

**INTEGRATING 21ST CENTURY SKILLS
IN THE CLASSROOM WITH PROJECT-
BASED LEARNING**

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ELK GROVE UNIFIED SCHOOL DISTRICT

The Ford PAS NGL Resource Hub is a certified regionally-based entity, working in partnership with the national Ford PAS NGL team designated by Ford Motor Company Fund.

The vision of the Resource Hub is to positively impact student learning and achievement in the region which the Resource Hub serves.



FORD
NEXT GENERATION
LEARNING



Education Innovation


CURRENT FORD PAS NGL RESOURCE HUBS

- 📍 Elk Grove, CA
- 📍 Coachella Valle, CA
- 📍 Georgia
- 📍 Nashville, TN
- 📍 Ohio
- 📍 Pensacola, FL
- 📍 Philadelphia, PA
- 📍 South Texas



FORD NEXT GENERATION LEARNING COMMUNITIES	FORD NGL HUBS																											
Counties/school districts partnered with Ford NGL and embrace Essential Practices	A certified regional entity, working in partnership with national Ford NGL team; serves as a service provider to help communities fulfill the Ford NGL vision																											
<table border="0"> <tr> <td>Bay County, FL</td> <td>Lee County, FL</td> </tr> <tr> <td>Clay County, FL</td> <td>Louisville, KY</td> </tr> <tr> <td>Coachella Valley, CA</td> <td>Nashville, TN</td> </tr> <tr> <td>Coastal, GA</td> <td>Newton County, GA</td> </tr> <tr> <td>Effingham County, GA</td> <td>Philadelphia, PA</td> </tr> <tr> <td>Elk Grove, CA</td> <td>Pinellas County, FL</td> </tr> <tr> <td>Floyd County, GA</td> <td>Polk County, FL</td> </tr> <tr> <td>Gordon, GA</td> <td>Rockford, IL</td> </tr> <tr> <td>Independence, MO</td> <td>St. John's County, FL</td> </tr> <tr> <td>Kansas City, MO</td> <td>Volusia County, FL</td> </tr> </table>	Bay County, FL	Lee County, FL	Clay County, FL	Louisville, KY	Coachella Valley, CA	Nashville, TN	Coastal, GA	Newton County, GA	Effingham County, GA	Philadelphia, PA	Elk Grove, CA	Pinellas County, FL	Floyd County, GA	Polk County, FL	Gordon, GA	Rockford, IL	Independence, MO	St. John's County, FL	Kansas City, MO	Volusia County, FL	<table border="0"> <tr> <td>Coachella Valley, CA</td> </tr> <tr> <td>Elk Grove, CA</td> </tr> <tr> <td>Georgia</td> </tr> <tr> <td>Nashville, TN</td> </tr> <tr> <td>Pensacola, FL</td> </tr> <tr> <td>Philadelphia, PA</td> </tr> <tr> <td>South Texas</td> </tr> </table>	Coachella Valley, CA	Elk Grove, CA	Georgia	Nashville, TN	Pensacola, FL	Philadelphia, PA	South Texas
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TODAY'S OBJECTIVES

- Identify 21st Century Skills
 - College and Career Readiness
 - Integrate Project Based Learning with Common Core State Standards
 - How to use Ford PAS NGL Curriculum Questions and Answer
- 



While the world has seen
revolutionary changes in the last 100 years...





Each day, 7,000 students **drop out**,
one every 26 seconds



Today's Biggest Problem: *College/Career Readiness*

Only 31 percent of American high school students will graduate from high school with skills they need to succeed in college/work



Each year dropouts represent **\$320 billion** in lost lifetime earning potential

SOURCE: Alliance for Excellent Education, "The High Cost of High School Dropouts: What the Nation Pays for Inadequate High Schools," (Washington, DC: 2008).

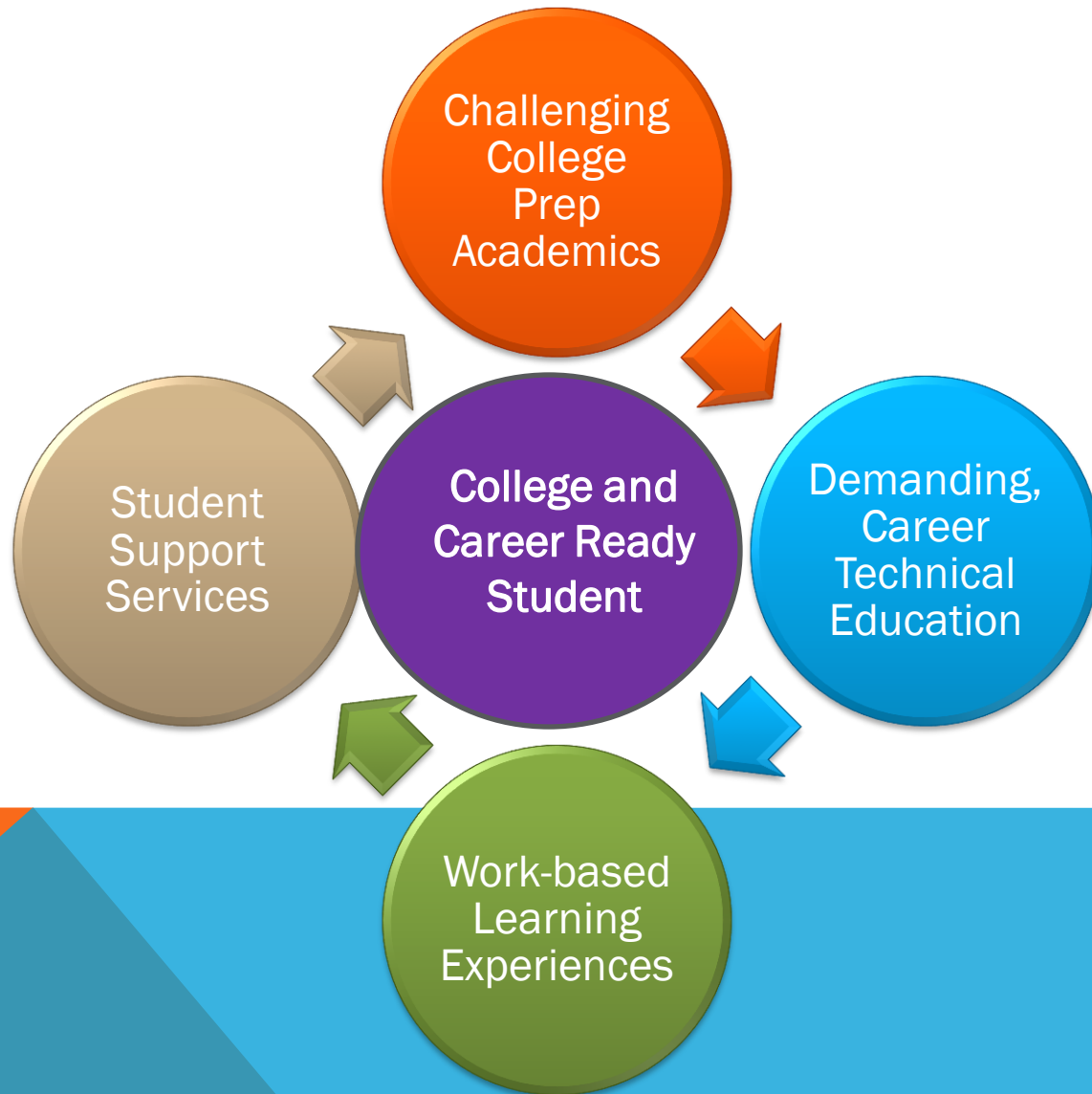
21ST CENTURY SKILLS

- **Critical thinking and problem solving**
- **Collaboration across networks and leading by influence**
- **Agility and adaptability**
- **Initiative and entrepreneurship**
- **Effective oral and written communication**
- **Accessing and analyzing information**
- **Curiosity and imagination**

PORTRAIT OF A STUDENT WHO MEETS THE COLLEGE AND CAREER READY STANDARDS

- Demonstrates independence
- Build strong content knowledge
- Respond to varying demands of audience, task, purpose, and discipline
- Comprehend as well as critique
- Value evidence
- Use technology and digital media strategically and capably
- Appreciate other perspectives and cultures

LINKED LEARNING – 4 COMPONENTS



TRANSFORMING TEACHING & LEARNING

Creating meaningful learning experiences that enable students to learn and apply academic, 21st century, and technical knowledge and skills to real-world challenges

TRANSFORMING THE SECONDARY SCHOOL EXPERIENCE

Creating and maintaining career and interest-themed academies and collaborative culture, structures, and practices

TRANSFORMING BUSINESS & CIVIC ENGAGEMENT

Engaging employers, educators, and community leaders in building and sustaining a transformed secondary school experience

NEXT GENERATION LEARNERS

Engaged and able to apply learning in the real world



Prepared for success in college, career, and life

Equipped with critical 21st Century skills

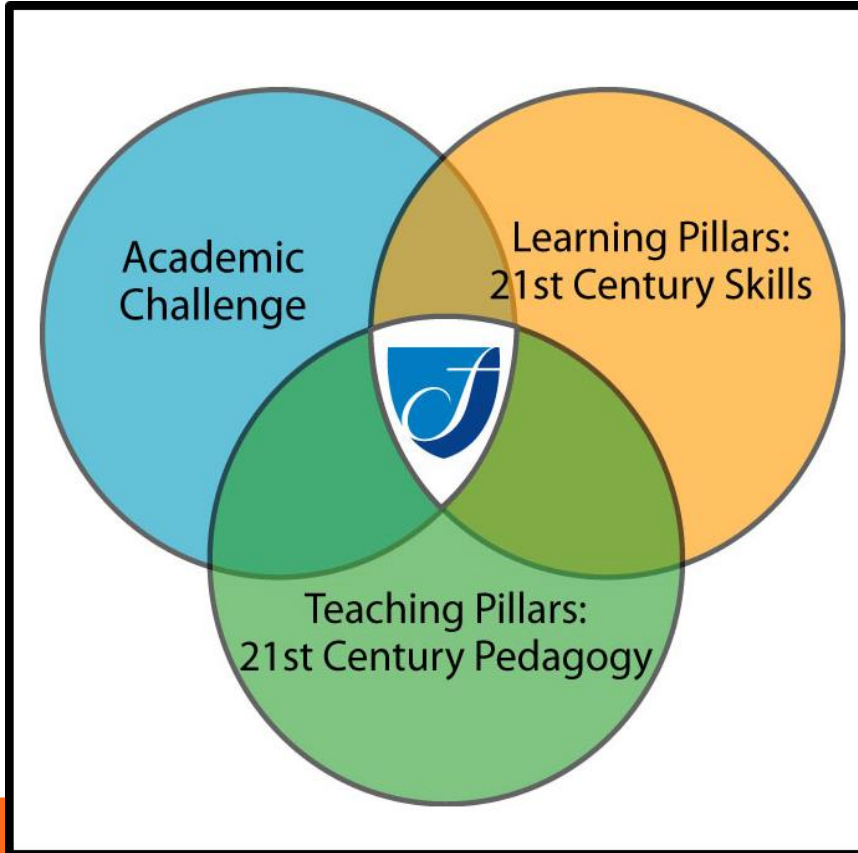
Student Engagement



WHAT ARE THE GOALS OF FORD NGL?

- Improve students' academic performance, mastery of 21st century skills, motivation to succeed, and commitment to lifelong learning
- Improve students' understanding of postsecondary and career opportunities in engineering, technology, business, and related fields
- Develop educators' capacity to use exemplary curricula and teaching strategies, integrate academic and career technical education (CTE), collaborate with colleagues, and effectively engage business and community partners

FORD NGL CURRICULUM



- Downloadable
- Interdisciplinary, project-inquiry based
- Series of materials for use in grades 9-12
- Currently 20 modules
- Modules designed for flexible use in various course configurations.

EXAMPLES OF FORD PAS NGL MODULES

- Careers Companies and Communities
- Closing the Environmental Loop
- Different by Design
- Energy for the Future
- Ensuring Quality
- From Concept to Consumer
- From Data to Knowledge
- Global Citizens
- Markets Without Borders
- Media and Messages
- People at Work
- Planning for Business Success
- Planning for Efficiency
- Reverse Engineering
- The Wealth of Nations

EACH MODULE CONTAINS

- **Module Overview**
- **Activities at a Glance**
- **Planning Calendar**
- **Learning Goals by Activity**
- **Correlation with Academic Standards and Core Skills**
- **Teaching Suggestions**
- **Reproducible Masters**
- **Quizzes and Test Answer Keys**
- **References**

Table 1: CTE Anchor Standards—Common Core English Language Arts Alignment

ANCHOR STANDARD	CCSS ELA Standards Code(s)
<p>Anchor Standard 1: Academics Analyze and apply appropriate academic standards required for successful industry sector pathway completion leading to postsecondary education and employment. Refer to the industry sector alignment matrix for identification of standards.</p>	<p>Note: alignment listed within each sector</p>
<p>Anchor Standard 2: Communications Language Standard: Acquire and accurately use general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the (career and college) readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>	<p>LS 9-10, 11-12.6</p>
<p>Anchor Standard 3: Career Planning and Management Speaking and Listening Standard: Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.</p>	<p>SLS 11-12.2</p>
<p>Anchor Standard 4: Technology Writing Standard: Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments and information.</p>	<p>WS 11-12.6</p>
<p>Anchor Standard 5: Problem Solving and Critical Thinking Writing Standard: Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem, narrow or broaden the inquiry when appropriate, and synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.</p>	<p>WS 11-12.7</p>
<p>Anchor Standard 6: Health and Safety Reading Standards for Science and Technical Subjects: Determine the meaning of symbols, key words, and other domain-specific words and phrases as they are used in a specific scientific or technical context.</p>	<p>RSTS 9-10 11-12.4</p>
<p>Anchor Standard 7: Responsibility and Flexibility Speaking and Listening Standard: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners, building on others' ideas and expressing their own clearly and persuasively.</p>	<p>SLS 9-10 11-12.1</p>
<p>Anchor Standard 8: Ethics and Legal Responsibilities Speaking and Listening Standard: Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the work.</p>	<p>SLS 11-12.1d</p>
<p>Anchor Standard 9: Leadership and Teamwork Speaking and Listening Standard: Work with peers to promote civil, democratic discussions and decision making; set clear goals and deadlines; and establish individual roles as needed.</p>	<p>SLS 11-12.1b</p>
<p>Anchor Standard 10: Technical Knowledge and Skills Writing Standard: Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.</p>	<p>WS 11-12.6</p>
<p>Anchor Standard 11: Demonstration and Application Demonstrate and apply the knowledge and skills contained in the industry-sector anchor standards, pathway standards, and performance indicators in classroom, laboratory, and workplace settings, and the career technical student organization.</p>	<p>Note: no alignment evident for this standard</p>



COURSE 1 – BUILDING FOUNDATIONS



Ford Partnership for Advanced Studies (Ford PAS)

COURSE 1: Building Foundations

How do people dream up new products? How are products made and marketed to customers? How do people communicate their ideas and knowledge in the workplace? How has the workplace changed in the United States over time? What will it be like when you're ready to enter the workforce?

Building Foundations introduces you to the worlds of business, product development, and manufacturing, and helps you develop skills—important for both college and the workplace—that you'll use throughout the rest of the Ford PAS curriculum. In Module 1, you'll work in teams to solve problems related to inventing, developing, and producing products like soft drinks and bicycles. In Module 2, you'll develop important communication skills as you take on the roles of employees of different departments at a fictional fast-food company called Quick 'n Tastee. In Module 3, you'll interview people in the workforce today and use historical documents to understand how and why the workplace has changed over time. You'll develop your research skills in order to create an exhibit for a class Web site that describes the lives of people working in different periods of U.S. history.

Module 1

From Concept to Consumer: Building a Foundation in Problem-Solving

Module 2

Media and Messages: Building a Foundation of Communication Skills

Module 3

People at Work: Building a Foundation of Research Skills

MODULE 1 – FROM CONCEPT TO CONSUMER



MODULE 1: From Concept to Consumer TABLE OF CONTENTS

MODULE OVERVIEW	1
ACTIVITY 1: INVENTIVE THINKING	2
ACTIVITY 2: THE EVOLUTION OF EVERYDAY OBJECTS	14
ACTIVITY 3: MAKING PRODUCT DECISIONS	23
ACTIVITY 4: PUTTING A PRODUCT TOGETHER	58
ACTIVITY 5: SEEING COMPANIES IN ACTION	66
ACTIVITY 6: DESIGNING FOR THE FUTURE	69
FOR FURTHER READING	76
REFERENCES	77

FROM CONCEPT TO CONSUMER

MODULE 1, ACTIVITY 1

- **Each module has:**
 - Module Overview
 - Before you teach
 - Materials
 - Vocabulary
 - Learning Goals
 - Reproducible Masters
 - Assessments/Rubrics

MODULE 1: FROM CONCEPT TO CONSUMER

***BUILDING A FOUNDATION IN PROBLEM-
SOLVING***




**ACTIVITY 1:
INVENTIVE THINKING**

MODULE OVERVIEW

Activity #	Title	# of Sessions
Activity 1	Inventive Thinking	3
Activity 2	The Evolution of Everyday Objects	6
Activity 3	Making Product Decisions	5
Activity 4	Putting a Product Together	5
Activity 5	Seeing Companies in Action	4
Activity 6	Designing for the Future	7

LEARNING GOALS

- Identify and explain the importance of the steps involved in developing a new product
 - Develop ideas for new products, taking into account the needs of particular consumer groups
 - Describe the consequences to society of the widespread use of new products
- 

VOCABULARY

CONSUMER GROUP

PRODUCT DESIGN

PATENT

PROTOTYPE

DESIGN SPECIFICATIONS




SESSION 1

**Necessity is
the mother of
invention**



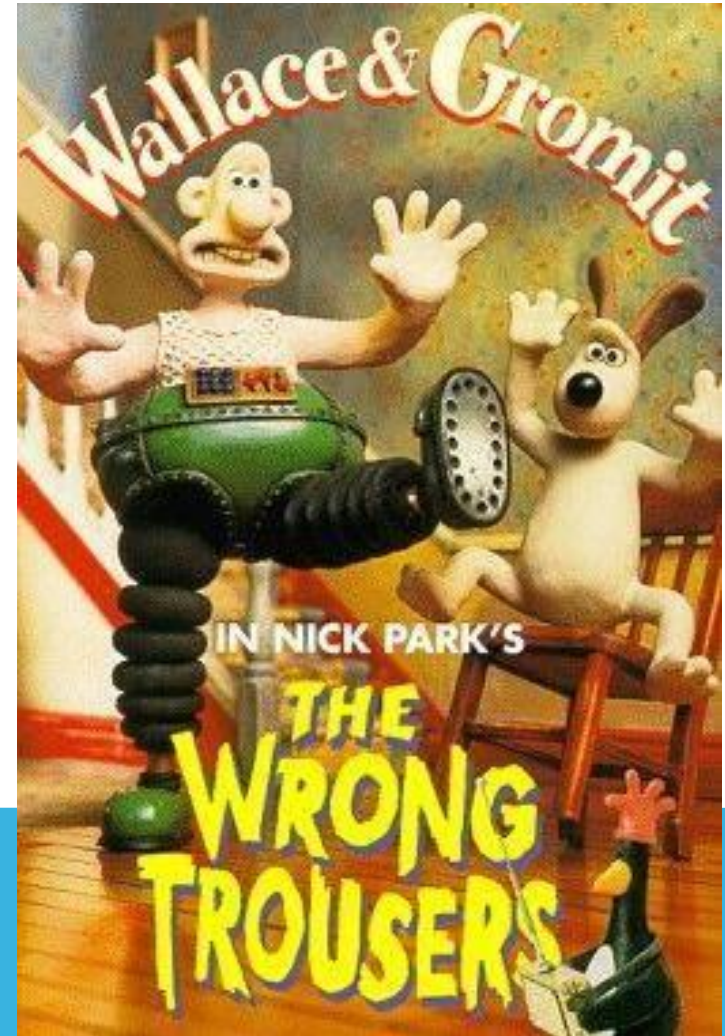
Plato

QUOTATIONS

1. Do you agree with this statement? Why or why not?
 2. Have you ever thought, “Someone should invent a way to...”? Do your answers reflect a need or a want?
 3. Do you know anyone who has invented a tool or gadget in order to do something in a new way or better way?
- 

SESSION 1 NECESSITY – THE MOTHER OF INVENTION?

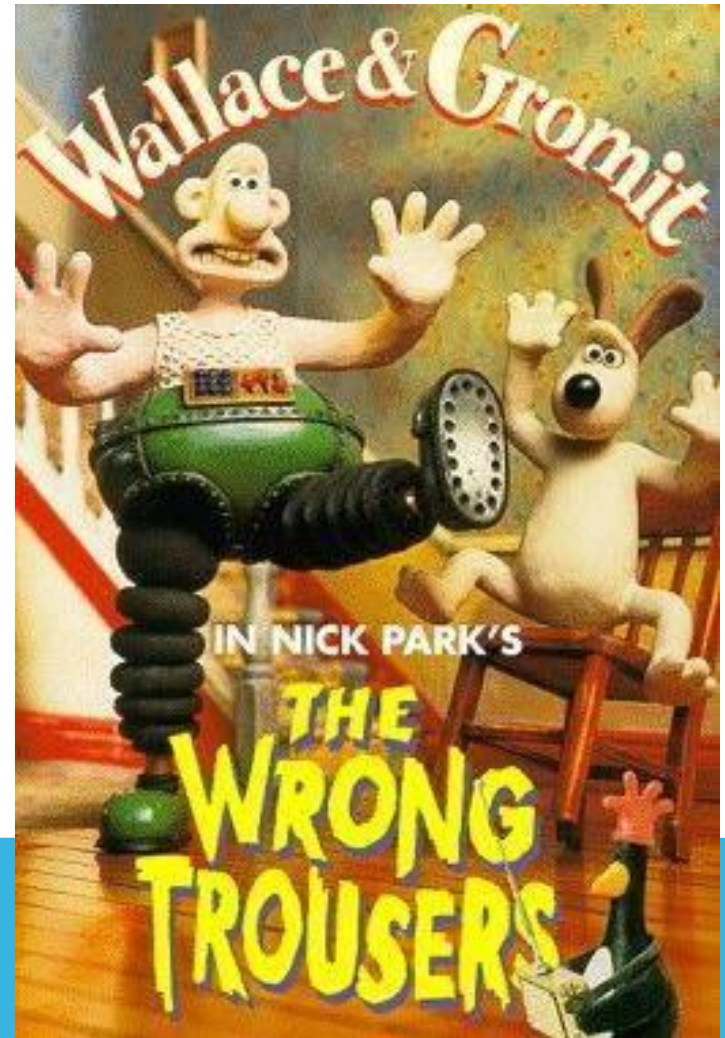
While viewing the video pay attention to the various gadgets the characters use and their purposes.



[Click Here](#)

SESSION 1 NECESSITY – THE MOTHER OF INVENTION?

1. Were any of these gadgets useful? Did they save time?
2. Can you think of some gadgets that could make your life easier or more fun?
3. Are there activities in your life that you would eliminate if you could? Would an invention help? How?



SESSION 1 NECESSITY – THE MOTHER OF INVENTION

Homework Assignment:

Read *Interesting Inventions* which describes the work of several inventions, and *What is Product Design?*

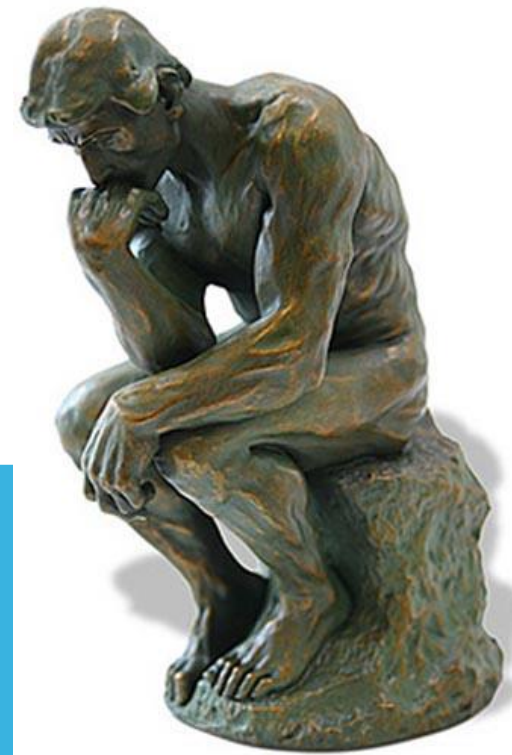
Then consider how an invention or an innovation in an everyday product could improve your life.

Find out what new inventions or redesigned products your friends and family would like to see developed.


Write a two-paragraph description of at least one invention or redesigned product idea.

SESSION 2 - DISCUSS INVENTION IDEAS

- How could an invention or an innovation in an everyday product improve your life?
- Work with your team to develop a product proposal that includes the following:



SESSION 2 - DISCUSS INVENTION IDEAS

1. Name of the product
 2. Sketch of the product
 3. Description of the purpose and function of the product
 4. Description of why this product is more useful than anything that already exists
 5. List of possible raw materials needed to make this product
- 

WRAP-UP

Each team presents and shares their invention.

Review the complete module:

Session 3 – Watch the second half of Wallace and Gromit and discuss the benefits and disadvantages of new inventions.



ASSESSMENT

There are two written assessments provided for this module:

Module 1 Quiz 1 – Looks for reading comprehension and retention as well as understanding of vocabulary words and key concepts from just activity 1.

Module Test – Meant to be done after the whole module is complete. Tests problem-solving skills and student achievement of learning goals

GROUP SHARE

- How can you use this activity in your class?
- With other classes?



CROSS-CURRICULAR COLLABORATION

Class	Assignment/Standards
English	<ul style="list-style-type: none">• writing business letters• understanding workplace documents• product proposals• public speaking• reading comprehension• persuasive techniques
World History	<ul style="list-style-type: none">• development of war weaponry• inventions that changed history
Biology	<ul style="list-style-type: none">• reinvention of an existing product to make it more environmentally friendly• impact of manufacturing on an environment
Engineering	<ul style="list-style-type: none">• schematics of a design• construction of a product• production process• manufacturing process
Video Production	<ul style="list-style-type: none">• commercials• product placement ads• film and editing techniques

FORD PAS PILLARS

Learning Pillars

Critical thinking

Problem-solving

Teamwork

Communication

Creativity and innovation

Global awareness

Teaching Pillars

Inquiry-based

Project-based

Real-world

Performance-based

Technology integration

FUTURE TRAINING

If you would like additional information on future Ford PAS NGL training write your name and email on the sign-in sheet.

Once you attend a training you have complete access to all of the curriculum.

The curriculum is a pdf form and downloadable for teacher and student.



QUESTIONS AND CONTACT INFORMATION

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