



E-VIEW

The Journal of The British Columbia Technology Education Association

September 2015

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BCTEA Conference 2015

October 23rd, 2015

The “3Rs”



“Real Projects, Real Learning, Real World”

[Click Here to Register](#)

President's Message



After our summer break, and now back in the swing of things, here are some topics to bring to your attention.

The conference information, such as workshops, district reps meeting, etc is up on the BCTEA web site. Registration

is open and we would like you to attend and encourage other teachers to also attend. We have arranged for some excellent workshops and speakers to share information, as well as scheduled an opportunity for discussion regarding the future direction of our discipline.

“If information is doubling every 18 months and technology is constantly expanding should we be thinking about what our focus areas should be so that we can up-skill existing Tech Ed teachers and prepare new Tech Ed teachers to be realistic in what they can teach? ”

The name change 2 decades ago from Industrial Education to Technology Education has some major challenges for us to consider. Presently a Technology Education teacher could be expected to teach any of the following courses: woodwork 8 – 12, metalwork 8 – 12, drafting 8 – 12, electronics 8 – 12, auto mechanics 11/12, small engines, carpentry, and now robotics 8 – 12, skills exploratory (plumbing, electrical, carpentry, mechanics), and maker space. No other teaching discipline has so many areas to potentially cover. If information is doubling every 18 months and technology is constantly expanding should we be thinking about what our focus areas should be so that we can up-skill existing Tech Ed teachers and prepare new Tech Ed teachers to be realistic in what they can teach? Our annual conference tries to address this issue by asking teachers to share their knowledge

and skills by offering workshops for professional development. At the conference one workshop is scheduled to hear from you, your thoughts on where we should be heading, “Future directions for Technology Education”.

Increase in class sizes and reduced budgets are challenging us, but those are not our only stressors. Trying to find time to learn new technologies, and then implementing new software and running new machinery/equipment are also challenging us. Take 3D printers for example. These machines take a lot of maintenance and there is no district staff usually capable of this. Most districts have staff maintaining computer networks or woodwork/metalwork machines, but new technology falls onto our shoulders.

We are getting encouragement/pressure to add Trades training, new technology and Maker Space to our offerings in Tech Ed. Let's take this as a positive step in helping us look at what we are presently offering to students. We do not want to be dinosaurs, so let's be pro-active and look at the big picture and decide just what we can do and can't do, and do it well. Let's not forget that what we teach kids today is not just for the present, but also the future.

I look forward to seeing everyone participate at our annual conference.

Facebook Page Update

The BCTEA Facebook page is being changed to a Group page. You will now be able to “JOIN” and post to the group. Only members of the group will see the posts. The old Facebook Page had now been removed. Please “JOIN” the new group @

<https://www.facebook.com/groups/bctea>

Arduino and Vex a Perfect Match?

Small budget with a big goal. What you can do with Arduino and Vex in a Junior Program

Written by: Mark Vance

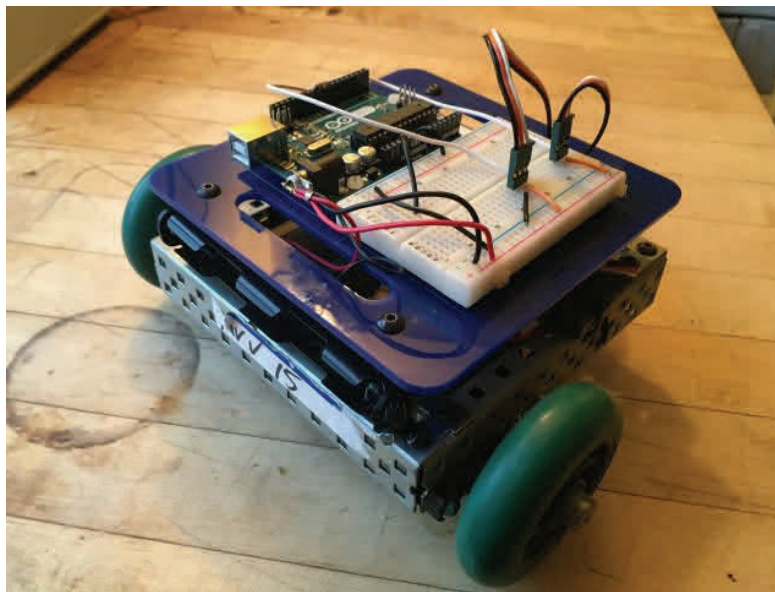
I began teaching at Moscrop Secondary School in Burnaby in the fall of 2007. Near the end of the job interview I was told the job was mine if I wanted it but I would have to run the school's robotics club. Little did I realize, when I accepted, how robots would take over my life in the years that followed.

In my first year the club had only five members working as a single team. As the years passed and interest grew, membership increased to three dozen, with our school entering as many as eight teams in a single competition. In my third year at the school we were able to parlay the interest into a formal course, with a fully subscribed inaugural class of 30 students.

Probably the greatest challenge we have faced over the years has been acquiring enough equipment to keep all the interested students working. We have always relied on the generosity of our school's PAC, local high-tech companies, parents, and fund-raising efforts to build up our inventory. No matter how much equipment we managed to add,

there never seemed to be enough.

Having studied computer programming as part of my undergrad degree I always felt it important to have my students learn at least the basics of programming. The greatest challenge here was the number of CPUs we had to work



with. Each new CPU cost \$300-400 so it wasn't as simple as just going out and buying as many as we needed, though we did slowly add to our inventory whenever we could. We never had enough to allow students and club members to test and run their robots while others worked on programming.

In 2014 a great solution to this problem presented itself. One of the programming platforms we had been using at that point was RobotC. I dis-

covered on their educational support page that they had a version available for use with the Arduino UNO, along with build instructions for a robot using the UNO called the Square Bot. The UNO sells for less than \$30, which meant I could buy ten of these for the same price as one VEX controller. And the mechanical/electrical components for the Square Bot could be purchased for approximately \$75. All told I could purchase everything I needed for a standalone robot, dedicated for programming instruction, for \$100. In the fall of 2014 I committed the \$3,000 and bought the equipment for a class set of 30 Square Bots. When this small army of small robots was fully assembled it was an impressive sight!

The next challenge we ran up against was how the UNO interfaced with the VEX electronics — all openly accessible jumper wires using a breadboard (photo above). We initially relied on the students' limited ability to correctly wire the Square Bots up, and to maintain the wiring between uses. I can feel all the electronics teachers out there cringing as they read

Arduino and Vex a Perfect Match?

Small budget with a big goal. What you can do with Arduino and Vex in a Junior Program

that last sentence. Problems were highly likely, and happened frequently.

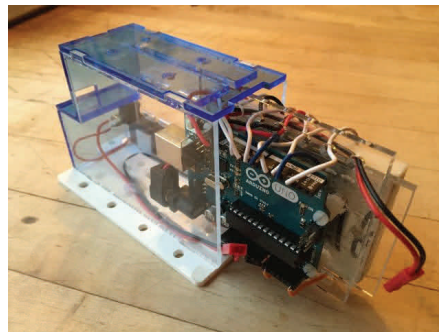
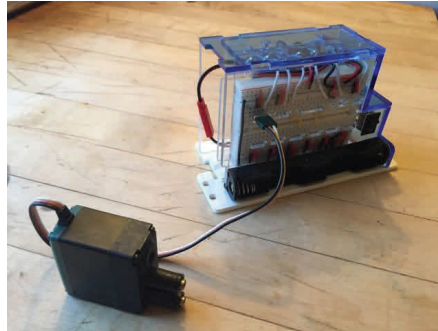
The solution I decided on was to design and build a 'black box' enclosure. In other words, a CPU that was the same as VEX's PIC (photo below) and



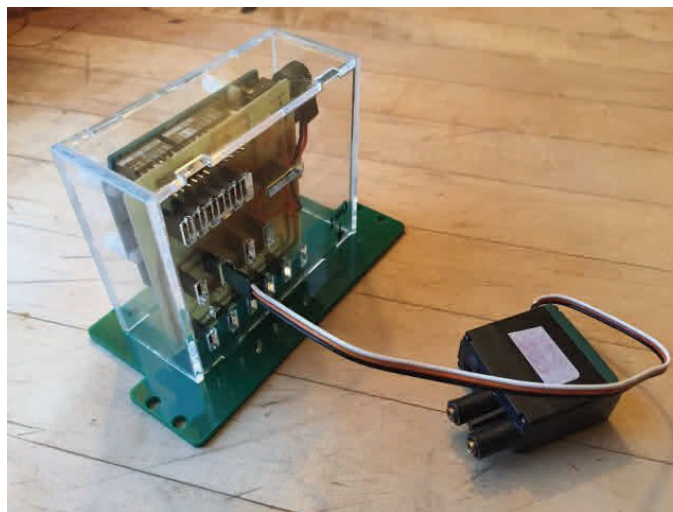
Cortex, in that users would only have access to three-wire ports for motors and sensors, as well as plugs for a battery and programming cable. Over my years at Moscrop I had acquired the necessary equipment and knowledge to bring this all together right in my classroom.

The CPU housing itself is made of 1/8" acrylic, cut on the laser cutter in my classroom. I designed the pieces in Sketchup as 2D models, output the orthographic views as PDFs using Layout (a partner program to Sketchup available with Sketchup Pro license), then loaded the PDFs into the laser-cutter control software. Most of these pieces are then glued together using methylene chloride solvent, but some are held in place with

screws to allow access to the electronic components inside.



Version one (photos below) uses a breadboard mounted back to back with an Arduino, but I found the wiring with this to be relatively complicated and prone to glitches. For version two (photo below) I



decided to design a PCB shield with male headers on

the underside that plug directly into the Arduino, and three-hole female headers on the top side for inserting motor and sensor plugs. I even included a six-pin header to allow for a bluetooth slave module, which would allow a user to control their robot using an Android phone.

Though I haven't tracked the time I've spent on what one of my colleagues has referred to as a VEXduino, it is well over 100 hours at his point.

The most interesting aspect of designing and producing these prototypes has been the synthesis of skill, knowledge and tools from all three subjects I teach: Robotics, Drafting and Design, and Electronics. I really enjoy teaching these, and there are many days where I sit at my desk and say, "I can't believe

someone actually pays me to do this!" I am hoping that a fully functioning version of my VEXduino will be ready by winter break, 2015. It has been really exciting to see this project come together, drawing on what I have learned from my different teaching areas over the years, marking the most recent step forward in the story of robotics at Moscrop

Secondary School.

Conference Information

Appendix

District Reps Meeting Agenda
Schedule for the Day
Workshop Schedule
Workshop Descriptions



BCTEA District Reps Meeting

Thursday, October 22rd, 2015



Holiday Inn Vancouver-Centre

711 West Broadway

Pre-registration is required. Please email randy.grey@sd71.bc.ca by October 5th

10:30am	Introductions and welcome Coffee and Muffins
11:00am – 11:45am	Applied Skills update. We have 3 Technology Education teachers on the IRP writing committee. They will be able to share what has been produced to date. They are Zale Darnel, Russell Evanisky and Nigel Reedman. Tim Winklemans will also be in attendance and will share his perspective from the ministry of education view point. He has the big picture as to who all this fits together.
11:45am - 12:15pm	Ministry of Education Blue Print. Tim Winklemans has been with this focus since the start. He will share what has taken place so far and where we are now in the process.
12:15pm - 1:00pm	LUNCH - Provided
1:00pm - 1:30pm	Red Seal Certification. Shawn McMullin from the Teacher regulation Branch will be with us to share the story of how we have a new credential and what it means for school districts.
1:30pm - 2:00pm	BC Construction Association. Jordan Perrault works in the youth division of the BC Construction Association. He has been involved with the project called “Learning Profile for Construction Jobs” that many stakeholders including industry have been working on for the last half a year. The report is ready for presentation.
2:00pm - 2:30pm	Skills Exploratory course. The BC Construction Association has been a huge partner in getting this new course off the ground. Abigail Fulton is not able to join us, so I will share what we have done to date with getting tool kits out and will continue to work on this. The teacher resources will also be shown.
2:30pm - 4:00pm	Technology Education. This is the time for district reps to share their concerns or ideas on what is happening in their districts and what they would like the BCTEA executive to work on and support. We do have a workshop on “Future Directions for Tech Ed” at the conference, so it would be good to have discussion with this group prior to the conference.
4:00pm	Adjournment

NOTE: The above agenda may be a bit fluid with the times



BCTEA Conference 2015

Schedule

October 23rd



7:45am - 8:30am	Registration		
8:00am	Coffee/muffins		Vendors
8:30am - 9:45am	Workshop #1	Bus to VCC workshops	
9:45am - 10:15am	Break	Leave 8:45 Return 11:15 for lunch	
10:15am - 11:30am	Workshop #2		
11:30am - 12:00pm	Lunch		
12:00pm - 12:30pm	Recruiting by School Districts Networking Time		
12:30pm - 1:45pm	Workshop #3	Bus to VCC workshops	
2:00pm - 2:30pm	AGM/BCTEA Elections	Leaves 12:30 Return 3:00	
2:30pm - 3:45pm	Workshop #4		
4:30pm - 8:00pm	VCC - Social time - Beverages and burgers		



BCTEA Conference Master Schedule (October 23rd, 2015)

Revised – Sept 19th



Room	Session A (8:30 – 9:45)	Session B (10:15 – 11:30)	Session C (12:30 – 1:45)	Session D (2:45 – 4:00)
V109 (Auto Shop)	Brakes & Tires (1) (<i>Kal-Tire</i>)	How to set up an Auto program (31) and shop (<i>Cam McRobb, Travis Hofman</i>)	(TBA)	Diagnostics & Scanners (23) (<i>Snap On</i>)
D103 (Metal Shop)	Simple Metal Projects (2) (<i>Chris Armstrong</i>)	Metalwork machine setup (9) (<i>Al Feustel</i>)	Junior Metal Class (16) (<i>Randy Chapman</i>)	Model Steam Engines (24) (<i>Ivor Langley</i>)
D101 (Wood Shop)	Wood Carving (3) (<i>Allan Byres</i>)	CNC (29) (<i>Remi Moore</i>)	Tool Sharpening (17) (<i>Lee Valley</i>)	The Complete package. Great woodwork program (25) (<i>Ken Cawley</i>)
D105 (Design Lab)	Electronics Share (4) (<i>Jason Brett</i>)	DIY CNC project build (10) (<i>Brett Harrison, Jeremy O'shea, Max Robinson, Calvin Patterson</i>)	Getting started in Electronics (18) (<i>Ivor Langley</i>)	(TBA)
V107 (Graphics room)	Skethup/Layout (5) (<i>Mark Vance</i>)	Autodesk Inventor (11) (<i>Jim Niessen</i>)	Junior Tech Program (20) (<i>Fred Andrews</i>)	(TBA)
V105 (Robotics room)	Vinyl Sign Cutters (6) (<i>James Bartz</i>)	Robotics Share (12) (<i>Todd Ablett</i>)	3D Printer Share (19) (<i>Steve Claassen</i>)	(TBA)
MS room	Skills Exploratory outlined (7) (<i>Randy Grey, Jeff Dixon, Jordan Perrault, Adrian Hill, Shawn McMullin, Lisa Ayton</i>)	Maker Space Examples (14) (Elementary, Middle, Senior) (<i>Martin Hartig, Dereck Dirom, Steve Claassen</i>)	(TBA)	Future Directions for Tech Ed. New Applied Skills IRP (26) (<i>Jim Scoten, Tim Winklemans, Larry Espe, Zale Darnel, Russell Evanisky, Nigel Reedman, Roger Bortignon, Randy Grey</i>)
V103	ENTER 1 & 2, STEM, TASK, Physics & Engineering (8) (<i>Roger Vernon, Meiko Matsumoto, Jim Scoten, Don Cameron, Steve Claassen</i>)	T.A.S.K, NorKam, Metal Mechanical Coop (13) (<i>Stu Rhodes, Ron Collins, Rob Gibbs</i>)	ACE IT Program Delivery (21) Plumbing, Auto Service Technician, ITA (<i>Jeff Dixon, Jim Tattrie, Lisa Aynton</i>)	Maker Space carts, Maker space funding (27) (<i>Lisa Ayton, Devon Burroughs, Dereck Dirom, Martin Hartig</i>)
Breezeway	(TBA)	Skills Exploratory (15) Carpentry, Plumbing Electrical, Auto (<i>Stu Rhodes, Jeff Dixon, Doug Blue, Jared Cloutier</i>)	Skills Exploratory (22) Carpentry, Plumbing, Electrical, Auto (<i>Stu Rhodes, Jeff Dixon, Doug Blue, Jared Cloutier</i>)	Skills Exploratory Carpentry (28) (<i>Stu Rhodes</i>)
VCC transportation Campus	Aluminum and thin gauge metal welding, current auto body techniques, car painting, riveting. Auto electronics, diagnostic troubleshooting (29)		Aluminum and thin gauge metal welding, current auto body techniques, car painting, riveting. Auto electronics, diagnostic troubleshooting (30)	



The “3Rs”

“Real Projects, Real Learning, Real World”

BCTEA Conference 2015 Workshop Themes

Revised Sept 20th, 2015

Session 26	<p><u>Future Directions for Technology Education</u></p> <p>This workshop will have a panel of key people working together to help guide Technology Education into the future. A moderator will guide the discussion through a process of looking at where we have come from, presently are and where we should be looking at going.</p> <p>On the panel there will be;</p> <ul style="list-style-type: none">• Ministry of Education Tim Winkelmans and Larry Espe• Technology Education teachers working on new Applied Skills IRP, Zale Darnel, Russell Evanisky, Nigel Reedman• Roger Bortignon, Program Head BCIT <p>Applied Skills IRP, changed to “Applied Design, Skills and Technology”</p> <p>The ministry or education is in the process of redesigning the old applied skills irp. It brings Home Economics, Business education, Information technology and Technology education together. We have 3 BCTEA representatives on this writing committee and they have finished up the K – 9 portion and are progressing on the 10 – 12 next. Come and hear what should be implemented in districts for this IRP. Zale Parnell, Russell Evanisky, Nigel Reedman.</p>
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Skills Exploratory Workshops

Session 7	<p><u>Carpentry, Electrical, Plumbing and Auto mechanics.</u></p> <p>These are the four focus areas presently outlined in the new Skills Exploratory course. This first workshop will have a panel describe how this new course came about, was developed and where it is going. Adrian Hill is from the Ministry of Education and put together the template for the teaching resources on the ITA web site under the direction of the Open School initiative to create teacher resources. Jeff Dixon, a plumber who also has his teaching degree, teaches the ACE IT plumbing program out of Langley. Stu Rhodes is a Career Coordinator in Saanich and is a Carpenter and Technology Education teacher who has taught an ACE IT carpentry program, and has developed successful Trades awareness programs in his district. There are presently several more trade areas being created for this course. The ITA (industry training authority), will be there to share their involvement in this course. Jordan Perrault from the BC Construction Association will share the work on the “Learning Profile for the Construction Sector” as part of a Labour Market Partnership with JTST. There has been input and feedback from many stakeholders on just what should high school students interested in going into trades graduate with. Shawn McMullin from the Teacher regulation branch will explain the new acceptance of a Red Seal trade certificate and teaching in the BC high school system.</p> <p>Separate workshops will occur in the breezeway between the shops at Gladstone. Delegates will be able to float through the breezeway and pick up short and quick sessions with the intention to build skills to teach the program hands on.</p> <p>BC Construction Association to share about the free tool give away for districts running this program. Updates on Project shop class and who has been given money and what districts are doing with it. Represented by: Jordan Perrault.</p>
Session 15, 22, 28	<p><u>Carpentry Skills Exploratory</u> will have some wall framing, power tool use, hand tool use, simple projects such as a wall layout and framing, rafter layout, reading blueprints, etc.</p> <p>Facilitator: Stu Rhodes from Saanich.</p>
Session 15, 22	<p><u>Plumbing Skills Exploratory</u> will have plan reading, tools of the trade, how to use plumbing tools, PEX pressure water piping, copper soldering, plastic drain systems, cast iron use, threaded pipe projects, etc.</p> <p>Facilitator: Jeff Dixon from Langley.</p>
Session 15, 22	<p><u>Electrical Skills Exploratory</u> will have a mock-up wall unit so participants can run wire, install boxes and receptacles, breaker panel installation, tools of the trade, project ideas for students.</p> <p>Facilitator: Doug Blue from Campbell River.</p>
Session 15, 22, 28	<p><u>Auto Mechanics Skills Exploratory</u> will focus on the basics of car care such as battery charging and boosting, tire inspection and service, car jacking and blocking, air tool use, electrical trouble shooting, and simple diagnostics.</p> <p>Facilitator: Jared Cloutier from Courtenay.</p>

Career Programs

Session 21	<p><u>ACE IT (Accelerated Credit Enrolment in Industry Training)</u></p> <p>For a district interested in setting up an “in district” ACE IT program, we are offering several examples of programs that are working well. With the government wanting to increase the number of youth getting trades certification, running cohort groups in a school district is a way to do this. Come and learn what highly successful (good pass rate), programs are doing to recruit, instruct and support youth. The programs rely on joint efforts from ACE IT teachers, Career Coordinators, district administration and Tech Ed courses that feed into these programs.</p> <p>Auto Service Technician. Jim Tattrie runs a semester AST program each year in Comox, SD#71. He will share how he recruits and selects the right student candidates, partnership with Vancouver Community College, runs his program, and his success rates.</p> <p>Plumbing. Jeff Dixon has a very unique Plumbing program in Langley, SD #35 . He will share his partnership with BCIT, runs work experience for every student, and is developing a junior preparation program for grade 9 and 10 students.</p> <p>ITA youth programs. The ITA supports the following programs that promote trades awareness and getting students their level 1 technical training. They are YES 2 IT, Maker Space, ACE IT and SSA. All have funding available to school districts to apply for. Lisa Ayton and Maureen Fung from the ITA will be on hand to describe these programs.</p> <p>Carpentry. (TBA)</p>
Lunch 12:00 – 12:30	<p><u>Technology Education Teacher Recruiting</u></p> <p>School districts wanting to meet with the up and coming Technology Education graduates from UBC and BCIT will have an opportunity to meet during lunch time and after at the social event. There may even be some Technology Education teachers looking to relocate?</p>

Unique Programs

There are some non-traditional programs that are out there. By sharing some of these different programs, maybe this will help someone building a new program or spark some new ideas.

Session 8	<p><u>ENTER 1 & 2, STEM, TASK, Physics & Engineering</u></p> <p>ENTER 1 and 2 “The eCademy of New Technology, Engineering and Robotics (Grades 6-7, and 8-9). Comox Valley. Roger Vernon and Meiko Matsumoto both teach cohort groups of 24 students for the whole year using a blended format of distance learning and in class work. Project based learning and Robotics are woven throughout. Taught by Tech Ed teachers.</p> <p>STEM Science, Technology, Engineering and Math. Jim Scoten has been teaching in the Vancouver school district for many years and last year he started teaching a new course and shared about it at last year’s conference. Hear how that went.</p> <p>TASK. Trades Awareness, Skills and Knowledge. Don Cameron. This program was created and is presently running in the 5 south Vancouver island school districts and is a partnership between Camosun college and the surrounding school districts. The program has college trades instructors work with high school shop teachers to introduce cohort groups to different trades. It is usually taken by students prior to doing an ACE IT course. This is a semester long program with small class sizes and usually covers the following trade areas; metalwork/welding, carpentry, plumbing, electrical.</p> <p>Physics and Engineering. Steve Claassen will share about his joint teaching class where students are double blocked with a physics teacher and himself. Students get to put their physics theory into use by building bridges, programming robots, building individual projects using 3D CAD software and 3D printers, laser engravers, etc.</p>
Session 13	<p><u>T.A.S.K, NorKam, Metal Mechanical Coop</u></p> <p>T.A.S.K. Trades Awareness Skills and Knowledge. Stu Rhodes created a unique TASK program targeted towards aboriginal youth. With some sources for funding, and a partnership with Camosun College, this program was highly successful. Come and learn about the challenges and success.</p> <p>NORKAM. North Kamloops has just opened a new trades building and is offering trade sampler programs. The facility is very versatile and you can see how students that are in a focused cohort group are often more enthusiastic and engaged than in a typical high school Tech Ed class. Ron Collins is district administrator overseeing this project. He is a Trained Technology Education teacher that has continued with a passion to provide opportunities for youth in his community.</p> <p>Metal Mechanical Coop. Rob Gibbs from Kwilicum Secondary School, ran this course several years ago, and it was very successful. He had a cohort group of students for a semester that restored several British sports cars. The students in the program attended school for 4 days per week and had a work experience component to the program. Students built skills in the metal trades and auto industry. Many proceeded on to an ACE IT program or employment.</p>

Makerspace

Makerspace is a movement that is spreading across North America and is a new way to combine making and doing with other skills such as design, communication, problem solving, etc. Both the ministry of education and the ITA recognize this and support more makerspace movements.

Session 14	<p><u>Maker Space Examples</u></p> <p>Elementary Maker Space. Martin Hartig is a grade 7 teacher that threw out all the desks and chairs from his class so that on the first day of class, the students had to start designing and building their classroom furniture. This was the start to a true maker space initiative. He is in his 3rd year of this maker space initiative. He weaves academic and projects throughout the curriculum. He is not a Tech Ed teacher by training, but is an enthusiastic woodworker on the side. When his students proceed to the high school in grade 8, they are turned on and skilled to continue with Technology Education courses.</p> <p>Middle school Maker Space. Dereck Dirom has been tweeting information for the last several years on STEAM and makerspace. He has a wealth of knowledge on how to get started with makerspace and getting kids excited through implementation. He will bring people up to speed on how Maker Space has come about, what it is and where it is going. The ITA and ministry of education support and encourage more of it. Figuring out where or at what grade level Maker Space fits into is the challenge. Dereck is a Social Studies teacher at Abbotsford Senior and has been teaching robotics for 9 years.</p> <p>Senior Maker Space. Steve Claassen is a technology education teacher that has evolved his traditional electronics class into an advanced makerspace. He will share the types of projects his students are making with the use of 3D software, 3D printers, Laser engravers, electronics, and robotics.</p>
Session 27	<p><u>Maker Space carts, Maker space funding</u></p> <p>Makerspace funding. Come and hear from the ITA where school districts can apply for Makerspace funding to put on workshops, etc. Hear about some of the activities that have already occurred. Lisa Ayton is with the ITA and will share on initiatives supported by the ITA.</p> <p>Maker Space carts. Devon Burroughs has been involved with the maker movement for several years and has done some work at the elementary level. He has some plans and ideas to share on what should be included in a Maker space cart that could be used in elementary schools to support hands on learning.</p>

Metalworking

Session 16	<p><u>Junior Metal Class</u> (Randy Chapman)</p> <p>*Cool Projects help make Student learning Fun*</p> <p>The focus of this workshop is on two exciting projects that are designed to create a positive learning experience in both metal fabrication and welding.</p> <p>Project # 1 is a Sheet Metal Airplane. This project provides the opportunity for every student to learn the basics of hand tools, metal fabrication, and safe welding practices.</p> <p>Project #2 is a Jeep based Monster truck. With this project, the emphasis is directed to a higher level of fit and finish whereas the Airplane was focused on learning basic welding skills. Both of these two projects are specifically designed to reinforce safe Metal Shop Skill Building with a higher than usual standard of quality control.</p>
Session 24	<p><u>Building Model Steam Engines</u> (Ivor Langley)</p> <p>This workshop will look at how to build a variety of model steam engine projects that can be used with Gr 9-12 Metal classes. I have recently designed a new steam engine plan that uses a number of cast aluminum parts which are cheaper and easier to machine than my previous mostly steel models. Plans will be given out for four different steam engines (the new plan, and three older ones), and discussion on how to construct them. All parts are machined, or made from scratch, so there is a wide variety of metalworking skills involved.</p>
Session 9	<p><u>Metal Shop machine setup, tool Sharpening, and great projects</u> (Al Feustel)</p> <p>Al is a Machinist by trade. He will share how to get the most out of your machines in your shop. He will cover the different types of cutting heads for metal lathes, and milling machines, sharpening tools, building your own belt sander, horizontal bandsaw setup, etc. He will also bring some examples of projects that are always a welcome part of any workshop.</p>
Session 2	<p><u>Jewelry Making And Junior Projects</u> (Chris Armstrong)</p> <p>Chris has created a huge desire for students to take metalwork classes at his school. A lot of this stems from the junior metalwork projects and the jewelry making courses he offers. In the workshop he will have the equipment available and examples of how to make tempered pendants and pewter castings. There will be time for participants to make their own project samples in the workshop.</p>

Electronics/Robotics

Session 4	<p><u>Electronics Share</u> (Jason Brett)</p> <p>There are so many electronics projects being taught and used in BC Schools. This share session will allow “Share participants” 5-10 minutes to share a project being used currently in a classroom with the entire group. The success of this workshop relies on people sharing.</p> <p>Share Participants - Please bring an example, handouts, links to a website, powerpoint or video to show your project. Please contact Steve Claassen @ steve.claassen@sd71.bc.ca to sign up prior. You will be entered into a draw if you share in this session.</p>
Session 10	<p><u>DIY CNC project build</u> (Brett Harrison, Jeremy O'shea, Max Robinson, Calvin Patterson)(</p> <p>Thinking of building your own CNC? This workshop will walk you through the process of design, construction and use of a DIY CNC machine. The machine uses Arduino as the controller and software called Universal G-code Sender.</p> <p>A few different versions of the machine will be demoed.</p>
Session 18	<p><u>Getting Started In Electronics</u> (Ivor Langley)</p> <p>This workshop is intended for teachers who would like to get started teaching Electronics, but are not sure where to start. Teaching Electronics is a lot of fun, and once you get started, it really is not too difficult. You will get all the handouts and lists of parts/equipment needed, a set of eight breadboard assignments, and plans to three simple projects. This will be a hands on workshop, so you will be doing some breadboarding of the introductory circuits.</p>
Session 12	<p><u>Robotics Share</u> (Todd Ablett)</p> <p>Robotics is growing in BC Schools. Lego, VexIQ, Vex, Sumobots, Arduino controlled robots, the list goes on. This share session will allow “Share Participants” 5-10 minutes to share a project being used currently in a classroom with the entire group. The success of this workshop relies on people sharing.</p> <p>Share Participants - Please bring an example, handouts, links to a website, powerpoint or video to show your project. Please contact Steve Claassen @ steve.claassen@sd71.bc.ca to sign up prior. You will be entered into a draw if you share in this session.</p>

Drafting/Printing

Session 5	<p><u>Google Sketchup/Layout</u> (Mark Vance)</p> <p>Mark is going to show how to use Google Sketchup/Layout programs that are affordable and easy to use for 3D modelling/2D presentation. These programs have been around for quite some time now, yet they are not readily used. Come and find out how to use them.</p>
Session 11	<p><u>Autodesk Inventor</u> (Jim Niessen)</p> <p>Now that Autodesk is giving its software away for free to schools you have no excuse for not using Inventor. This session will be an introduction to Inventor and how I use it in my Mechanical design course. I will provide some of my assignment handouts and explain how I use them. For those of you that are family are with Inventor I always appreciate hearing better ways or alternate ways to do things. Join us to add your "two cents".</p>
Session 6	<p><u>Vinyl Sign Cutting</u> (James Bartz)</p> <p>Looking at purchasing a vinyl sign cutter for your program or have one and you are not sure what you can do with it? This workshop will cover; sign making, banners, decals, stencils, vehicle wraps and t-shirts. Processes such as design, vectorising, cutting, weeding, transferring and finally application will also be covered. A discussion on cutter sizes, brands, materials and cost will also happen.</p>
Session 19	<p><u>3D Printer Share</u> (Steve Claassen)</p> <p>Are you interested in 3D printers? Not sure which printer to purchase? Where to buy materials? Come learn about 3D printers (pros/cons) from teachers that currently have them in their classrooms and what students are currently doing with them.</p> <p>This share session requires teachers that are actively using 3D printers to bring them in to share their experience and expertise. Please contact Steve Claassen @ steve.claassen@sd71.bc.ca if you are willing to bring in a 3D printer or share your experience. You will be entered into a draw if you share in this session.</p>

Auto Mechanics

Session 1	<p><u>Brakes & Tires, Tire Sensors</u> (Kal-Tire)</p> <p>Kal-Tire will be on hand for you to learn from the professionals on Brakes & Tires</p> <p>Brakes:</p> <ul style="list-style-type: none"> ○ Basics of an automotive systems & ABS ○ Trouble shooting/diagnostics <ul style="list-style-type: none"> ▪ Pulsating pedal, Fading, Pulling, ABS <p>Tires:</p> <ul style="list-style-type: none"> ○ Sizing & application ○ Safety - Mounting/dismounting <ul style="list-style-type: none"> ▪ Repair practices – Patches, Inspection/wear diagnosis ▪ Tire Pressure Monitoring systems - Codes/diagnosis, Repair
Session 23	<p><u>Diagnostics & Scanners</u> (Snap-On Tools)</p> <p>Snap-On Tools will be on hand to give a workshop on</p> <p>Onboard Diagnostics:</p> <ul style="list-style-type: none"> ○ Overview of engine management control/feed-back system ○ Trouble codes <p>Scan tool operation/functions and diagnostic capabilities</p>
Session 29,30	<p><u>Vancouver Community College (VCC) – Broadway campus</u></p> <p>A bus will take a group to VCC for a morning session, return for lunch at Gladstone, and then take a second group for an afternoon session.</p> <p>The broadway campus has the Auto Collision Repair and Auto Service Technician programs. The department heads and staff for these trade areas have offered to run skill building workshops. There will be different welding operations with a focus on aluminum and thin guage steel. There are lots of welding booths, so everyone gets a chance to get instruction and then try it. Auto prep and painting will be shown and you can give a try at painting. For auto instructors you can learn more about how cars are built presently and the challenges/difficulties in frame and body repair. It is not like the old days. At the time of this printing, the workshops for Auto Service Technician have not been nailed down yet, but promise to be very valuable.</p>
Session 31	<p><u>How to set up an automotive program</u> (Cam McRobb from Okanagan College & Travis Hofman Vernon)</p> <p>We are very fortunate to have Cam McRobb from Okanagan College join a newer Tech Ed teacher to present on how to set up and run an auto mechanics program at your school. Cam has been interested in helping high school programs succeed. He is up to date with what is happening in training at the college level and is working on connecting colleges with high schools for support. Travis is a relatively new teacher, that will share how he has set up his shop and runs his program.</p>

Junior Tech And Woodwork

Session 25	<p><u>The complete package</u> (Ken Cawley)</p> <p>Ken is a master at wood turning and has often presented at our conferences. He is going to share not only wood turning, but the complete package that covers all aspects of setting up and running a very successful wood program. He taught in Powell River for many years and will share many project ideas, give some demonstrations, and be able to answer your many questions about how to build that great wood program.</p>
Session 20	<p><u>Junior Tech Program</u> (Fred Andrews)</p> <p>What to do in a Middle School Tech class..... Fred will give his take on a Middle School Program. CorelDraw is the software of choice for his Tech class and is used for a variety of project design and work. This involves glass etching, wood projects and vinyl cutting along with a bit of electronics. There is also an introduction to sublimation on hard surfaces and design work for clothing. An overall of how this is presented to students will also be discussed. There will be demos on these projects as time permits. Questions are always welcome.</p>