

Robotics Academy and Precision Manufacturing Career Exploration Programs

1. Overview

The Washington County Workforce Investment Board distinguished itself this year by integrating the MN Department of Employment and Economic Development's Business Service Specialists (BSS) and partnering with Stillwater Area Public Schools, the MN Precision Manufacturing Association, the Midwest Robotics League and local businesses in the development and implementation of a Robotics Academy and a Precision Manufacturing Career Exploration Program. The goals of these exceptional programs were to build closer relationships among industry and school personnel, to introduce teachers, students and parents to careers in the precision manufacturing industry and to begin to frame curriculum and courses to position students for successful careers in the industry. The details of these programs are outlined in the attached brochures. These programs will serve as models for other industries within the district program and for other school districts in the state and nation. The incredible success can clearly be attributed to the partnership involved – drawing expertise across professional fields. The Washington County Workforce Investment Board connected the partners to make the concept a reality.

To support the MWCA's goals, the Washington County WIB focused its efforts on supporting the development of programs that ensure both employers (businesses) and workers have the resources and skills needed to be competitive. Feedback about qualified worker shortages from precision manufacturers visited by the Business Services Staff, along with the realization that there is a disconnect between student and parent perception of what manufacturing jobs can be, resulted in the WIB's support of the Academy and Career Exploration programs. These programs offer students practical, hands-on learning opportunities, as well as tours and internships with high tech manufacturers. They offer employers opportunities to develop young workers' interest and skills in jobs that face worker shortages, as well as new ways to market the industry and job openings to potential workers.

2. Job Seeker Impact

Based on the impact of the Robotics Academy and the exposure to robotics, many of the students and parents are looking at machining and engineering as possible careers. The parents who attended the robotics demonstration and toured a "state-of-the-art" precision manufacturing company now have a new and positive perspective on this industry.

We have also developed stronger relationships with machining companies for job seekers currently looking at the industry—company visits, internships and/or on-the-job training possibilities. These companies are posting current job openings on the Minnesota Job Bank (MJB) and participating in our Business of the Day program.

The Career Exploration Program substantially impacted the teachers who participated in the Career Orientation at Dunwoody College of Technology, the industry visits and the application session. Through this program the teachers have gained a deeper understanding of the precision manufacturing industry, the skills required for these jobs and the career paths available. They will be able to design courses at the secondary level to apply what is taught in math, science, engineering and technology with an industry-based focus. The teachers and industry representatives will work collaboratively to develop curriculum and credit courses that will position our students for success in post-secondary education and for careers in the industry.

3. Community Impact

We are finding ways to meet the workforce needs of the business community, specifically the manufacturing industry, and these two programs have built firm relationships that will advance numerous initiatives related to curriculum development, staff development and program design well into the future. It has created awareness of new options in machining and other high tech/precision machining opportunities. We have built a model that may be used across other WIB key industries, which include healthcare, finance, transportation and professional services.

4. Collaborators

Staff, parents and students from Stillwater Area Public Schools and St. Paul Public Schools, MN Precision Manufacturing Association, Midwest Robotics League, MN Department of Employment and Economic Development, Washington County Work Force Investment Board, Dunwoody College of Technology and local manufacturing firms, namely, Haberman Machine, Mold Craft, Valley Dental Arts, Oakdale Precision, Classic Manufacturing and Granite Transformations. This partnership has created a "cutting-edge" collaboration.

5. Outside Resources

Expertise, time and resources have been generously given by the school districts and the manufacturing companies listed above. Dunwoody College of Technology hosted a week-long training session for teachers, provided the lead teacher for the Academy and loaned five gears kits for use by the students during the Robotics Academy. The East Metro Integration District (EMID) funding allowed the students from St. Paul and Stillwater to attend on a "no fee" basis and a MN Department of Education S.T.E.M. (Science, Technology, Engineering and Math) grant will help pay for gears kits to be used by Stillwater Area Public Schools teachers and students in the classroom and for co-curricular activities, as well as in future Academies. These resources are very key and very important to the success of these programs.

6. Ability for Replication

These two programs have been videotaped from inception to completion by the Stillwater Area Public School district to be used as a district, state and national model. A narrative documentation of the process, operational and logistical details, evaluations and benefits to students, teachers and partners is being written. CD's are being produced to help other school districts design and implement a successful partnership model for introducing secondary students to careers in precision manufacturing that involve science, technology, engineering and math. These programs will inform teachers of "real world" applications of science, technology, engineering and math and benefit the manufacturing industry in Minnesota. Our partnership has applied to present at the 11th Annual MN Development Conference in St. Paul, to be held in October 2006. Our presentation is entitled "Accelerating Innovation and Entrepreneurship".



Stillwater Area Public Schools

Robotics Academy

Summer 2006



What is the Robotics Academy?

The Robotics Academy is a state-of-the-art, innovative learning opportunity for staff and students. The Academy is being offered for the first time this summer 2006 by Stillwater Area Public Schools in association with the MN Precision Manufacturing Association, the Midwest Robotics League, the MN Department of Employment and Economic Development and the Washington County Workforce Investment Board.

The Robotics Academy brings together key partners representing business, education and workforce/economic development. The experience of working with our partners in the precision manufacturing and robotics fields will have direct application to your curriculum and classroom instruction.

We are inviting you to participate in this Academy as a teacher leader from Stillwater Area Public Schools. In this capacity, you will be working with students throughout the Academy under the direction of a master teacher, Al Jaedike from Dunwoody College of Technology. You will assist students in grades 8 and 9 as they work with GEARS tabletop robot kits. Students will configure the systems in a robot for task oriented functions. Students will develop an appreciation for the creative application of science, technology, engineering and mathematics.

The Academy will be offered the following dates/times:

Thursday, July 6, 2006: 9:00 am-1:30 pm at Stillwater Area High School - Auditorium/Ropes Course

Monday, July 10-Thursday, July 13, 2006: 9:00 am- 12:00 pm – Stillwater Area High School – Rooms 118/138

Friday, July 14, 2006: 9:00 am-2:30 pm – Stillwater Area High Schools – Rooms 118/138 and Local Business

What are the benefits to me as a teacher involved in the Academy?

- Each teacher involved in the training and Academy will receive a GEARS robotics kit (approximate value of \$1,000) for use in your classroom.
- As a part of the training you will be given access to 750 pages of curriculum that is available to all teachers who complete the training.
- You will receive a contractual stipend for all training, Academy teaching and curriculum development and presentation time commitments outside of your contractual time. The current rate of pay for training is \$18.64 per hour and for teaching is \$21.96 per hour (supplemental rate). You will also receive mileage reimbursement for the training at Dunwoody College of Technology.
- You will receive a Certificate for re-licensure clock hours.
- You will gain invaluable access to business and industry partners now and into the future.

What is my commitment?

In order to participate in the academy as a teacher leader you must attend a planning meeting in the district and a week-long training at Dunwoody College of Technology, June 19-23 from 9:00 am – 4:00 pm. This training will involve a combination of lecture, discussion, question and answer sessions, and primarily hands-on experiences. Laptops will be used to participate in internet research around the basic assembly of the robot kits. Dunwoody College of Technology will provide the laptop for use during the training.

You will also be required to attend all Robotics Academy sessions as listed above.

Following the training and the Academy, you will be required to present to your fellow math, science or technology teachers across the district. Your experience will also be foundational to the development of potential curricular units or credit courses in robotics and associated fields.



Stillwater Area Public Schools Precision Manufacturing Career Exploration Program

The Precision Manufacturing Career Exploration Program is aimed at building closer relationships among industry and school personnel, in an effort to draw more and better prepared students into exciting engineering, design and related careers in manufacturing. Initial industry focus is upon precision manufacturing, including tool and dye, mold-making, and injection molding operations.

The objective is to provide math, science, and industrial technology teachers or counselors structured experiences at key manufacturing business sites. Each participant will spend approximately four (4) hours of observation and discussion time at each of three (3) businesses, viewing various aspects of the design, manufacturing, and quality control processes and operations.

Program Activities and Timeline

General and Career Orientation

June 15, 2006 10:00 am-2:00 pm Dunwoody College of Technology (4 hours)

Gain a general understanding of the precision manufacturing industry, tour Dunwoody College of Technology and visit classrooms teaching skills necessary for the industry.

Independent Research and Study – Mid June (6 hours)

Study areas of the precision manufacturing industry that are of particular interest to you and research the companies you have selected to visit.

Manufacturing Company Site Visits – Mid-June to Mid-July (12 hours – 3 visits @ 4 hours/visit)

Observe and discuss with key employees in each company the various aspects of design, manufacturing, quality control and operations. Gain an understanding of how the math and science concepts taught in your classroom relate to the industry and potential careers. Schedule these business visits around your time schedule.

Feedback and Application Session – (5 hours)

August 17, 2006 9:00 am - 2:00 pm Stillwater Area High School – Media Center

Discuss with other teachers who have participated in the program what you have learned from your involvement in the program. Identify ways in which what you have learned can be applied in your classroom teaching or in the curriculum design process.

Presentations To Fellow Math, Science and Technology Teachers – Fall (To be Determined)

Share what you have learned from the program with other teachers in the district. Become involved in the curriculum review process and perhaps help to design credit courses related to the skills necessary for the precision manufacturing industry.

Goals and benefits to teachers of the Precision Manufacturing Career Exploration Program

- ◆ An overview and a deeper understanding of the precision and overall manufacturing industry, and of related jobs and career opportunities, from design to engineering, to fabrication, to production, and related endeavors.
- ◆ An understanding of the skills required for precision manufacturing, including physical, cognitive, and technical skills.
- ◆ A better understanding of the relationship between job requirements and classroom instruction in junior and senior high school.
- ◆ Awareness of career paths, earning potential, and local area opportunities relating to precision manufacturing.
- ◆ Stipend for all training, orientation, research, observation, and other program time commitments outside of your contractual time. (Training rate of \$18.64/hour).