Computer Applications for Life
7th grade at Highlands

Computer Applications &
Project Lead the Way
Gateway Module

(STEAM)
Teachers:

Mary Bongo
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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

Image source - Commonsensemedia.org
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.
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.

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

- Old fashion pencil sharpeners
- Spinning wheel
- Bus tinea
- Screw
- Elevators
- Gates
- Conveyor belts

Where is a rack and pinion?

- In cars and trains

What is a Rack and pinion.
The Engineering Design Process using VEX Robotic Kits

1. Define the Problem
2. Do Background Research
3. Specify Requirements
4. Brainstorm, Evaluate, and Choose Solution
5. Develop and Prototype Solution
6. Test Solution
7. Communicate Results

- Solution Meets Requirements
- Solution Meets Requirements Partially or Not at All