

II. High School Level Expectations for College Readiness– Ela

B. High School Classroom Work

II.B6) School-to-Career Exploration

Minuteman Regional Vocational Technical High School Learn-and-Earn Experience

Middle School Outreach

It's never too early to take on a challenge, and the Middle School Outreach Project is just the place for students in its sixteen-town membership to do it. Students travel by bus to the Technology Learning Center after school and can try their hand at robotics, laser technology, construction and solar energy, or telecommunications.

The students love working with the machinery and tools, and they experiment with problem solving.

Sample School-Career Path in Environmental Science

This regional high school was the first high school in Massachusetts to develop an approved Environment Technology Program, and is currently one of only two high schools in Massachusetts offering the program. Students have a unique opportunity to participate in extensive, concentrated environmental studies, and to conduct in-depth laboratory and field studies not available in traditional high school settings. The philosophy of the Environmental Technology Program is to bring together students interested in the environmental field, research scientists, community and state officials, and other environmental organizations to investigate real-world environmental issues.

Graduates of the Environmental Program are certified in First Aid and CPR, and in OSHA Hazardous Waste Operations Training. Many students also complete internships with local environmental consulting companies, contractors, or laboratories, and are certified as Massachusetts Class II Municipal Wastewater Treatment Plant Operators. Most students graduating from this program are pursuing further education within the environmental field at the college level. But based on their abilities and competencies when they graduate, they are also qualified to enter the work force directly.

Partnerships and Projects include:

- Cambridge Water Department: Water-quality monitoring
- MWRA: Wastewater treatment and infrastructure projects
- United States Geological Survey (USGS): Water-quality monitoring
- Parker River NWR: Beach Profiling and wildlife habitat studies
- Bolton, MA Conservation Commission: Vernal pool certification
- Devens Groundwater Remediation: monitoring and cleanup of TCE
- National Park Service, Minuteman National Park: Integrated pest management
- Massachusetts Division of Fisheries and Wildlife: Endangered Species program
- Northeastern University, Marine Biology Research Center, Nahant, MA
- US Fish and Wildlife Service: reintroduction of salmon into the Souhegan River
- Mass Aquaculture: PAS systems for raising large-mouth bass in cranberry bogs
- Hanscom AFB: Groundwater gauging and monitoring

Course Outlines for the Environmental Technology program look like this:

Grades 9 and 10

- Limnology
- Wildlife Biology
- Geology
- First Aid and CPR
- Marine Sciences/ Aquaculture
- Land-Use Planning/Watershed Management
- Meteorology
- Air Quality
- Hydrogeology
- 40-Hour OSHA Haz-Waste Operations Certification

Grades 11 and 12

- Applied Water Technology
- Environmental Site Assessment
- Senior Project
- Hazardous-Waste Site Remediation
- Surveying
- Co-Op/Internship
- OSHA HAZWOPER recertification, Science Fair Project, Envirothon, GIS, MA Municipal Wastewater Certification First Aid/CPR Recertification
- Geographic Information Systems (GIS), CPR Recertification, Envirothon, Science Fair Project

Career Opportunities Upon Graduation

- Environmental Technician
- Laboratory Technician
- Hazardous-Waste Site Worker
- Water/Wastewater Treatment Plant Operator

Capstone Project

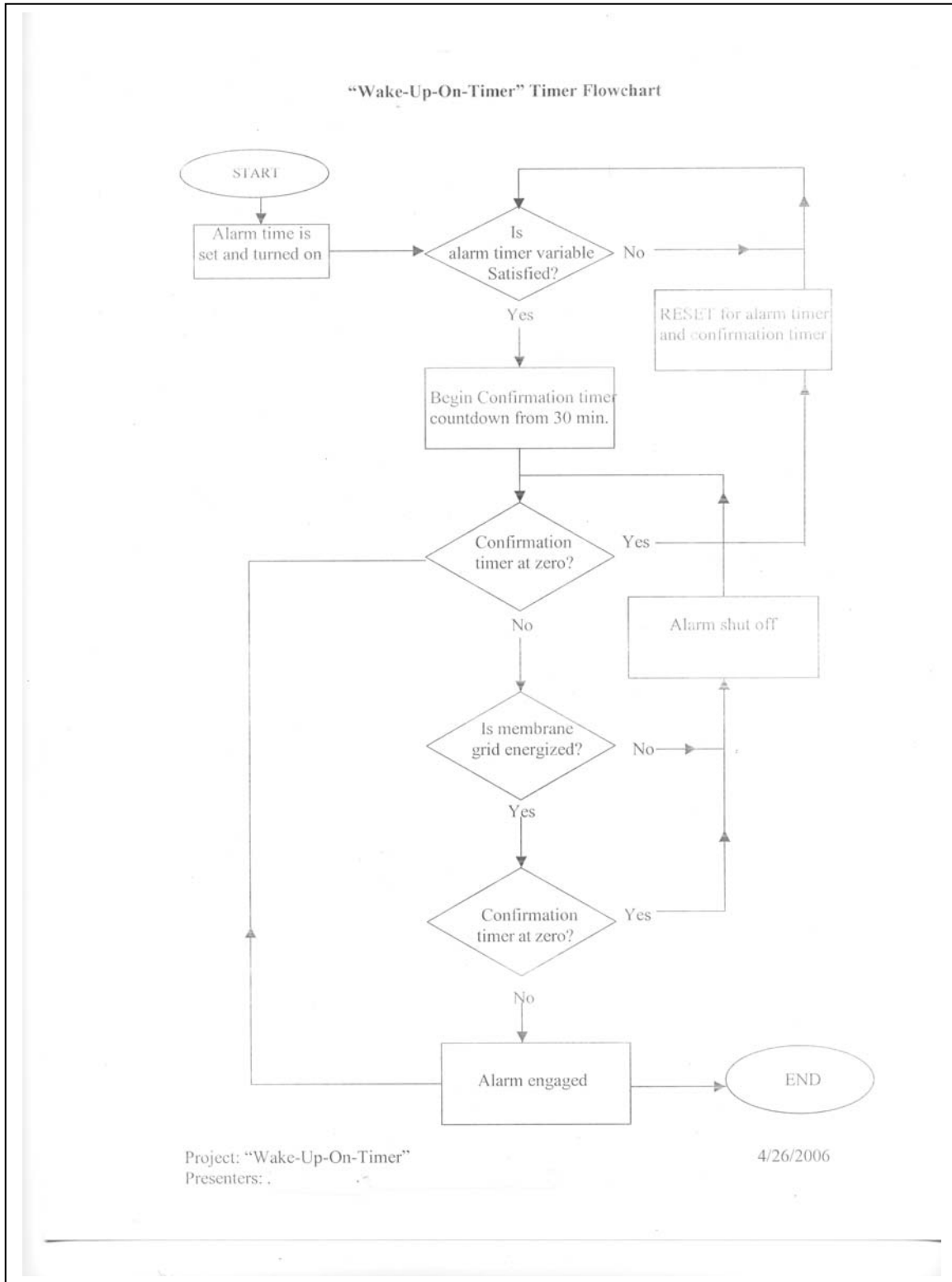
This school participates in [Project Lead the Way](#), a national program guiding high school and college science learning.

The PLTW High School Program is a four-year sequence of courses which, when combined with traditional mathematics and science courses in high school, introduces students to the scope, rigor and discipline of engineering prior to entering college or the workplace. Courses from Principles Of Engineering and Digital Electronics to Computer Integrated Manufacturing and Biotechnical Engineering prepare students for their senior year Capstone course, which is just what its name suggests: the culmination of students' development through high school academic and trades classes.

Working in teams with the assistance of a mentor, students design and build solutions to authentic engineering problems. At the end of the course, teams present their research papers or presentations and defend their projects in front of a panel of engineers, business leaders and college engineering educators for professional review and feedback.

One recent spring, teams of students developed a new kind of alarm clock – for those who keep hitting the snooze button and not getting up – an electric car, and an underwater ROV. One team presented their project for students who are afflicted with a brittle-bone disease and have difficulty playing sports. The students developed a blower-supported t-ball game that was portable, attractive, inexpensive (the budget was \$150) and works. Another team developed a pair of high-quality sunglasses that filter out 91% of light waves to assist a photo-sensitive epileptic six-year-old client unable to be outdoors comfortably.

The students presenting the “Wake-Up-On-Timer” alarm clock produced the following flow chart to show how they designed the clock:



Presentations are evaluated according to the following guide:

EDD Presentation Evaluation Form

Evaluator: _____ Date: _____

Evaluatee: _____ Presentation Title: _____

Part I. Presentation Skills (4 points each)	Points Earned	Comments
1. Dresses appropriately _____		
2. Speaks clearly _____		
3. Uses appropriate volume projection _____		
4. Uses appropriate delivery techniques _____		
5. Uses appropriate introductions _____		
6. Uses proper grammar, syntax, and composition _____		
7. Uses time effectively _____		
8. Conducts him/herself professionally _____		

Part II. Description and Rationale (6 points each)	Points Earned	Comments
1. Clearly identifies scope of presentation _____		
2. Design process demonstrated by steps followed _____		
3. Clear and detailed justification for project _____		
4. Clear and detailed explanation of research done _____		
5. Clear and detailed proposed solution _____		
6. Documented prototype planning _____		
7. Documented prototype construction _____		
8. Documented prototype Testing _____		
9. Clearly presents test results _____		
10. Test data supports theoretical calculations _____		

Part III. Follow-up (4 points each)	Points Earned	Comments
11. Overall organization _____		
12. Responding to questions _____		

Total Points _____ out of 100

ELA Framework:

Guiding Principles: 1,2,8

ELA Standards:

3.17: Deliver formal presentations for particular audiences using clear enunciation and appropriate organization, gestures, tone, and vocabulary.

3.18: Create an appropriate scoring guide to evaluate final presentations

24.6: Formulate original, open-ended questions to explore a topic of interest, design and carry out research, and evaluate the quality of the research paper in terms of the adequacy of its questions, materials, approach, and documentation of sources.