

Computer Applications for Life  
7th grade at Highlands

Computer Applications  
&  
Project Lead the Way  
Gateway Module

(STEAM)

Teachers:

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# Office 365

- ▶ Use MS Word to effectively communicate new knowledge and ideas
- ▶ Use Excel for research and data analysis
- ▶ Use OneNote to manage class tasks & activities and collaborate with peers
- ▶ Use Office 365 apps and presentations tools to communicate with peers, teachers and experts, and demonstrate knowledge
  - ▶ PowerPoint
  - ▶ SWAY
  - ▶ Prezi



# Digital Citizenship

- ▶ Internet safety
- ▶ Information literacy & researching online
  - ▶ Identifying credible and reliable sources
  - ▶ Providing accurate citations
  - ▶ Copyright
- ▶ Email etiquette
- ▶ Digital footprint



# PLTW Automation and Robotics

## What is Automation and Robotics

### Mechanical Systems

### Automation systems

- ▶ History, development, and influence of automation and robotics
- ▶ Mechanical systems
- ▶ Machine automation
- ▶ Students use the VEX Robotics® platform to design, build, and program real-world objects
  - ▶ Steps of the Design Process
  - ▶ Deconstruct and construct mechanisms
  - ▶ Program mechanisms
- ▶ Research and problem solving
- ▶ Office 365 Apps, including OneNote Notebook

# Example of Mechanical Gears Research Project

- Research
- Collaboration

- Mechanical Gears
- Presentations

## Mechanical Gears Research Project Rubric (40 Points)

Description: For this project you will be researching a mechanism and presenting it to the class.

Mechanisms: You will be able to choose between these mechanisms below. Please circle the one that you are going to research.

- Gear Train
- Rack and Pinion
- Worm and Wheel

### Task 1: 10 Points

Research two reliable sources that need to be approved by your teacher.


Fill in the reliable source worksheet.

- Website 1 - **5 Points**
  - There is a working link to their reliable website.
  - The reliable source was approved by the teacher.
  - There are specific examples from these websites on their mechanism.
  - Student has relevant topics written down that are covered on the website that will be helpful for their project.
  - Is fully completed and is written in complete sentences.
- Website 2: **5 Points**
  - There is a working link to their reliable website.

# Research Presentations on Mechanical Gears

What is a worm and wheel?

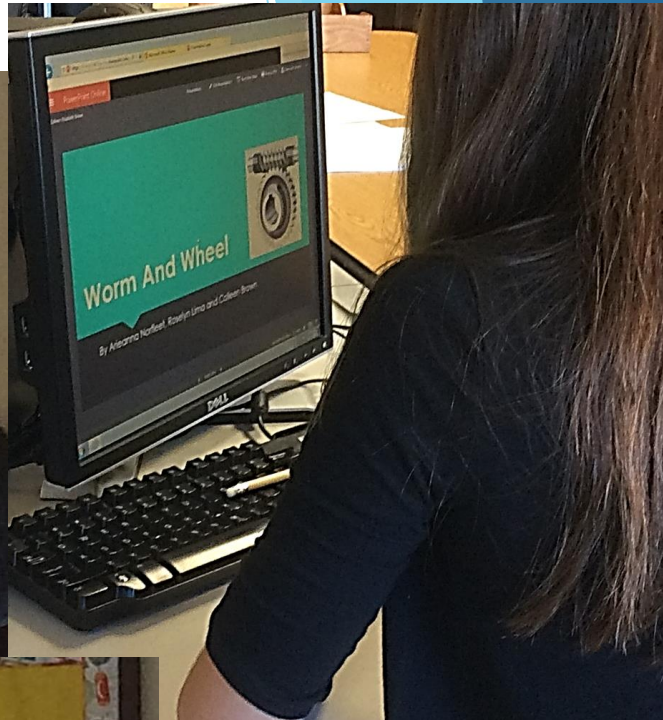

○ A worm and wheel is a mechanism that is made up of 3 different parts, Which are the worm the wheel and the motor.



By using the motor the worm and wheel can be used to make a motor.

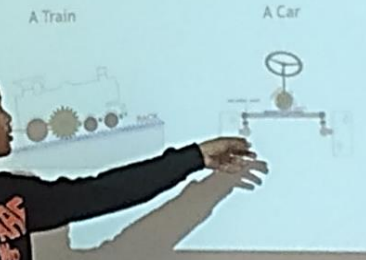
Where do you find a worm and wheel in real life?

- Old fashion pencil sharpener
- Spinning wheel
- Bass tuners
- Screw
- Elevators
- Gates
- Conveyer belts



Where you can find it

A Train      A Car



Where is a rack and pinion?

In cars, and trains

What is a Rack and pinion.

A rack and pinion is a type of gear train that is used to convert the rotational motion of a gear into the linear motion of a rack.





# The Engineering Design Process using VEX Robotic Kits

