Chester, Montana
Liberty County

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The Montana Land Information Advisory Council had the foresight to "*Give the Kids a Chance*" when the Liberty County School and Community Partnerships were awarded the education grant to develop *GIS across the Curriculum* from Kindergarten through adult. This grant fostered learning through community service, delivered teacher (7), county (5), student (3) leadership team training and provided opportunities for student hands on authentic applied problem solving activities for elementary through high school and 4-H camp.

This project put recreation, resource and centimeter accurate equipment in the hands of students.

K ids make GIS happen! The magic began on the first day of training with Jeff Crews of Beyond the Chalk. Each student was paired with two adults and they became mentors (teachers) to the adults. The student leadership team developed and set up the elementary and HS activities with the teachers.   …."*Can we do this again?", 6th grader.* ……

Projects: geo caching, mapping fire hydrants, tracks, cemetery maps, airport waterline locations, manhole covers, authentic learning, traveling to the top of Mount Royal to get a centimeter accurate signal (25 Miles), base station mount design, setting up the County GIS office, peer teaching, cemetery building, setting up computers, downloading software, and working with people.

ABOVE: Geo Caching Students connecting the dots…Below: Community members inspecting the student made, cemetery maps located in the cemetery visitors center on Memorial Day 2014

Mrs. Brown, Bradee Hawks, and Geo-Caching Student learning to operate a GPS unit

Written By: Gail Shatkus, Liberty County GIS Project Manager

Where is Liberty County GIS? The Montana Association of Geographic Professional State Conference, April 2014, The 2014 National ESRI Education Conference in San Diego {GIS Across the Curriculum: What tools are in your toolbox?; Interview by Edutopia (*The George Lucas Education Foundation); The 2014 ESRI T3G Institute in Redlands California (Teachers Teaching Teachers); The Montana Association Of Registered Land Surveyors; 2014 TwiST (Teaching with Spatial Technology) at Clark University in Vancouver, Washington, 4-H Camp and finally in The Sweet Grass Hills on top of Mount Royal in LIBERTY COUNTY, MONTANA.*

GIS Team on top of Mount Royal, Sweet Grass Hills Liberty County, Montana :   Elevation 6,914 Feet
L-R: Thad Kaiser, Gail Shatkus, Bradee Hawks, Peyton Cole, Larry Hendrickson, Bruce Tempel, Rlynn Rockman, Russ Tempel, Jesse Fulbright   {Note: Centimeter accurate signal at 25 miles from the base station.}

How did we do that? This is about relationships, partners, and the MAGIC that happens when you put technology in the hands of KIDS to create maps solving problems.

Geographical Information System Student Leadership Team: 1st Year, Bradee Hawks, Daine Meissner, Susanne Stewart, Ryan Tempel; 2nd Year: Bradee Hawks (Student Team Leader), Peyton Cole, and Bruce Tempel.   This project would not have been possible without the GIS Student Leadership team.   These students actively assessed, researched, and solved problems through the use of mapping and CAD software, GIS technology and hands on learning. Students were empowered to call professionals to resolve questions and seek answers.

GIS Student Leader Team with Jeff Crews: Bradee Hawks, Daine Meissner, Ryan Tempel, Susanne Stewart

Where is Liberty County GIS going? We are working on the final changes to prepare the base station for data gathering to be submitted to the National Geodetic Survey. We are hoping to qualify for Continuously Operating Reference Station Status. We need to set up the ESRI ArcGIS online organization account which is free to all Schools in the US from ESRI. ($10,000 per school, 1Billion for all schools in US) With the ArcGIS online organization, the students will be able to easily create and share story maps. The High School students continue to provide GIS solutions for the county. This project qualifies as a ConnectED project.

ConnectED: ConnectED is a National Education Initiative designed to enrich K-12 Education. ConnectED empowers teachers with the best technology and the training to make the most of it, and empowers students through individualized learning and rich digital content.[1] ESRI has partnered with the ConnectED initiative to provide ArcGIS online for all schools for free. Give students future options with high-value skills in problem solving, data analysis, and technology integration with ArcGIS Online.[2]

Training provided by Jeff Crews, EdD, of Beyond the Chalk. Total of 4 days (24 Hrs / person) delivered to 16 people for a total of 384 training hours. Training was scaffolded and chunked from easy to more difficult. We learned by doing. Throughout the training we rotated between field and classroom activities. Teachers learned about data and how to gather and transfer data. As Jeff says, "What are we going to do with the data?." We learned to create maps in Google Maps and ESRI ArcMap. GIS/GPS integration and training while using a great variety of technology and programs to present data is one Jeff's many specialties.

Contributors & Partners: Broken Mountain Genealogical Society (Pat Ludwig), City of Chester, Liberty County & Commissioner's, The Weed Department, Chester-Joplin-Inverness Schools, Pacific Steel, IGAGE, Selbys, Liberty County Conservation District, Triangle Telephone, Hill County Electric, North Central Montana Resource Conservation & Development Area, Leica, Garmin, Senior Citizens, Teachers, Students, Administration, Board of Education, Montana State University Extension, Montana State University Northern, ESRI, and Jeff Crews (Beyond the Chalk) Montana Association of Geographic Information Professionals, Montana Association of Registered Land Surveyors, The Montana State Library, and finally; The Montana Land Information Advisory Council.

The Adult GIS Team: Gail Shatkus, CTE- (Liberty County GIS Project Manager), Donna Rudolph (2nd), Spencer Sartori (Social Studies), Windie Golhahn (Math), Pat Goldhahn (4th), Sue Smith (6th), Jada Fraser (5th), the County Road Department, the "Weed Guy", Pam Graph (Principal), Rita Chvilicek (Superintendent), Thad Kaiser(Current Superintendent), and Jesse Fulbright (MSU Extension). The Commissioners: Larry Hendrickson, Russ Tempel, Rlynn Rockman, and Maureen "Morb" Wicks. Noel Walston (Mayor) and John Kleinsasser (City). Thanks to Mr. Kaiser, the Board of Education and the community for continuing to nurture this project.

Epilogue: MLIAC has given the students at Chester-Joplin-Inverness schools all of the tools to have rich technical and digital content using state of the art recreation, resource, and survey grade GIS equipment, to collect and analyze spatial data. This project aligns our school with the National ConnectED Initiative. The community has been enriched with student GIS service projects.

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Memorial Day at the Cemetery 2014

The depth and breadth of this project would not be possible without….the Montana State Library, Stu Kirkpatrick (State GIS Coordinator), Montana Land Information Advisory Council, Jeff Crews(training), technical support Tyler Good (Engineer and Grant Intern), Pat Ludwig, commissioners, surveying professionals, and community members.

Special Recognition goes to: SELBYS of Billings and Bozeman. Neal Gray (Selbys Billings) began this GIS project when Selbys donated a $10,000 used Centimeter Accurate Leica 500 (previous grant 3 years ago). Bryce Scala (Selbys-Bozeman) took this project to the next level with the Leica GS 14, Mobile Mapper 10s (IGAGE), and Garmin GPS Units, training, support, and patience by answering endless questions from GIS novices. Thanks to all of the SELBYS team.

GIS Rover Training: Bryce Scala (Selbys), Bradee Hawks, Jesse Fulbright, Montana State University Extension

To MLIAC: The statements in this document are accurate to the best of my ability. Errors and omissions are unintentional.
Respectfully, Gail Shatkus

Works Cited

"EdCommunity." *The ConnectED Initiative and Esri*. ESRI, n.d. Web. 31 Jan. 2015. [2] <http://edcommunity.esri.com/resources/connected>.

"EDUCATION Knowledge and Skills for the Jobs of the Future." *The White House*. The White House, June 2013. Web. 29 Jan. 2015. [1] <http://www.whitehouse.gov/issues/education/k-12/connected>.

Station Base Mount on top of the court house. Thanks to the county road department for using the student plans and making our mount. Thanks to Pacific Steel in Havre and Great Falls for materials. Thanks to Mark Armstrong of NOAA for design review.

Resources:

ArcGIS Online….Set up your Montana School ArcGIS online organization..SpatialSci: http://www.spatialsci.com/index.php/sID/aa017b03/fuseaction/programs.cms.htML
Beyond the Chalk (Jeff Crews EdD)... www.beyondthechalk.net
Chester-Joplin-Inverness Schools www.cji.k12.mt.us
ConnectED (The White House) http://www.whitehouse.gov/issues/education/k-12/connected
Edutopia *What works in education* ....www.edutopia.org
ESRI Education Community .... http://edcommunity.esri.com/
ESRI Education Conference... http://www.esri.com/events/educ
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GEODATA Services, Inc. .... www.geodataservicesinc.com
IGAGE .... www.igage.com
Liberty County Commissioners .... com@co.liberty.mt.gov
Montana Association of Geographic Information Professionals .... www.magip.org
Montana Association of Registered Land Surveyors .... http://www.marls.com/
Montana Land Information Advisory Council .... http://about.msl.mt.gov/commission_councils/mliac
Natural Resource Information- Montana State Library (*Maps*) .... http://nris.mt.gov/
Selbys ....www.selbys.com
Teaching with Spatial Technology .... TwIST Work Shop for K-12 teachers (http://www.oit.edu/docs/default-source/programs-geomatics-documents/twist-overview2012.pdf?sfvrsn=0)

GIS In the Classroom: Three schools of note that are using GIS in education are Big Fork HS, Condon (Swan Valley Elementary), and Lewistown. Contact the state library for information about other great schools using GIS in the classroom.

ESRI 2014 Plenary- ....Connecting GIS with Education
Load the video code below into your internet browser to watch.
<iframe frameborder="0" scrolling="no" width="480" height="270"
src="http://video.esri.com/iframe/3665/000000/width/480/0/00:00:00"></iframe>
Scholarships: Many of the listed professional organizations award scholarships to deserving students and teachers.
Photos:... Thanks to Larry and Jan Hendrickson, Gail Shatkus