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Robot, magic? highlight — STEM — activities

by Jennifer King

Last week was STEM (Science, Technology, Engineering, Math) week in Lemhi County. STEM learning is an approach to learning and development that integrates the areas of science, technology, engineering and mathematics. Through STEM, students develop key skills including problem solving.

Steve Dahl, owner of Computer Zen, gave demonstrations to middle school students at Salmon Junior-Senior High School and high school and middle school students at the Leadore School.

At the high school on November 15 Dahl visited Bridget Severe's seventh grade class during third and sixth hour. In third hour he gave a demonstration to 16 students. Beginning with a short video that discussed the different uses of energy.

After the video he gave a demonstration with a Stirling engine. He showed the students how the simple engine can be powered with a single flame. The Stirling engine was invented by Robert Stirling in 1816 to rival the steam engine. Unlike the cycles used in internal combustion the gasses inside a Stirling engine never leave the engine.

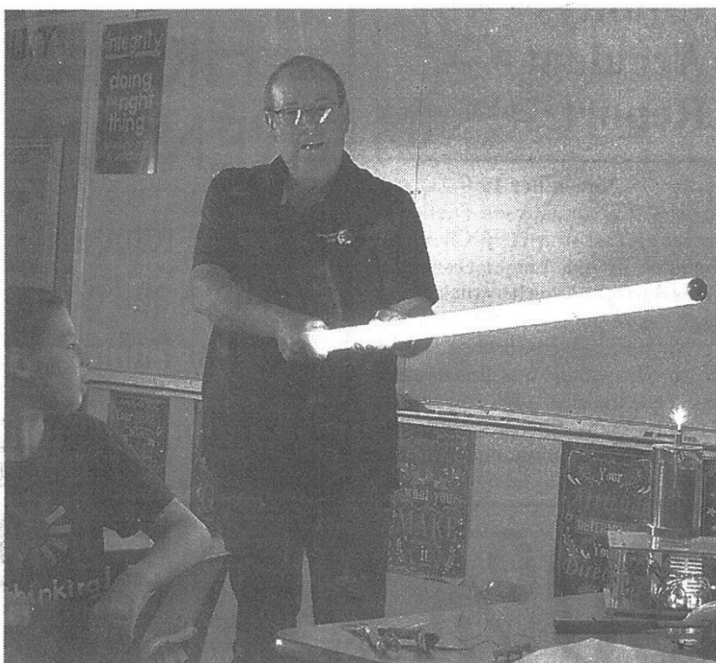
Dahl next talked to students about high voltage and low currents. He used a Tesla coil to light up a four foot fluorescent light bulb while demonstrating the transference of energy.

After asking for a volunteer he connected a wire to one student's forearm and connected another wire to a pair of pliers. He showed how the signal from her brain can open and close the pliers. Next he connected the wire to his ulnar nerve and showed how her brain signal can open and close his hand. He asked the students what they thought that technology could be used for. He received a variety of answers one of which was the use of prosthetics for handicap individuals.

He showed the students another video about the use of prosthetic limbs and how the technology can help them in their daily lives. The video showed the benefits 3D printers can provide when it comes to the cost of prosthetic limbs.

After the video Dahl passed out a Makey Makey kit to groups of three students. With a laptop the students used the alligator cables, USB card and connector wires to play piano. The Makey Makey turns objects into a keyboard. It is an invention kit that uses alligator clips to attach two objects. When you touch the object the computer thinks a keyboard key is being pressed so the user can type a letter, jump in a video game, take a picture or play music. Within several minutes the room was filled with music from the students who put together the Makey Makey.

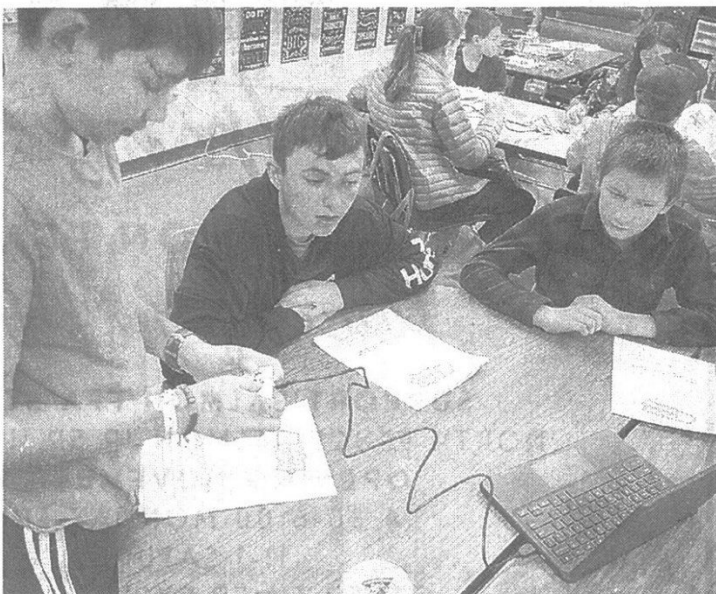
The following day Dahl traveled to Leadore where the same presentation was given.



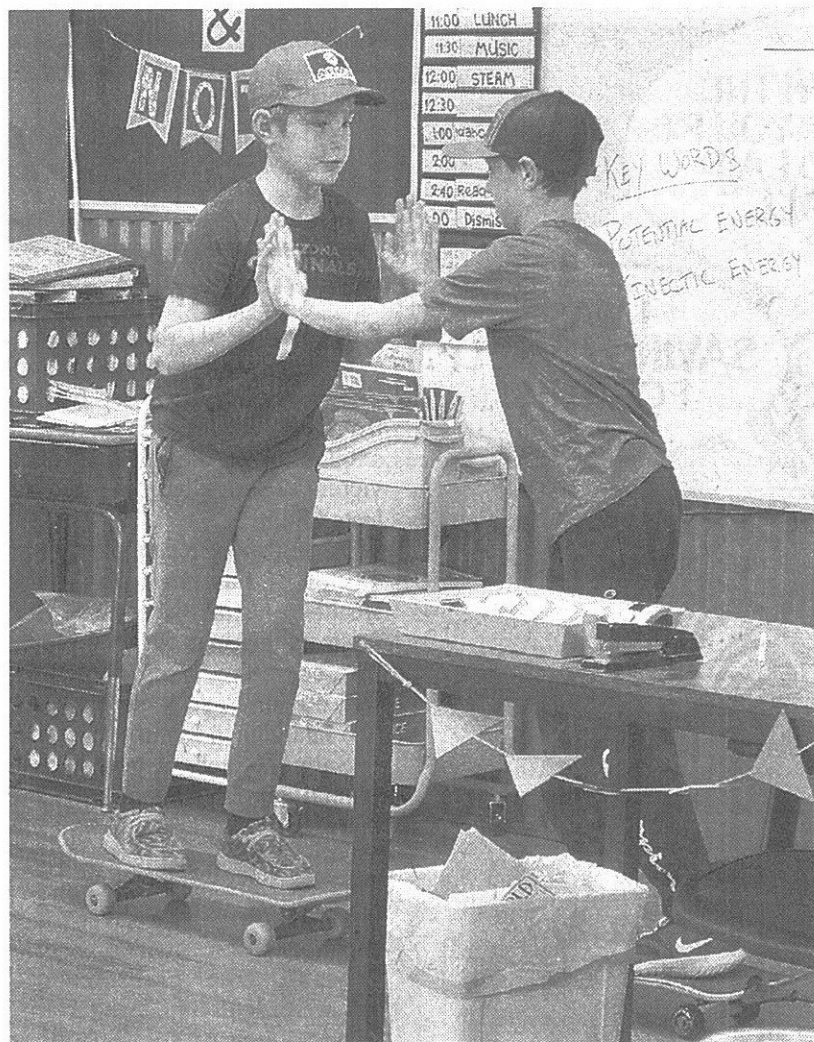
STEVE DAHL, COMPUTER Zen, using a four foot fluorescent light bulb and a Tesla coil demonstrates the transference of energy during STEM lessons at Salmon Junior-Senior High School November 15.



LIZ ENRIQUEZ, A Leadore seventh grader, controls Steve Dahl's hand through the use of an amplifier and contacts attached to their forearms during STEM activities in Leadore the afternoon of November 16.



SALMON SEVENTH GRADERS connect a Makey Makey to a laptop computer creating an interface between the machine and the real world making musical sounds in this STEM lesson November 15.



STUDENTS HARLAN INGWERSEN (left) and Liam Ruskell (right) at Fernwaters school act out Newton's third law of motion November 16 — for every action there is an equal and opposite reaction. The students did this as part of an exercise during STEM week — DeFord photo.

~ Robot ~

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tation was given to high school and middle school students at the Leadore School.

Also at the school was Shannon Williams and Taylor Smith from the University of Idaho Extension Office. Williams and Smith were at the school to give a STEM presentation to fourth and fifth grade students. The students split into groups and used a deck of flashcards to play a game called Watts Up. The idea of the game is to put in order which objects use the most energy.

Another STEM presentation was given to fourth and fifth grade students at Fernwaters on November 16. The one hour presentations were given by Jeff Stratter from the public library. The lesson was about physics and the study of energy specifically — Newton's third law of motion — for every action there is an

equal and opposite reaction. An example was given of this with people on a skateboard pushing each other.

The students put Newton's law to test with balloon cars for a race. The balloons expelled air pushing the cars forward. Each grade split into teams where they had 10 minutes to make the balloon race cars. The materials the students had to use were provided — car, balloon and a straw to inflate the balloon. The motor was the balloon and straw.

The cars were designed and crafted by students from water bottles, straws, dowels, thread spool, bottle lids, wooden disks and corks. One team in the fourth grade had a moving car and two teams in the fifth grade had moving cars.