

Integrated Project-based Learning: Combining PTE Standards and Academic Standards

Use this template for planning and sharing ideas for projects. This template is based on the 6 A's:

Authenticity Academic Rigor* Applied Learning* Active Exploration* Adult Connections* Assessment*

Project

Title of Project: Examining what led the worldwide recall of airbags?

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School Minidoka School District

Pathway / Small Learning Community/Academy: Small learning community

Course Title(s) Intro to Auto Body, Diesel Technology, Applied Mathematics, physics, chemistry, Geometry, Algebra I, Algebra II

Time Frame: One week time frame to be conducted in the technical classes according to the schedule of where it falls into context in chemistry and physics classes.

Authenticity

Briefly describe your project. Include the key question and provide an overview of what students do and learn. Tell why the question is meaningful to the students and where one might see a similar question tackled by an adult in the workplace.

Key Question: What led to the worldwide air bag recall?

Overview: This project focuses on key concepts that involve chemistry, physics, diesel, automotive, autocollision

Vocabulary/Key Terms

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List vocabulary words and key terms essential to student understanding.

Sodium Azide, Kinetic Energy, Potential energy, explosion, volatility, milliseconds, organic compound, inorganic compound, colorless, odorless, ionic substance, soluble, chronic, acute, toxic, chemical reaction

Active Exploration * Applied Learning * Adult Connections

Real analyzing of airbag systems etc. will be conducted in the classroom setting, Industry speakers will speak and select trips will be made to industry sites as opportunities become available. Internet searches will be utilized in order to identify examples and will be used while doing activities that are related to the research of select vocabulary words and activities that are associated with the technical tasks.

Active Exploration How does the project engage students in real investigations using a variety of methods, media and sources? What field-based work will students perform? How does student learning and service support active career exploration?

Applied Learning Students will be required to determine the chemistry involved in air bags and how the system operates properly. In the event that there is an identified problem they will be required to make suggested sequence of repairs to repair the damage identified. They will be required to use the correct terminology and vocabulary to describe all areas identified.
(e.g. designing a product, improving a system, creating an exhibit, organizing an event)

Adult Connections Guest speakers from industry will be utilized and local tradesmen will be brought in to discuss the importance of this and the various places that measuring techniques can be used.

Classroom Activities

Knowledge of Vocabulary

Demonstration and knowledge of chemistry, physics, system operation, involved in the deployment of an airbag system.

Community Activities

Industry speakers to use terms

Career Activities

Identify careers where these techniques can be used

Academic/PTE Rigor

Standards Use the space below to list the state content standards and PTE industry standards addressed by the project. (A list of the content standards is available at <http://www.sde.idaho.gov/ContentStandards/default.asp>. This page, which includes selected high school level standards, is designed to let you easily create a list of standards you are addressing. You may then copy and paste the list into this template.)

Academic/PTE Rigor

School to Career Competencies *Please check (x) the competencies addressed by the project*

- Communicate and understand ideas and information
- Collect, analyze and organize information
- Identify and solve problems
- Use technology
- Initiate and complete entire activities
- Act professionally
- Interact with others
- Understand all aspects of an industry
- Take responsibility for career and life choices

Student Goal(s) Once the project begins, ask students to generate one or two personal goals.

Students are required to set 4 goals prior to starting hands on or live projects in the shop area.

Assessment

Upon the completion of the project students will be able to describe and use in practice chemistry, physics, and math theories that relate to the technical programs and problems that are at hand to solve. Accomplishing worksheets and class activities that are related to solving the problems will be used as an assessment. There will be technical competency sheets. ? How will students self-assess? Self reflection, group reflections, share out, and presentations.

Recommended Resources / Sample Products

Software or Materials Needed

Internet and web browsers (Standards)

Math Lab

Teacher-Developed Materials

Hand written lab and board demonstration as well as worksheets that represent the theory.

Recommended Resources / Sample Products

Student-Developed Materials

(Examples of products that can be shared with other classes. Please attach samples.) Periodic Tables, I-car website, manufacturer websites

Websites Used

As needed, I-Car, manufacturer

Final Words

Allows students to see how science and math concepts can be used in real life situations.

Teacher Tips/Extensions

Industry contacts and vendors who will act as guest speakers

Extensions

Internships, job placement, job shadowing etc., working in industry. Working for manufacturer, manufacturer support.

Timeline

What sequence of teaching and learning experiences will equip students to develop and demonstrate the PTE standards and the Academic standards?

The academic course work will take place in the same week as the technical course in the realm of technical instruction. Instructors will collaborate actively the week of instruction to facilitate instruction that will transfer from class to class during that time period.

