

**GRANTS REPORT
2015-2016**

Fund	Grant	Purpose/Priorities	Amount
409	Perkins Instructional Equipment	To provide funds to purchase new up-to-date instructional equipment to support Career Technical Education programs under the Carl D. Perkins Act at the secondary level.	\$55,940.00

Use of Funds

- Instructional Equipment

These funds have been awarded to South and Worcester Technical High Schools

Worcester Public Schools
Office of Grants Management

Grant Acceptance Form

Name of Grant: Perkins-Instructional Equipment

Type of Funder: Massachusetts Department of Elementary and Secondary Education

Awarded Amount: \$55,940.00

Grant Funding Period: July 1, 2015 through August 31, 2015

Project title: Perkins-Instructional Equipment

Program coordinator: Kyle Brenner

Purpose: To provide funds to purchase new up-to-date instructional equipment to support Career Technical Education programs under the Carl D. Perkins Act at the secondary level.

Description of the program: To facilitate teaching and learning using new up-to-date instructional equipment designed to strengthen and support academic and technical skill achievement at the secondary level.

Program location: South High School (Diesel)& Worcester Technical High School(Welding)

Outcomes and Measures: To give students access to equipment that will allow them the opportunity to acquire work skills at a faster rate given the fact that this equipment allows for individualized feedback with a greater level of detail. This will also lead to greater student engagement which in turn has been proven to impact graduation rates.



OFFICE OF THE GOVERNOR
COMMONWEALTH OF MASSACHUSETTS
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(617) 725-4000

CHARLES D. BAKER
GOVERNOR

KARYN E. POLITO
LIEUTENANT GOVERNOR

July 2, 2015

Melinda Boone, Superintendent
Worcester Public School District
One Skyline Drive
Worcester, MA 01602

Dear Superintendent Boone,

Congratulations! I am pleased to notify you that Worcester Public School District has been awarded a Perkins-Instructional Equipment grant of \$55,940. I want to thank you for your commitment to providing academic opportunities and improving career and technical training preparation for our students. Through this funding and your continued support, we hope to expand access to great educational opportunities for all students in the Commonwealth.

You will be receiving further instructions from the Department of Elementary and Secondary Education on next steps, and please feel free to contact Gary Gomes, (ggomes@doe.mass.edu) if you have any questions.

Governor Charles D. Baker

Lt. Governor Karyn E. Polito

Handwritten signature of Charles D. Baker in black ink.

Handwritten signature of Karyn E. Polito in black ink.

Copy: Lisa Sandler

**MASSACHUSETTS DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION
STANDARD CONTRACT FORM AND APPLICATION FOR PROGRAM GRANTS**

PART I - GENERAL

A. APPLICANT: Worcester Public Schools	District Code:	0	3	4	8
ADDRESS: 20 Irving Street					
Worcester, MA 01609					
TELEPHONE: (508) 799-3108					

B. APPLICATION FOR PROGRAM FUNDING				
FUND CODE	PROGRAM NAME	PROJECT DURATION		AMOUNT REQUESTED
		FROM	TO	
FY2016	FEDERAL administered by CAREER/VOCATIONAL TECHNICAL EDUCATION			\$55,940
409	Perkins - Instructional Equipment	7/1/2015	8/31/2015	

C. I CERTIFY THAT THE INFORMATION CONTAINED IN THIS APPLICATION IS CORRECT AND COMPLETE; THAT THE APPLICANT AGENCY HAS AUTHORIZED ME, AS ITS REPRESENTATIVE, TO FILE THIS APPLICATION; AND THAT I UNDERSTAND THAT FOR ANY FUNDS RECEIVED THROUGH THIS APPLICATION THE AGENCY AGREES TO COMPLY WITH ALL APPLICABLE STATE AND FEDERAL GRANT REQUIREMENTS COVERING BOTH THE PROGRAMMATIC AND FISCAL ADMINISTRATION OF GRANT FUNDS.

AUTHORIZED SIGNATORY: <i>Melinda J. Boone</i>	TITLE: Superintendent
TYPED NAME: Melinda J. Boone, Ed.D.	DATE: 7.9.15

DATE DUE: May 15, 2015
Competitive proposals must be received at the Department by 5:00 on the date due.

Mail the proposal listed on this signature page to:

Margie Roberts
Massachusetts Department of Elementary and Secondary Education
Office for Career/Vocational Technical Education
75 Pleasant Street
Malden, MA 02148-4906

Number of sets: Four (4) sets, each with an original signature of the Superintendent.

DO NOT WRITE BELOW THIS LINE

MASSACHUSETTS DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION USE ONLY	
GRANTS MANAGEMENT	
For the Department Authorized Signatory:	Date:

FY 2016

PART II-B PROJECT EXPENDITURES - DETAIL INFORMATION					A. FUND CODE:	409
B. APPLICANT AGENCY					District four-digit code:	0348
Applicant Agency: Worcester Public Schools		Address: 20 Irving Street, Worcester MA				
Contact Person: Gregory Bares		Zip Code: 01609				
Telephone: (508) 799-3108		E-mail address: BaresG@worc.k12.ma.us				
PLEASE PROVIDE THE INFORMATION REQUESTED ABOVE AND SUBMIT BOTH PAGES OF THE BUDGET DETAIL EVEN THOUGH THERE MAY BE NO LINE ITEM ENTRIES ON THE FIRST PAGE.						
C. ASSIGNMENT THROUGH SCHEDULE A <input type="checkbox"/>						
Check this box ONLY if this project will be using funds assigned by more than one agency. A completed Schedule A, with signatures and the amount of funds assigned by each participating agency, must be attached to this Budget Narrative.						
D. STAFFING CATEGORIES	E. # of Staff	F. FTE	G. MTRS*	H. AMOUNT	I. TOTAL	
1. ADMINISTRATORS:						
SUPERVISOR/DIRECTOR						
PROJECT COORDINATOR						
STIPENDS						
SUB-TOTAL					0	
2. INSTRUCTIONAL / PROFESSIONAL STAFF:						
STIPENDS						
SUB-TOTAL					0	
3. SUPPORT STAFF:						
AIDES/PARAPROFESSIONALS						
SECRETARY/BOOKKEEPER						
OTHER						
SUB-TOTAL					0	
* Check the MTRS box if the identified employee(s) is/are a member of the MA Teachers' Retirement System. This requirement applies only to federally-funded grant programs.						
4. FRINGE BENEFITS:				AMOUNT	LINE-ITEM SUB-TOTAL	
4-a MA TEACHERS' RETIREMENT SYSTEM (Federally-funded grants only)						
4-b OTHER FRINGE BENEFITS (Other retirement systems, health insurance, FICA)						
SUB-TOTAL					0	

APPLICANT AGENCY: Worcester Public Schools			FUND CODE:	409
5. CONTRACTUAL SERVICES: Indicate the services to be provided and the rate to be paid per hour or per day.			AMOUNT	LINE ITEM SUB-TOTAL
	RATE	Hour/Day		
CONSULTANTS	\$			
SPECIALISTS	\$			
INSTRUCTORS	\$			
SPEAKERS	\$			
OTHER	\$			
SUBSTITUTES	\$			
SUB-TOTAL				0
6. SUPPLIES AND MATERIALS: Items costing less than \$5,000 per unit or having a useful life of less than one year.				
TEXTBOOKS AND INSTRUCTIONAL MATERIALS				
INSTRUCTIONAL TECHNOLOGY INCLUDING SOFTWARE				
NON-INSTRUCTIONAL SUPPLIES				
SUB-TOTAL				0
7. TRAVEL: Mileage, conference registration, hotel, and meals				
SUPERVISORY STAFF				
INSTRUCTIONAL STAFF				
OTHER				
SUB-TOTAL				0
8. OTHER COSTS: Please indicate the amount requested in each category.				
Advertising			\$	
Maintenance/Repairs			\$	
Memberships/Subscriptions			\$	
Printing/Reproduction			\$	
Transportation of Students			\$	
Telephone/Utilities			\$	
Rental of Space			\$	
Rental of Equipment			\$	
SUB-TOTAL				0
9. INDIRECT COSTS		Approved Rate:	1.0000	
10. EQUIPMENT: Attach a list with a statement of need and cost of each item. Items costing \$5,000 or more per unit and having a useful life of more than one year.				
INSTRUCTIONAL EQUIPMENT/Virtual Welder and Steering and Suspension (attached)			55,940	
NON-INSTRUCTIONAL EQUIPMENT				
SUB-TOTAL				55,940
TOTAL FUNDS REQUESTED				55,940

Name of Grant Program: Perkins - Instructional Equipment	Fund Code: 409
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BUDGET NARRATIVE

WELDING

The VRTEX® 360 is a best-in-class, advanced level welding training system. It is designed to provide a full featured, expandable platform in an easy to use and engaging welding training tool. The VRTEX® is ideal for basic to advanced welding training, as a testing, recruitment and engagement tool for educational and industry and for preparation for advanced level evaluation for instructors.

- Supports all out of position welds
- Dedicated welding gun and retractable stinger
- Flexible and adjustable welding stand
- Supports tee joint, flat plate, groove joint, 6 in. diameter schedule 40 pipe, 2 in. diameter XXS pipe, and lap joint (available only with Upgrade 5)
- VRTEX® Extensions™ software upgrade program

Equipment	COSTS
VRTEX 360 Frequency Standard Systems and software extensions	\$43,475

DIESEL

The 500 Suspension and Steering System from ATech Training features actual late-model, low mileage vehicle components. This trainer provides an advanced level of instruction by duplicating actual on-vehicle troubleshooting and service procedures. The steering wheel is fully operational, with tilt column and rack and pinion assembly. Also fully operational is the power steering wheel pump driven by an electric motor and belt. The suspension trainer features fully operational strut towers. Hydraulic pistons are provided to compress and expand each strut. Hydraulic pressure is provided by on-board steering pump and controlled by levers. Strut operation does not interfere with wheel rotation allowing for wheel alignment service. The tires provide training for front tire and alignment service.

Equipment	COSTS
Suspension and Steering System (Model 500)	\$12,465

Total from both = \$55,940

Name of Grant Program: Perkins - Instructional Equipment

Fund Code: 409

PART III - REQUIRED PROGRAM INFORMATION

Provide the following information, using no more than five (5) pages.

- 1. Provide the name of the career technical education program(s) that would be improved by new up-to-date instructional equipment. (20 points)**

Worcester Public Schools seeks funding through this grant opportunity for a program located at the Worcester Technical High School (Welding) and the Diesel Technology program located at South High Community School

- 2. Provide a description of the new up-to-date instructional equipment that would be purchased and the cost. (5 points)**

For Welding Worcester Public Schools would like to purchase a virtual welding system:

The VRTEX® 360 is a best-in-class, advanced level welding training system. It is designed to provide a full featured, expandable platform in an easy to use and engaging welding training tool. The VRTEX® is ideal for basic to advanced welding training, as a testing, recruitment and engagement tool for educational and industry and for preparation for advanced level evaluation for instructors.

- Supports all out of position welds
- Dedicated welding gun and retractable stinger
- Flexible and adjustable welding stand
- Supports tee joint, flat plate, groove joint, 6 in. diameter schedule 40 pipe, 2 in. diameter XXS pipe, and lap joint (available only with Upgrade 5)
- VRTEX® Extensions™ software upgrade program continues to offer new and exciting features

For Diesel Technology, Worcester Public School would like to purchase a suspension and steering system trainer:

The 500 Suspension and Steering System from ATech Training features actual late-model, low mileage vehicle components. This trainer provides an advanced level of instruction by duplicating actual on-vehicle troubleshooting and service procedures. The steering wheel is fully operational, with tilt column and rack and pinion assembly. Also fully operational is the power steering wheel pump driven by an electric motor and belt. The suspension trainer features fully operational strut towers. Hydraulic pistons are provided to compress and expand each strut. Hydraulic pressure is provided by on-board steering pump and controlled by levers. Strut operation does not interfere with wheel rotation allowing for wheel alignment service. The tires provide training for front tire and alignment service.

- 3. Provide documentation that the instructional equipment has been recommended by business/industry. Documentation may include program advisory committee recommendations and/or recommendations by business/industry organizations or other groups of employers. (10 points)**

Welding: The Worcester Technical High School Welding program is a state-approved Chapter 74 program and it follows the MA DESE office of CVTE curriculum frameworks. The department is also accredited by the American Welding Society. The advisory committee for this program has been studying the use of Virtual Reality Integrated Welder Training and sees the purchase of this equipment as a complement to the traditional training taking place within the program and as a way to help prepare our students for current workplace conditions.

Today's metal fabricating companies face an unusual challenge: In the event that they receive a large number of employment applications for an open position, only a small number of applicants truly are qualified to do the required skilled labor. This adds to the complexity of hiring qualified workers from a shrinking skilled-labor pool. Skilled trades remain among the hardest jobs to fill, according to the 2013 Talent Shortage Survey prepared by ManpowerGroup™. The survey, which interviewed more than 1,000 U.S. employers, revealed that 39 percent of respondents report difficulty in finding staff with the right skills, while nearly half of respondents (49 percent) admit that this shortage affects their ability to serve customers.

The use of Virtual Reality Integrated Weld Training was evaluated for both training potential and implication for effective team learning by a team at Iowa State University. The team drew its members from the Department of Industrial and Manufacturing Systems and Engineering and the Department of Mechanical Engineering.

In the study, 22 participants were trained using one of two separate methods, traditional welding and virtual reality integrated training. The results demonstrated that students using 50 percent virtual reality training (VRI) had training outcomes that surpassed those of traditionally trained students across four distinctive weld qualifications (2F, 1G, 3F, 3G). In addition, the VRI group demonstrated significantly higher levels of team interaction which lead to increased team-based learning. Lastly, the material cost impact of the VRI group was significantly less than that of the traditionally trained group even though both schools operated over a full two-week period.¹

Diesel - This year a teacher at South High Community School has been hired to teach Diesel mechanics. This new instructor started to teach a two (2) year Diesel Technology curriculum to prepare students for careers in the Diesel fields. The district has partnered with two local companies to develop curriculum and business partnerships to firmly establish this pathway.

Reiterating the above-referenced survey: Skilled trades remain among the hardest jobs to fill, according to the 2013 Talent Shortage Survey prepared by ManpowerGroup™. The survey, which interviewed more than 1,000 U.S. employers, revealed that 39 percent of respondents report difficulty in finding staff with the right skills, while nearly half of respondents (49 percent) admit that this shortage affects their ability to serve customers.

The Diesel instructor, in concert with industry/business partners, have recommended the purchase of a suspension and steering system trainer. The 500 Suspension and Steering System from ATech Training features actual late-model, low mileage vehicle components. Tremendous changes have come to the automotive service and repair industry during the last decade. Vehicles today are more sophisticated and require technicians working on them to have a deeper understanding of the technology that goes into them. The suspension and steering system trainer would bring much-needed equipment into this shop and raise the level of preparation of students to industry required standards.

4. Provide the estimated number of students who would benefit from the up-to-date instructional equipment or supplies. (15 points)

For Welding, the approximate numbers of students who would benefit would be 237 as students learning welding from other shops would also have access to this equipment.

For Diesel Technology, the approximate numbers of students who would benefit are 160 students.

5. Describe how the proposed equipment purchase will strengthen and support academic and technical skill achievement at the secondary level. Describe how the proposed equipment facilitates teaching and learning, provides new instruction not currently offered in the program, and how the district will assure funds will be used to supplement, not supplant, existing program resources. (50 points)

¹ Stone, R. Watts, K. & Zhong, P. (2011). Virtual Reality Integrated Welder Training. *Welding Journal*, 90, pages 136-s – 141-s.

Name of Grant Program: Perkins - Instructional Equipment

Fund Code: 409

Welding: There have been no equipment upgrades to technology over the last seven years due to limited WPS' funding. Our Welding shop lacks equipment to implement a virtual reality integrated weld training component within our program. Training in the welding industry is a critical and often costly endeavor as welding is a skill and as such requires that its practitioners be trained to a standard; this kind of training requires time, money and talent.

Welding is a skill that requires not only manual dexterity, but also attention to numerous details. Weld quality depends on an operator's travel speed, angles relative to the work piece, arc position in the welding joint, and the operator's body position throughout the length of the weld. Achieving these goals using only traditional training methods can get costly—requiring more hands-on supervision and raw material. Virtual reality welding can help to expedite skills development and reduce training costs.

The use of the virtual reality training equipment will not substitute for hands-on training in an actual welding booth. This equipment will complement existing training as part of a comprehensive blended training program. In blended training, a virtual reality welding simulator is incorporated as a supplement and enhancement to traditional welding training methods.

Virtual reality training programs, when combined with traditional training, have distinct advantages:

- (a) economic – more cost effective in training welders
- (b) safety – students are “working” in such a way that they are learning in the safest environment possible
- (c) virtual reality training systems allow the ability to provide initial hands-on training that delivers instantaneous feedback and proficiency scores

An example of this is offered here. With a virtual reality welding system, students must learn how to replicate proper machine setup before they can “weld.” They must know how to properly enter the material type; the welding process; the gas flow settings; and even the amperage, voltage, and wire-feed speed into the system before they can pick up and use the virtual welding torch.

Purchase of this equipment would support the following Perkins Core Indicators: 2S1: Technical Skill attainment - Students will have access to equipment that will allow them the opportunity to work with advanced equipment and accompanying applications; Core Indicator 3S1 – Completion – access to more sophisticated equipment leads to greater student engagement which in turn has been proven to affect graduation rates and Core Indicator 5S1: Placement – students' access to technology that is current enhances their employability skills and/or as they proceed with post-secondary education in their chosen field.

Diesel Technology: A new instructor within the Diesel Technology program has shown us the need for increasingly, technicians must be flexible, in order to adapt to customer needs and new technologies. It is common for technicians to handle all kinds of repairs, from working on a vehicle's electrical system one day, to doing major engine repairs the next.

Diesel maintenance is becoming increasingly complex, as more electronic components are used to control engine operation. For example, microprocessors regulate and manage fuel timing, increasing engine efficiency. In modern shops, diesel service technicians use hand-held computers to diagnose problems and adjust engine functions. Technicians must continually learn about new techniques and advanced materials.

Diesel service technicians use a variety of tools in their work, including power tools, such as pneumatic wrenches, to remove bolts quickly; machine tools, such as lathes and grinding machines, to rebuild brakes; welding and flame-cutting equipment to remove and repair exhaust systems; and jacks and hoists to lift and move large parts. Common hand tools-screwdrivers, pliers, and wrenches-are used to work on small parts and get at hard-to-reach places. Diesel service technicians and mechanics also use a variety of computerized testing equipment to pinpoint and analyze malfunctions in electrical systems and engines.

In large shops, technicians generally receive their assignments from shop supervisors or service managers. Most supervisors and managers are experienced technicians who also assist in diagnosing problems and maintaining quality standards. Technicians may work as a team or be assisted by an apprentice or helper when doing heavy work, such as removing engines and transmissions.

Name of Grant Program: Perkins - Instructional Equipment

Fund Code: 409

Purchase of this equipment would support the following Perkins Core Indicators: 2S1: Technical Skill attainment - Students will have access to equipment that will allow them the opportunity to work acquire skills at a faster rate given the fact this equipment allows for individualized feedback with a greater level of detail; Core Indicator 3S1 – Completion – access to more leads to greater student engagement which in turn has been proven to affect graduation rates This tracking and reporting allows for the instructor to review and track student competencies and alter, if necessary, instructional practice tailored to each student. The system also records student work in an electronic portfolio. And Core Indicator 5S1: Placement – students' access to technology that is current enhances their employability skills and/or as they proceed with post-secondary education in their chosen field.

Notes:

1. The Standard Contract Form and Application for Program Grants specifies that equipment are items costing \$5,000 or more per unit and having a useful life of more than one year. Equipment should be put on Line 10.

Grants and Other Financial Assistance Programs: FY2016

Perkins-Instructional Equipment

Fund Code: 409

Purpose: The purpose of this federal competitive grant is to provide funds to purchase new up-to-date instructional equipment to support Career Technical Education programs under the Carl D. Perkins Act at the secondary level.

Priorities: The priorities are to facilitate teaching and learning using new up-to-date instructional equipment designed to strengthen and support academic and technical skill achievement at the secondary level.

Eligibility:

1. School districts with high enrollment* or a high percentage* of students in career technical education programs and current Perkins Act Local Plans are eligible to apply.
* High enrollment is defined as enrollment of 500 or more students in secondary-level career technical education programs on the October 1, 2014 SIMS. High percentage is defined as having at least 30% of the total secondary student enrollment in secondary-level career technical education programs on the October 1, 2014 SIMS. A list of eligible districts is attached.

Funding: Eligible school districts may apply for a maximum of \$60,000 for new instructional equipment. The Carl D. Perkins Career and Technical Education Improvement Act, P.L.109-270 is the funding source. It is anticipated that total amount available will be \$690,770.

Fund Use: Grant funds must be used to purchase new up-to-date instructional equipment to support Career Technical Education Programs under the Carl D. Perkins Act at the secondary level. Requests for repairs or parts will not be considered. Grant Equipment is defined as tangible non-expendable personal property having a useful life of more than one year and an acquisition cost of \$5,000 or more per unit.

Project Duration: July 1, 2015 - 8/31/2015 All funds must be obligated by the district by 8/31/2015.

Program Unit: Career/Vocational Technical Education

Contact: John L.G. Bynoe, III JBynoe@doe.mass.edu

Phone Number: (781) 338-6300

Date Due: Friday, May 15, 2015
Proposals must be received at the Department by 5:00 p.m. on the date due.

Required Forms:
Part I - General - Program Unit Signature Page - (Standard Contract Form and Application for Program Grants)

Part II - Budget Detail Pages (Include both pages.)

Part III - Required Program Information

Additional Information:
List of eligible districts

Submit four (4) sets, each with an original signature of the Superintendent/Executive Director. Mail to:

Submission Instructions: Margie Roberts
Office for Career/Vocational Technical Education
Massachusetts Department of
Elementary and Secondary Education
75 Pleasant Street
Malden, MA 02148-4906