategies for College and Career-QCC

CVTE Linkages Activities

Career Construction Day  
Healthcare Career Day  
College Visits  
Guidance Counselor and Teacher Professional Development  
Accuplacer Awareness- for students and teachers

## Other CVTE Linkages Support Programs

Pipeline Health Program

Medical Interpreter Program

Accuplacer Testing and Support

Dual-Enrollment/Partnership Classes Offered

## Early Career and College High School Offerings:

Early Career and College High School STEM- Academy for College Excellence

Partnership between Northeastern University and Massachusetts Association of Vocational Administrators

The mission is to expand upon the opportunities provided for CVTE (Career Vocational Technical Education) students to develop the knowledge and skills necessary for success in post-secondary education and STEM (Science, Technology, Engineering and Math) focused pathways in a 21<sup>st</sup> century economy. The goal is to have the high school curriculum transition seamlessly into the offerings at the university level so that students will be able to maintain college status while still at high school. The academy will be introduced to sophomore students in the Information Support Services and Networking Program. Those accepted will be Northeastern University students, and have the opportunity to take up to twenty four college credits during their junior and senior years. This will provide a pathway to an associate's degree in science, which can eventually articulate to a Bachelors' of Science degree. This program is also unique in that the credits are transferable and there is no cost to student or parents.

Parental involvement and commitment, to this initiative, are essential to its success. WTHS will do direct mailings to parents containing information about the proposed program and invite the families to learn more about the opportunities. WTHS will work with elementary and middle schools to inform students about the exciting programs, opportunities, and college-career pathways available. A team consisting of an Administrator, several Department Heads, a guidance counselor, and selected student representatives will visit each Worcester Public middle school to present the career and college options available at WTHS to their seventh graders. This multi-sensory presentation will provide a balanced and realistic expectation of a Worcester Technical High School education. Highlighting Worcester Tech's innovative and exciting twenty-four technical programs along with the rigorous and challenging academic options will help to stimulate and motivate the seventh graders to maintain solid work habits needed to successfully navigate the competitive admissions process. In addition, opportunities for presentations at the elementary schools will also be provided.

Each fall every Worcester Public School eighth grader is invited to tour WTHS with their classmates and teachers. These tours are scheduled to allow each middle school their own special visiting day at Worcester Tech. An overview of the WTHS educational experience is presented to the students along with an informative and entertaining video highlighting Tech's 100 Year History of Success. The admissions criteria, process, and timetable are clearly explained with a step by step walk through of completing the application. The eighth graders and their teachers are then toured throughout the large Worcester Technical campus in smaller groups led by Tech faculty. These groups stop along the way to explain the concept and break down of our Small Learning Communities and our four diverse and exciting Technical

Academies and to answer any question students or teachers might have. The annual eighth grade Worcester Tech tours will continue to expose each child to the opportunities and options of a vocational/technical education and its successful pathways to career and college.

The school will hold “Tech Night”, an evening of information and exploration of the school, staff, programs, and opportunities for families and students. Additionally, tours will be offered to interested community members, be they neighbors, prospective students, partners, industry/business leaders, and or academic/technical institutions. Lastly the school will use the various media available (district Web site, Guidance Quarterly, flyers, public access television/radio, Channel 11, Connect Ed) to educate and inform parents, guardians, families, and the general public about the many academic and support services available at WTHS.

Engaging students from the earliest moments of their high school experience is the concept of the successful Jump Start orientation program at WTHS. Accepted incoming ninth graders and their families are invited to the Freshmen Family Reception in June. Presentations of welcome by the principal along with the student council compliment the introduction of the rigorous vocational/technical and academic journey that these students will begin in August. The Jump Start orientation is a three day program that encompasses most facets of becoming a successful WTHS student. Lockers, bus passes, schedules, and IDs are just a small part of the Jump Start orientation. Each incoming student will complete a Career Inventory assessment and begin the first phase of their Career Plans with the help of the WTHS Guidance Department. To complete the intensive three day orientation each freshman student is photographed in a graduation cap and gown symbolizing great achievements and goals that awaits them in four years. High attendance rates for the WTHS Jump Start orientation will continue to point to high success rates of Career and College plans of our graduates.

Parents are encouraged to be informed, active participants in their children’s education. They are invited several times a year for informational gatherings and school celebrations. The school continually involves parents through “ConnectEd” phone calls, Guidance Quarterly, and the school’s website. They are invited to Know Your School Night, Open House, college job fairs, AP Family Night, AVID Night, financial aid seminars, and to serve on advisory boards and the School Site Council. The school will seek input from parents for additional supports to ensure student success.

Early discussions held with higher education partners have indicated there is a disconnect that exists between the secondary and post-secondary classroom, specifically with regard to the level of work students will be required to undertake. This model allows for a unique opportunity for professional development for both the high school teacher and the college professor. Both levels of educators will meet, discuss, and outline the vertical skills necessary to prepare our students for success in post-secondary educational opportunities. The plan is to use exemplars at each grade level that will be analyzed for specific skills and broken down to developmental and grade appropriate lessons to help scaffold learning for all students. High school teachers will be able to observe college classes while college professors will observe high school classrooms for further understanding of the curriculum, pedagogy, and dynamics involved in grades 9 -16 education. Additional professional development will be necessary in the STEM fields.

Measurements will enable the stakeholders the ability to review the successes/failures of the plan. Well defined measurable results will assist the team in determining strengths and weaknesses. This data will then be assessed and the plan can be reviewed and modified accordingly.

Lastly, autonomy in curriculum, instruction, and assessment will allow teachers to carefully craft content tailored to the needs of their students. Autonomy in the area of budget will afford the school the ability to make critical decisions regarding the use of resources to achieve the mission. Staffing autonomies will give the Worcester Technical High School's STEM Early Career and College Initiative community the ability to determine who will be hired when openings exist.

Each component of the innovation plan is critical to providing students with the best opportunity to achieve success in high school, college, and/or careers.

## C. Preliminary Description of the Process



### WTHS Steps for Implementation

The illustration above represents the description and steps needed for implementation of the Worcester Technical High School's STEM Early Career and College Initiative initiative. Middle school students will be afforded the opportunity to explore STEM related fields through Tech Night and school tours. Incoming Worcester Technical High School's STEM Early Career and College Initiative ninth graders will explore college and career pathways through interest and ability inventories, the school's mini-exploration, and full exploratory program. Ninth and tenth grade students, with guidance counselor and parental input, will develop a four year college and career plan and enroll in pre-AP courses. All students in tenth grade will take the PSAT exams to prepare them for college entrance exams. Eleventh and twelfth graders will have the opportunity to take college courses (at school and on college campuses); engage in internship and co-op placement in business and industry; and earn college credits through articulation agreements. In addition, with parental support, students will have the opportunity to attend school sponsored events, such as, college and career recruitment and financial aid information sessions.

Advancement Via Individual Determination (AVID) will support students in their quest for college success. Students will have the opportunity to take AVID courses through their high school experience. AVID has a 30-year documented history of preparing all students to succeed in rigorous curriculum and to increase their enrollment in four-year colleges. AVID’s mission is to close the achievement gap by preparing all students for college readiness and success in a global society. With planning and support, AVID can complement STEM initiatives in each of our small learning communities.

In addition, we have an Educational Talent Search Advisor on staff. Educational Talent Search (ETS) is one of the federally funded TRIO programs designed to serve youth who have the potential to succeed in college, but who are educationally and economically disadvantaged. The Colleges of Worcester Consortium, Inc. operates Educational Talent Search at WTHS with the ultimate goal of ensuring that students graduate from high school and successfully enroll in a postsecondary program appropriate to their interests and abilities. In most cases, these students are the first in their families to go on to college. In many cases they are the first to graduate from high school. The ETS college placement rate is typically about 93 percent.

#### **D. Proposed Timetable for Development and Establishment of the Proposed School**

WTHS is proposing the following five (5) year innovation plan:

##### **Five-Year Innovation Timetable**

Year 1	2011-2012	Planning
Year 2	2012-2013	Alden Design and Engineering Academy
Year 3	2013-2014	Construction Academy
Year 4	2014-2015	Allied Health and Human Services Academy
Year 5	2015-2016	IT and Business Services Academy

The first year of the innovation plan would involve the establishment of the overall plan. This stage would involve working with external partners and the planning committee to develop a methodical approach to implementing Worcester Technical High School’s STEM Early Career and College Initiative plans for each of the four academies. This would involve scheduling, course selection, curriculum, support systems, staff, professional development, and budgets.

Subsequently, Worcester Technical High School’s STEM Early Career and College Initiative programs for each academy would be rolled out one per year. This would ensure that each program would be afforded the level of attention that is required for success. It is important that each program receives the support necessary to guarantee success of its teachers and more importantly students. Early success will establish a level of confidence that will pay dividends in the students’ college endeavors. Thus by implementing one academy at a time, it will enable WTHS personnel the opportunity for due diligence in the design, implementation, and support of the developed programs.

## VI. Applicant Group

The applicant group, comprised of members of the ILT, came together to develop this innovation school plan because they believe that being an innovation school will offer WTHS students greater opportunities for college and career success. The applicant group believes that all WTHS students should graduate with the 21<sup>st</sup> century skills and abilities necessary to complete rigorous college coursework and to be successful in their STEM careers. The applicant group is comprised of dedicated and highly qualified educators who possess the necessary skills, qualifications, expertise, and experience to manage an Innovation School. They are experienced and knowledgeable administrators and educators. Many members of the applicant group have successfully transitioned from STEM careers in engineering, marketing, and research to become highly qualified educators. The WTHS Innovation Plan Team represents over 160 years of dedicated service to WTHS. Members of the applicant group have deep ties to the community and are dedicated to the success of the school and its students. Group members have met regularly, devoting their time, expertise, and commitment in the development and drafting of this plan.

The Applicant Group members are:

**Sheila M. Harrity**, a graduate of the Worcester Public Schools (WPS), has been an educator for WPS for many years. She has worked with at risk students at the Comprehensive Skills Center, managed the Work for Worcester's Youth program, was a WPS AVID Coordinator and is currently the Principal of Worcester Technical High School, a position she has held since the opening of its new facility in September of 2006. Sheila is currently enrolled at Northeastern University pursuing her Doctoral Degree in Education Administration.

**Kyle Brenner** is the Director of Career and Technical Education for WPS. Kyle was previously the Department Head of the Business Information Systems Program, a position he held for five years. Kyle is also a Site Administrator and Manager of after school programs. Kyle has an engineering and management background from working for Verizon. Kyle has an undergraduate degree in Civil Engineering from Worcester Polytechnic Institute, a Master of Science Degree from Stevens Institute of Technology, and a Master of Occupational Education from Fitchburg State University.

**Mary O'Malley** is an Assistant Principal at WTHS. She has held this position for over ten years. Mary was previously the Department Head for the Hotel, Restaurant Management Program, served as an Integration Coordinator, Professional Development Coordinator, and was a Biology teacher. Mary has over twenty-five years of service with WTHS.

**Mary Lou Zamarro** has been an Assistant Principal at WTHS for the past ten years. Previously, Mary Lou was Acting Director of Worcester Technical Institute (WTI). She was a Guidance Counselor for WTHS for several years. Mary Lou holds a Master Degree in Counseling Psychology and a CAGS in Counseling.

**William Cousins** has been an Assistant Principal at WTHS for the past eight years. Previously, he was an instructor at WTI in the Ophthalmic Dispensing Department. He owned and operated

his own opticianry business for many years while continuing to teach. He later served as Acting Dean at WTI before transferring to WTHS as an Assistant Principal. Mr. Cousins holds a Bachelor of Science in Vocational Education, a Masters of Education, and a CAGS in Educational Leadership.

**Siobhan Petrella** has recently joined the Administrative Team at WTHS as an Assistant Principal. She was selected the 2010-2011 WPS Teacher of the Year as well as the WTHS Teacher of the Year. Siobhan has over twenty years of teaching experience in history and music. Mrs. Petrella also successfully led the WTHS National Honor Society for four years and was the Professional Development Coordinator. Mrs. Petrella holds a Juris Doctorate from Southern New England School of Law, now known as UMass Dartmouth.

**Brian Potter** has been the Guidance Department Head for seven years and has been a member of the Guidance Department for eleven years. Brian has also served as Golf Coach at WTHS. Brian holds a Master Degree in Counseling from Assumption College.

**Frances Meringolo** has been the Social Studies Department Head for twenty-five years and has thirty-two years of teaching experience for WPS. Fran was the 2009 WPS Teacher of the Year as well as the WTHS 2009 Teacher of the Year. Fran also runs the successful New Teacher Mentoring program at WTHS.

**Betty Copeland** has been a math teacher since 1998 and the Math Department Head at WTHS for the past three years. Mrs. Copeland has presented at Harvard for the Breaking Ranks Program along with WTHS. Mrs. Copeland came to education from her previous career as a Financial Systems Analyst.

**Azad Chaparian** has been the Science Department Head for ten years at WTHS. Azad has also served as a facilitator in the Small School Initiative. He was a teacher for WPS for 13 years. Mr. Chaparian owned and operated his own business for 13 years prior to teaching. He also worked as a Quality Assurance Supervisor for Norton Company.

**Theresa Leland-Sullivan** the English Department Head at WTHS has been an English teacher for over six years. She has also served as Lead AP Teacher. Teri successfully transitioned from upper level management at NEC to teaching. Teri also facilitates the WTHS Community Outreach Club.

**Beth Dowd** has been a Special Education teacher at WTHS for twenty-five years. She is now the Department Head for Special Education. Beth holds an undergraduate degree in Special Education and Elementary Education from Fitchburg State University. She also holds a Master of Education Administration from Worcester State University.

**Michelle Phenix** has been the MCAS Specialist at WTHS for the past four years. Michelle was previously an AVID teacher, Health teacher, and coach. Michelle is a graduate of Worcester Public Schools. She holds a Bachelor Degree from Worcester State University and is currently enrolled in Worcester State University's Educational Administration Program.

**Christine Lloyd** is the new Focused Instructional Coach at WTHS. She was previously a Biology teacher and held that position for eight years. She has successfully planned and

organized the WTHS Science Fair and served as a Class Advisor. Mrs. Lloyd is an alumnus of Teach for America. She holds a Bachelor Degree in Environmental Geology and has two Master Degrees.

### **The Innovation Plan Committee members are:**

Sheila M. Harrity, please see above.

Jeffrey J. Mulqueen, Chief Academic Officer for WPS, was previously an Assistant Superintendent for the New Britain and Windham School Districts in Connecticut. He has worked in education for over 30 years. Dr. Mulqueen received his doctoral degree from NOVA Southeastern University and his masters degrees from Anna Maria College in Paxton, MA and Notre Dame College in Manchester, NH.

John Monfredo, WPS School Committee, was a principal for 20 years at Belmont Community School in Worcester. He received numerous awards for his innovative leadership while serving as principal. He also received awards for his work in the community. After retiring, Mr. Monfredo and his wife established the literacy project “Worcester: The City That Reads”, collecting books for children in the community. As a School Committee Member he is a strong advocate for students and parents, making sure they are involved in their child’s learning. He has also fought for a strong wellness program, an anti-bullying program, and works towards establishing more rigor in the curriculum.

Donna Ostiguy, is the parent representative on the committee and a member of the WTHS Site Council. She has three children. One son graduated from WTHS and her youngest son is currently a junior at WTHS. She is the Office Manager of Elder & Disability Law Advocates. She is also responsible for the management of the extensive EDLA outreach program and is the Executive Producer of the radio and Charter TV3 show, “*The Senior Focus*”. Ms Ostiguy is very involved in community service and participates in many charitable and civic organizations.

Robert Mazzone, Graphics Department Head at WTHS, is a graduate of Worcester Boys Trade/WVTHS in the Graphic Arts/Printing Department. He worked for over 15 years for various printing companies before becoming a teacher in 1993. Mr. Mazzone is a graduate of Fitchburg State University with a degree in Occupational Education, is certified in NCLB and is a certified OSHA Trainer in General Industry.

Azad Chaparian, please see above.

Len Zalauskas, President of the Educational Association of Worcester.

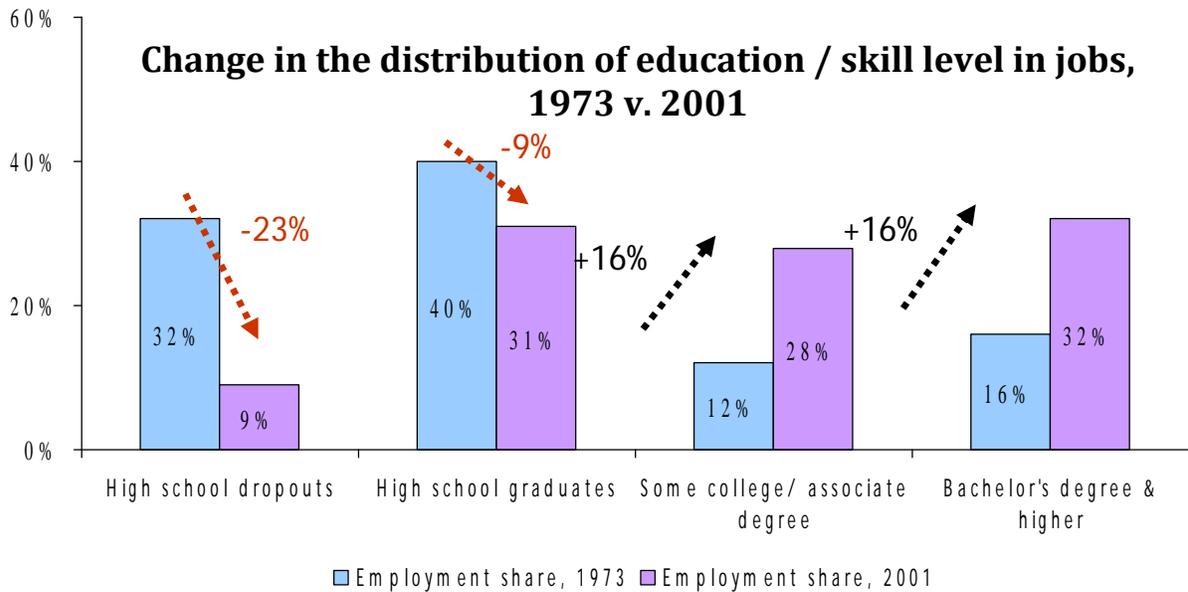
Kyle Brenner, please see above.

Edwin B. “Ted” Coghlin, Jr., is the Chair of the WTHS General Advisory Board. He is a graduate of WPI and managed the Coghlin family businesses in Worcester for over 55 years. Mr. Coghlin has been the Chair of the Advisory Boards for the 24 Technical Programs at WTHS for over 30 years.

Mary O'Malley, please see above.

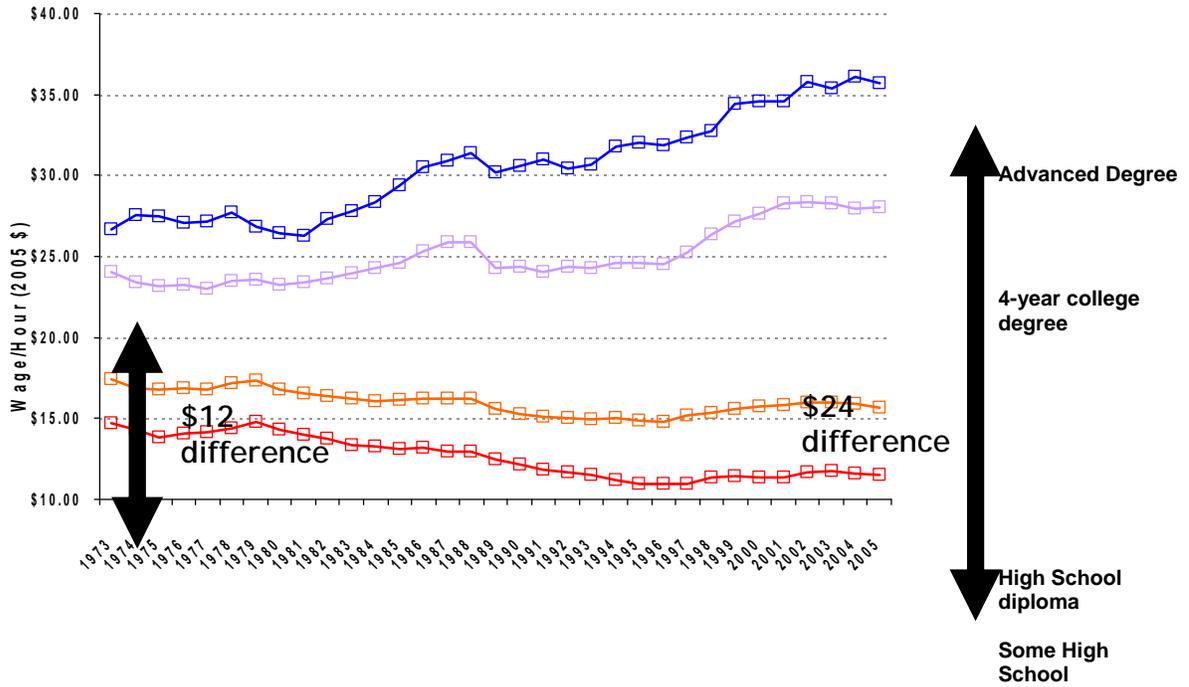
Kathleen Radley, is the Manager of Educational Partnerships at Quinsigamond Community College. She holds a Bachelor's degree in Elementary Education and a Master's degree in Educational Leadership and Management from Fitchburg State University. She is currently a Doctoral Candidate at the University of Massachusetts, Boston majoring in Higher Education Administration. Prior to coming to QCC, Ms. Radley was the Director of Extended Campus Programs at Fitchburg State University. As an adjunct faculty member, she has taught graduate courses for FSU in Curriculum Design and Research in Education.

# Today's Jobs Require More Education & Training



Source: Carnevale, Anthony P. & Donna M. Desrochers, *Standards for What? The Economic Roots of K-16 Reform*, Educational Testing Service, 2003.

# Hourly Wage Gaps are Widening



## *Appendix C*

August 15, 2011

Ms. Sheila Harrity – Principal  
Worcester Technical High School  
1 Skyline Drive  
Worcester, MA 01605

Dear Sheila,

The Business / Industry Advisors to the four academies, composed of 24 vocational/technical programs, are very supportive and pleased that Early Career and College High School could be a reality soon at Worcester Technical High School.

During the 1990's, the advisors were encouraged to think about a future plan for 21<sup>st</sup> century jobs and implementing technology. With vision, community support (professional and financial) One Skyline Drive became a reality.

Trade skills and student employment in area business/industry were the hallmark of Boys and Girls Trade Schools; with graduates becoming the strength of many companies workforce. However, 21<sup>st</sup> century jobs all have a technology component and a high school diploma is not enough. The academic rigor so ably imbedded in all technical programs at Worcester Technical High School has attracted many new as well as old business/industry partners as advisors and more importantly employers.

Worcester Technical High School graduates are better prepared. Technology skills; comprehension of 21<sup>st</sup> century concepts; improved abilities in math logic, communication and science; provide college-career ready students to move Worcester's economic engine forward. These graduates recognize that, to assure their future, they need advanced studies at the college and industry certified standards levels.

Implementing Early Career and College High School makes perfect sense at Worcester Technical High School. The vision of the 90's, the implementation of facilities and academic relevance and rigor in 2002 to 2010, and Early Career and College High School in 2012 and beyond continues the Advisors' mantra of "Keeping on the Leading Edge" to produce the best prepared graduates.

Sincerely,

*Ted Coghlin*

Edwin B. Coghlin Jr.  
Treasurer  
Chair WTHS Advisory Boards

## Innovation Schools Statute

### G.L. Chapter 71, Section 92 - Innovation Schools

View this page in PDF or Word format  

Section 92. (a) An Innovation School shall be a public school, operating within a public school district, that is established for the purpose of improving school performance and student achievement through increased autonomy and flexibility. An Innovation School may be established as a new public school or as a conversion of an existing public school. A student who is enrolled in a school at the time it is established as an Innovation School shall retain the ability to remain enrolled in the school if the student chooses to do so.

(b) An Innovation School may establish an advisory board of trustees. An Innovation School shall have increased autonomy and flexibility in 1 or more of the following areas: (i) curriculum; (ii) budget; (iii) school schedule and calendar; (iv) staffing policies and procedures, including waivers from or modifications to, contracts or collective bargaining agreements; (v) school district policies and procedures; and (vi) professional development. An Innovation School shall receive each school year from the school committee the same per pupil allocation as any other district school receives. An Innovation School may retain any unused funds and use the funds in subsequent school years. An Innovation School may establish a non-profit organization that may, among other things, assist the school with fundraising. A district shall not reduce its funding to an Innovation School as a result of the school's fundraising activities.

(c) An Innovation School established under this section shall be authorized by the local school committee and shall operate according to an innovation plan, which shall articulate the areas of autonomy and flexibility under subsection (b). To the extent practicable, the innovation plan shall be based on student outcome data, including, but not limited to: (i) student achievement on the Massachusetts Comprehensive Assessment System; (ii) other measures of student achievement, approved by the commissioner, as appropriate; (iii) student promotion, graduation rates and dropout rates; (iv) achievement data for different subgroups of students, including low-income students as defined by chapter 70, limited English-proficient students and students receiving special education; and (v) student attendance, dismissal rates and exclusion rates.

An Innovation School shall operate in accordance with the law regulating other public schools, except as the law conflicts with this section or any innovation plans created thereunder.

(d) An Innovation School is a school in which: (i) faculty and leadership are primarily responsible for developing the innovation plan under which the school operates and leadership is responsible for meeting the terms of the innovation plan; or (ii) an external partner is primarily

responsible for developing the innovation plan under which the school operates and the external partner is responsible for meeting the terms of the innovation plan.

(e) Nothing in this section shall be construed to prohibit: (i) the establishment of an Innovation School as an academy within an existing public school; (ii) the establishment of an Innovation School serving students from 2 or more school districts; provided, however, that all of the provisions of this section are met by each school district; (iii) the simultaneous establishment of 2 or more Innovation Schools as an Innovation Schools Zone within a school district; or (iv) the establishment of an Innovation School as a virtual public school that provides instruction to students through distance learning, including online learning programs and courses, subject to regulations adopted by the board of elementary and secondary education.

(f) The following shall be eligible applicants for the purposes of establishing an Innovation School: (i) parents; (ii) teachers; (iii) parent-teacher organizations; (iv) principals; (v) superintendents; (vi) school committees; (vii) teacher unions; (viii) colleges and universities; (ix) non-profit community-based organizations; (x) non-profit business or corporate entities; (xi) non-profit charter school operators; (xii) non-profit education management organizations; (xiii) educational collaboratives; (xiv) consortia of these groups; and (xv) non-profit entities authorized by the commissioner. Private and parochial schools shall not be eligible to operate an Innovation School.

(g) The local school committee, local teacher's union and superintendent of the district shall follow a process, consistent with this subsection and subsections (h) to (o), inclusive, for which an existing district school may be converted to an Innovation School or by which a new Innovation School may be established within the district. This process shall require that an eligible applicant proposing to establish an Innovation School prepare a prospectus regarding the proposed school. The prospectus shall include, but not be limited to, a description of: (i) whether the school will be a new school or a conversion of an existing school; (ii) if the school is a new school, the proposed location of the school; (iii) if the school is a conversion of an existing school, the school that is being proposed for conversion; (iv) the external partners, if any, that will be involved in the school; (v) the number of students the school is anticipated to serve and the number of staff expected to be employed at the school; (vi) the overall vision for the school, including improving school performance and student achievement; (vii) specific needs or challenges the school shall be designed to address; (viii) a preliminary assessment of the autonomy and flexibility under subsection (b) that the school will seek; (ix) why such flexibility is desirable to carry out the objectives of the school; (x) anticipated components of the school's innovation plan; (xi) a preliminary description of the process that shall be used to involve appropriate stakeholders in the development of the innovation plan; and (xii) a proposed timetable for development and establishment of the proposed school.

(h) Upon completion of the prospectus under subsection (g), an eligible applicant shall submit the prospectus to the superintendent, who shall within 30 days convene a screening committee consisting of the superintendent or a designee, a school committee member or a designee selected by the school committee and a representative from the leadership of the local teacher's union.

The screening committee shall review the prospectus for the purpose of determining whether the prospectus: (i) presents a sound and coherent plan for improving school performance and student

achievement; (ii) supports or enhances existing educational efforts in the district; and (iii) reasonably can be expanded into a comprehensive innovation plan. In the case of a new school, the committee will prepare an impact statement describing how the new school will affect the children and faculty in the district. Within 30 days of receiving a prospectus, the screening committee shall decide, on the basis of a two-thirds vote, to accept or reject the prospectus, or return the prospectus to the eligible applicant for revisions. If a prospectus is rejected or returned, the screening committee shall submit a detailed explanation for the decision to the applicant. A prospectus that is rejected or returned may be revised and resubmitted for subsequent consideration.

(i) Upon the acceptance of a prospectus by the screening committee under subsection (h), the applicant shall form an innovation plan committee of not more than 11 individuals within 30 days. The purpose of the innovation plan committee shall be to: (i) develop the innovation plan described in subsection (c); (ii) assure that appropriate stakeholders are represented in the development of the proposed Innovation School; and (iii) provide meaningful opportunities for the stakeholders to contribute to the development of such school. The size and composition of the innovation plan committee shall be determined by the applicant; provided, however, that the committee shall include: (i) the applicant; (ii) the superintendent or a designee; (iii) a school committee member or a designee; (iv) a parent who has 1 or more children enrolled in the school, or in the case of a new school, from the district; (v) a principal employed by the district; and (vi) 2 teachers employed by the district. The applicant shall select the parent from among nominees submitted by parent-teacher organizations in the district. If the district does not contain a parent-teacher organization or if the organization does not submit nominees, the applicant shall select the parent from among volunteers in the area or community the proposed school is expected to serve. The applicant shall select the principal and 1 teacher from among volunteers in the district and 1 teacher from among nominees submitted by the local teacher's union.

(j) Upon the formation of the innovation plan committee in subsection (i), the committee shall develop the innovation plan for the proposed Innovation School. The purpose of the innovation plan shall be to comprehensively articulate the areas of autonomy and flexibility under subsection (b) that the proposed school will use. The innovation plan shall include, but not be limited to: (i) a curriculum plan, which shall include a detailed description of the curriculum and related programs for the proposed school and how the curriculum is expected to improve school performance and student achievement; (ii) a budget plan, which shall include a detailed description of how funds shall be used differently in the proposed school to support school performance and student achievement; (iii) a school schedule plan, which shall include a detailed description of the ways, if any, the program or calendar of the proposed school will be enhanced or expanded; (iv) a staffing plan, which shall include a detailed description of how the school principal, administrators, faculty and staff will be recruited, employed, evaluated and compensated in the proposed school and any proposed waivers or modifications of collective bargaining agreements; (v) a policy and procedures plan, which shall include a detailed description of the unique operational policies and procedures to be used by the proposed school and how the procedures shall support school performance and student achievement; and (vi) a professional development plan, which shall include a detailed description of how the school may provide high-quality professional development to its administrators, teachers and staff.

In order to assess the proposed school across multiple measures of school performance and student success, the innovation plan shall include measurable annual goals including, but not

limited to, the following: (i) student attendance; (ii) student safety and discipline; (iii) student promotion and graduation and dropout rates; (iv) student achievement on the Massachusetts Comprehensive Assessment System; (v) progress in areas of academic underperformance; and (vi) progress among subgroups of students, including low-income students as defined by chapter 70, limited English-proficient students and students receiving special education; (7) reduction of achievement gaps among different groups of students.

A majority vote of the innovation plan committee shall be required for approval of the innovation plan.

(k) The provisions of the collective bargaining agreements applicable to the administrators, teachers and staff in the school shall be considered to be in operation at an Innovation School, except to the extent the provisions are waived or modified under the innovation plan and such waivers or modifications are approved under subsections (l) and (m).

(l) In the case of a school conversion, upon completion of the innovation plan in subsection (j), , the applicant shall submit the innovation plan to teachers in the school that is proposed for conversion for approval by secret ballot within 30 days. A two-thirds vote of the teachers shall be required to approve the plan. Upon approval of an innovation plan by the applicable union members the plan shall, within 7 days, be submitted to the school committee. If a two-thirds vote is not achieved, the innovation plan committee may revise the innovation plan as necessary and submit the revised plan to the teachers for a subsequent vote.

In the case of a new school, upon the completion of the innovation plan in subsection (j), the applicant, a local union and the superintendent shall negotiate waivers or modifications to the applicable collective bargaining agreement necessary for the school to implement the innovation plan. Upon the conclusion of the negotiations, the innovation plan shall be submitted immediately to the school committee. If the negotiations have not resulted in an agreement within 40 days, either party may petition the division of labor relations for the selection of an arbitrator. The division shall select an arbitrator within 3 days of the petition from a list submitted by the parties. The arbitrator shall conduct a hearing within 14 days of the arbitrator's selection. The arbitrator shall consider the parties' positions and the needs of the students in the district. The arbitrator's decision shall be consistent with the contents of the innovation plan developed by the applicant. The arbitrator shall, within 14 days of the close of the hearing, submit a decision which shall be final and binding on the parties.

(m) Upon receipt of an innovation plan regarding an Innovation School, a school committee shall hold at least 1 public hearing on the innovation plan. After the public hearing, but not later than 60 days after the receipt of the innovation plan, the school committee shall, on the basis of the quality of the plan and in consideration of comments submitted by the public, undertake a final vote to authorize the Innovation School for a period of not more than 5 years, subject to subsection (n). Approval of the majority of the school committee as fully constituted shall be required to authorize an Innovation School. If the approval is not obtained, an innovation plan committee may revise the innovation plan and: (i) in the case of a new school, submit the revised plan to the school committee for a subsequent vote; or (ii) in the case of a conversion, submit the revised plan to the teachers in the school that is proposed for conversion for a vote, pursuant to subsection (l); provided, however, that the plan meets the requirements for approval under subsection (l), submit the revised plan to the school committee for a subsequent vote. A school

committee shall vote on a revised plan submitted pursuant to this subsection within 60 days of the receipt of such plan and contract.

(n) All Innovation Schools authorized under subsection (m) shall be evaluated by the superintendent at least annually. The superintendent shall transmit the evaluation to the school committee and the commissioner of elementary and secondary education. The purpose of the evaluation shall be to determine whether the school has met the annual goals in its innovation plan and assess the implementation of the innovation plan at the school. If the school committee determines, on the advice of the superintendent, that the school has not met 1 or more goals in the innovation plan and that the failure to meet the goals may be corrected through reasonable modification of the plan, the school committee may amend the innovation plan as necessary. After the superintendent assesses the implementation of the innovation plan at the school, the school committee may, on the advice of the superintendent, amend the plan if the school committee determines that the amendment is necessary in view of subsequent changes in the district that affect 1 or more components of the plan, including, but not limited to, changes to contracts, collective bargaining agreements or school district policies; provided, however, that an amendment involving a subsequent change to a teacher contract shall first be approved by teachers at the school under the procedures in subsection (l).

If the school committee determines, on the advice of the superintendent, that the school has substantially failed to meet multiple goals in the innovation plan, the school committee may: (i) limit 1 or more components of the innovation plan; (ii) suspend 1 or more components of the innovation plan; or (iii) terminate the authorization of the school; provided, however, that the limitation or suspension shall not take place before the completion of the second full year of the operation of the school and the termination shall not take place before the completion of the third full year of the operation of the school.

(o) At the end of the period of authorization of an Innovation School approved under subsection (m), the leadership of the school may petition the school committee to extend the authorization of the school for an additional period of not more than 5 years. Before submitting the petition, the leadership of the school shall convene a selection of school stakeholders, including, but not limited to, administrators, teachers, other school staff, parents and external partners, as applicable, to discuss whether the innovation plan at the school requires revision and to solicit recommendations as to the potential revisions. After considering the recommendations of the stakeholder group, the leadership of the school and the applicable superintendent shall jointly update the innovation plan as necessary; provided, however, that a proposal regarding a new waiver or exemption from the local teacher's union contract shall be approved by teachers at the school, under subsection (l). Approval of the majority of the school committee as fully constituted shall be required to extend the period of authorization of an Innovation School. If the approval is not obtained, the leadership of the school and superintendent may jointly revise the innovation plan and submit the revised plan to the school committee for a subsequent vote. If the school committee does not extend the authorization of the school, the leadership of the school may seek the authorization from the board of elementary and secondary education. The board shall vote on the requested extension within 60 days of its receipt for approval of such extension.

(p) The commissioner of elementary and secondary education shall, to the extent practicable, be responsible for the following: (i) the provision of planning and implementation grants to eligible applicants to establish Innovation Schools; (ii) provision of technical assistance and support to

eligible applicants; (iii) the collection and publication of data and research related to the Innovation Schools initiative; (iv) the collection and publication of data and research related to successful programs serving limited English-proficient students attending Innovation Schools; and (v) the collection and dissemination of best practices in Innovation Schools that may be adopted by other public schools. The board of elementary and secondary education shall promulgate regulations necessary to carry out this section. Annually, the commissioner shall report to the joint committee on education, the house and senate committees on ways and means, the speaker of the house of representatives and the senate president on the implementation and fiscal impact of this section.

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