



Emerging Technology Catalog 2023-2024

The Walsh-Pembina Technology Cooperative is made up of 12 schools, Cavalier, Drayton, Fordville-Lankin, Grafton, Manvel, Midway, Minto, N.B. Pembina, N.B. Walhalla, Park River, Valley-Edinburg, and North Valley CTC. The purpose for this cooperative is to rotate High Tech Equipment between member schools. This rotation enables schools to share the cost of equipment. The goal of this rotation is that teachers and students are able to utilize High Tech Equipment enhancing instruction in areas of Math, Science, and Career/Tech. Education. High Tech gives the opportunity for students to remain competitive in the technology workforce, by developing fundamental skills through experiential learning, with an understanding of technological principles that will guide them to future education and careers.

All equipment can be checked out with North Valley. If there is equipment that needs repairing or if there are emerging technology equipment purchase requests, please contact North Valley at 701-352-3705.

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Alternative Energy(Hydrogen, Solar, and Wind)

Areas of impact: Science, Tech, and AG



Solar Energy-Collections of photovoltaic cells, circuit modules, and instrumentation with an experimental platform suitable for classroom demonstrations.



Hydrogen Energy-Perform class demonstrations and experiments using an electrolyser and fuel cell.



Wind Energy- Demonstrate on a tabletop scale the conversion of energy from wind to electricity.

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Anatomage Table

Areas of impact: AG, Anatomy, Health Science



Anatomage Table - Fully segmented real human 3D Anatomy system, exploration and learning of human anatomy, gross anatomy cases, regional anatomy cases, pathological examples, as well as animal cases, also activities and curriculum.

Carviewright Router

Areas of impact: AG, Construction, and Math



Carviewright - Advanced and usable 3D carving system, offers opportunity to introduce CNC into the classroom. The machine and software merges technology with craft incorporating CAD and 3D design.

VR Meta Quest 2

Meta Quest 2 - a virtual reality headset, most advanced VR system, providing new opportunities.



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CNC Wood Router

Areas of impact: AG, Construction, and Math



CNC Wood Router - using mastercam software to convert images to be routed in wood, hands-on curriculum teaching students the basics of CNC Machining.

BN20 Vinyl Cutter

Areas of impact: CTE



BN20 Vinyl Cutter - vinyl cutter that offers media cutting and printing that can be used further in various ways for designs of t-shirt graphics, poster designs, and decals.

Embroidery Machine

Areas of impact: FACS



Embroidery Machine - Offers many features such as built-in designs, on-screen editing, thread brand selections.

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GPS

Areas of impact: AG and Math



GPS - introduces precision agriculture and engineering into the curriculum.

Laser Engraver (Versa Laser)

Areas of impact: CTE



Laser Engraver - using CoralDRAW software to create designs for cutting and engraving, learning how the laser cuts the object.

Plasma Cutter

Areas of impact: Welding



Plasma Cutter - Consisting of production components built into small machine footprint, allowing real world manufacturing tools to teach CNC operations, grasping CAD and CAM design.

zSpace

Areas of impact: AG, Anatomy, Health Science, Math, Science



zSpace- zspace is a virtual reality learning experience, using three sensory characteristics (Perception of Depth, Ability to Look Around, Kinesthetic Realism) to create natural products.



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Vernier Sensors

Garmin GPS	CO2-O2 Tee
Lab Quest	Colorimeter
Vernier NXT adapter	Conductivity Probe
pH Sensor	Current Probe
SS Temp Probe	Diff. Voltage Probe
ProScope Kit (proscope stand, biology proscope)	Adapter
High Resolution ProScope	Dissolved Oxygen Sensor
Proscope Stands	Dual Range Force Sensor
Stir Stations	Flow Rate Sensor
Dynamic System	Light Sensor
Physiology LABPRO	Microphone
Hand Grip Heart Rate Monitor	Relative Humidity Sensor
EKG Sensor	Soil Moisture Sensor
Labpro Interface	Sound Level Meter
Surface Temp Sensor	UVA Sensor
Blood Pressure Sensor	UVB Sensor
Hand Dynamometer	Turbidity Sensor
Spirometer	Extra Long Temp Probe
O2 Gas Sensor	Gas Pressure Sensor
Force Plate	Ammonium Ion-Selective Electrode
Low-g Accelerometer	Chloride Ion-Selective Electrode
CO2 Gas Sensor	Nitrate Ion-Selective Electrode
	Calcium Ion-Selective Electrode



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Barometer	Ez Temp
Blood Pressure Sensor	Heart Rate Monitor
Magnetic Field Sensor	Exercise Heart Rate Monitor
Motion Detector	Vernier Photogate
Graphical Analysis 3 Software	Carter Picket Fence
Logger Pro 3 Software	Digital Extension Cable
Chemistry with CBL	Photogate Bar Tape Kit
Explore Physics and Math with CBL	Photogate Bracket
Agricultural Science	Picket Fence
Human Physiology	Pulley Bracket
Earth Science w/calculator	Pulley Attachment
Physical Science w/calculator	Tris-Compatible Flat pH Sensor
Physics w/Graphing calculator	2V/400ma Solar Panel
Chemistry w/Graphing calculator	Vernier Labquest 2
Biology w/graphing calculator	LabQuest Charging Station
Water Quality w/graphing calculator	Vernier Optical DO Probe
Middle School Science w/graphing calculator	pH Buffer Capsules (3x10)
Basic Pro Scope HR Kit	pH Storage Solution
Magnetic Field Sensor	Spectrovis Optical Fiber
Pressure Sensor	Spectrovis Plus
CBL Motion Detector	Vernier Energy Sensor
pH System	pH Storage Bottles
	D. O. Filling Solution



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HOW EQUIPMENT can be used in your classroom

Anatomage Table

- *The table* can be used for lecture as it can project off a screen
- *The table* can be used for a full lab replacement as more effective than embalmed cadavers
- *The table* can be used as a lab review, as there are quiz modes you can create
- *The table* can be used for visualization for viewing anatomy in 3D color as opposed to 2D black and white
- *The table* can be used for veterinary usage, as it has animal anatomy
- *The table* can be used for forensic and virtual autopsy
- *The table* can be used as a focal point, as it never fails to draw attention

Carviewright Router

- *Carviewright* can be used from small individual projects to large group projects
- *Carviewright* can be used to introduce CNC
- *Carviewright* can be used to incorporate CAD, 3D design, automated manufacturing, and creative skills into one package
- *Carviewright* can be used to bring innovative technology into the classroom

CNC Wood Router

- *The Router* can be used to router an image in wood converted from Mastercam
- *The Router* can be used to make real world products
- *The Router* can be used to teach the basics of G-Code, CNC Machining, & Mastercam

Alternative Energy

- *Alternative Energy* can be used to demonstrate tabletop scale the conversion of energy from wind to electricity
- *Alternative Energy* can be used to demonstrate experiments using electrolyser and fuel cells

Vinyl Cutter

- *Vinyl Cutter* can be used to print banners, posters, decals, stickers, and floor graphics
- *Vinyl Cutter* can be used for creating t-shirt graphics with Adobe and CorelDraw software
- *Vinyl Cutter* can be used for wide-format media cutting

Embroidery Machine

- *Embroidery Machine* can be used to sew something from design and create something uniquely for you
- *Embroidery Machine* can be used to develop embroidery skills

GPS

- *GPS* can be used to increase the accuracy of certain tasks
- *GPS* can be used to introduce precision agriculture and engineering into curriculum



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Laser Engraver

- *The Engraver* can be used to identify components of laser engraving and cut system
- *The Engraver* can be used to create designs using CorelDraw for cutting or engraving

Plasma Cutter

- *Plasma Cutter* can be used to teach CAD software and CNC operations
- *Plasma Cutter* can be used to cut an image designed from using Mastercam
- *Plasma Cutter* can be used to teach basic of G-Code Programming
- *Plasma Cutter* can be used for students to develop mastercam skills for rewarding careers as innovators shaping the future of manufacturing

zSpace

- *The zSpace* can be used as a virtual reality learning tool
- *The zSpace* can be used to create new virtual experiences while completing traditional classroom activities
- *The zSpace* can be used to support learning objectives to experience different careers and industries
- *The zSpace* can provide applications to provide self-study and hands-on activities

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Equipment:

Solar Energy:

- Custom yellow suitcase with protective foam cutouts
- Base board with inserts for circuit modules & multi meters
- Low voltage halogen lamp
- Power supply with dimmer switch and power cable
- Solar module with 4 single cells and angle adjustment
- 2 multimeters with connectors
- Sensor box for measuring irradiance
- Load box with electric motor and lightbulb
- Storage box with NC accumulator with GoldCap and blocking diode
- Measuring box with variable resistor
- Flexible connecting cords, brass contacts, hard copper gold plated
- Experiments manual

Hydrogen Energy:

- Red carrying case with foam cutouts to store and protect components
- Experiment platform constructed to hold components & meters
- Electrolyzer
- Power supply
- Current control box
- Gas storage
- Fuel cell
- 2 multimeters with connectors
- Load module with electric motor and light bulb
- Variable resistor module
- Flexible connecting cord, brass, hard copper, gold plated contacts
- Connecting tubes and end caps
- Distilled water
- Syringe
- Experiments manual

Wind Energy:

- White suitcase with foam cutouts to store and protect equipment
- Experiment platform with mounting for modules and multimeters
- Wind source with variable power output
- Wind power plant with axial rotor, generator without gear, tacho-generator, hub for mounting
- Protective cover, wind shield, assembly tool
- 2 multimeters with connectors
- Anemometer
- Load box with electric motor and light bulb
- Storage box with NC accumulator, GoldCap, and blocking diode
- Measuring box with variable resistor
- Experiments manual