

Science	Math	Technology
<p>Biology 30 Mick Rissling, Regina Public SD; Lindsay Shaw, Prairie South SD; Kim Temoshawsky, Chinook SD; Rob Gosselin, Good Spirit SD, and Dean Elliott and Fatma-Zohra Henni from the Ministry of Education</p> <p>Ministry representatives along with the teacher-writers, will provide an overview of the renewed Biology 30 course.</p> <p>Projector, Big room</p>	<p>Tetrahedral Kite Workshop Lana Elias, University of Saskatchewan</p> <p>Participants will create their own inexpensive tetrahedral kite out of paper, straws, string and glue. Although curricular connections will be made to grade 6 science (flight) and math (tessellations and fractals) curricula, all teachers are welcome to join in the fun!</p>	<p>Lego Robots Patrick A. Kossmann, Prairie Valley SD</p> <p>Robots are becoming a bigger and bigger part of our everyday lives. LEGO Mindstorms allows students to build and rebuild robots to perform various tasks. In this session we will use a collection of prebuilt robots and program them to interact with their environment.</p>
<p>Chemistry 30 Helen Forbes, Jacinthe Deblois, Norm Lipinski, Nancy Fraser, and Dean Elliott and Fatma-Zohra Henni from the Ministry of Education</p> <p>Ministry representatives along with the teacher-writers, will provide an overview of the renewed Chemistry 30 course.</p> <p>Projector, Big Room</p>	<p>A Document Preparation System George Huczek, Prince Albert Catholic SD</p> <p>Mathematics and science documents have specific technical formatting requirements such as equations, tables, diagrams and graphs. Word processors do not handle these tasks well. In this session participants will discover LATEX, how it is used, and how it can be introduced to students in secondary level maths and science classes. LATEX is free, platform independent software, based on TEX, and supported by a large community of users. It has become the de facto standard for publishing mathematical and scientific documents. It can be used to prepare reports, articles, slide presentations, handouts, tests, HTML documents, books, bibliographies, and much more. It is widely used in MOOCs (Massive Open Online Courses) for writing formulas and equations, and is perhaps the best platform available for thesis preparation. Participants will be given an introduction to LATEX, information on how to obtain it, and how to use it with students at secondary or postsecondary levels.</p> <p>Projector, Classroom</p>	<p>Space Balloons and Computer Science: Open Source Data Gathering with the National High Altitude Balloon Experiment David Gerhard, University of Regina Stephen Cheng, University of Regina</p> <p>In The National High Altitude Balloon Experiment, teams across Canada will be launching stratospheric balloons and gathering data from the edge of space. The balloon kit developed by the University of Regina is based on open source hardware and software, and is a demonstrative case-study in integrating cutting-edge technology into class activities. This workshop will focus on the design of the experiment, the choice of sensing equipment, the software for data collection, and the analysis of the resulting data, from the standpoint of computer science, mathematics, and statistics. The Smart Citizen kit, a component of the balloon package, will be discussed in detail as a standalone environmental sensor, with a focus on using computing to support other classes like Environmental Science.</p> <p>Projector, Computers</p>
<p>Physics 30 Ellen Fritz, Geoffrey Haacke, Karen Kennedy-Allin, Daniel Dion, and Dean Elliott and Fatma-Zohra Henni from the Ministry of Education</p>	<p>An Arc Midpoint Computation: Developing Logical Thinking and a Number Sense Gregory Akulov, Luther High School</p> <p>Session considers a generalization of the midpoint formula for the case of a circular arc and</p>	

<p>Ministry representatives along with the teacher-writers, will provide an overview of the renewed - Physics 30 course.</p> <p>Projector, Big Room</p>	<p>discusses its links to curriculum. Presentation includes materials for innovative lessons, assignments and projects with a special focus on applied problem solving. Participants will be provided with several digital and printed resources.</p> <p>25-30, projector</p>	
<p>Tornado Hunter Ricky Forbes</p> <p>Team Tornado Hunter has a combined 20+ years of chasing mother nature's fury across North America. They have first hand knowledge from over 400 tornadoes, from a small EF-1 to being inside the largest tornado ever recorded, a 4.0 km wide tornado last year in Oklohoma. Beyond tornadoes they have experienced some of the most powerful lightning events, devastating hail, hurricanes and more. The goal of their presentations is to bring this knowledge and these stories into the discussion to educate and entertain the students.</p> <p>Projector, Speakers, Lecture hall</p>	<p>The Canadian Math Wars, 2011—2015 Egan J Chernoff</p> <p>The Math Wars, Eh? Believe it or not, the teaching and learning of mathematics has become a staple of local, provincial and national media coverage over the last four years. The purpose of this session is to provide a historical overview of the (most recent) debate over the teaching and learning of mathematics, as found in the media. The historical overview will, of course, touch on many of the "hot topics" of the debate (e.g., PISA, TIMSS, WISE Math, WNCP, "new" math, new Saskatchewan curriculum, and others) and time for discussion at the end of the presentation will be strictly preserved.</p> <p>Projector, Classroom</p>	
<p>Fertile Ground Kate Grapes & Lynn Carter, Sask Mining Association</p> <p>What do mixtures and solutions and the provincial mineral, have in common? Potash ore is a mixture and one of the methods of mining potash is by dissolution. The Saskatchewan Mining Association (SMA), along with teachers and industry, has developed several lessons about potash mining that are aligned with the outcomes and indicators of the Grade 7 Mixtures and Solutions and Earth's Crust and Resources and the "old" Chemistry 30 Solubility and Solutions units. These lesson plans can also be used in the Practical and Applied Arts Energy and Mines 10/20/30 course as well as Physical Science 20. This SMA presentation includes a hands-on demonstration of the potash kit activities, as well</p>		

<p>as information about other education outreach programs offered by the SMA for Saskatchewan educators. Help grow your knowledge of one of Saskatchewan's major resources. Participants will receive a potash kit</p> <p>Tables, Projector</p>		
<p>Rock'n the Classroom: Amy Lafontaine, Sask Mining Association</p> <p>Come Explore and Discover curriculum-correlated lesson plans and activities focused on Saskatchewan's Earth Resources. This workshop will showcase lessons and teaching resources that the Saskatchewan Mining Association (SMA) has developed to correlate with Grade 7 Earth's Crust and Resources; Science 9, Science 10, Physical Science 20, Chemistry 30 Solubility and Solutions; new Chemistry 30 , Practical and Applied Arts Energy and Mines 10, 20 and 30, and Careers in Mining. These resources can also be used in the new Earth Science 30 course. Participate in hands-on activities to learn how uranium is processed or how seismic surveys help to interpret the ground beneath our feet. Discover how the SMA is developing curriculum-correlated resources to complement the new Secondary Science courses and find out how you can have the best PD experience of your career on the 2015 Rock'n the Classroom GeoVenture Program this summer.</p> <p>From minerals and rock cycles to mining cycles and bicycles, learn about mineral resources and how they are extracted and used in daily life. Rock'n the Classroom is a workshop to provide teachers with classroom resources, enhanced knowledge and increased confidence to teach about Saskatchewan's mineral resources.</p> <p>Tables, projector</p>		
<p>Careers in the Mining Industry Kate Grapes & Lynn Carter, Sask Mining Association</p> <p>Not everyone in mining is a miner! Mining companies in Saskatchewan employ people in</p>		

<p>over 120 career pathways. Accountants, Security Guards, Engineers, Welders, Geologists and Heavy Equipment Operators are just a few of these. This workshop will look at the Saskatchewan mining sector's growing need for new employees in the next 5 – 10 years. Participants will try out an activity highlighting potential careers in the minerals industry, based on Holland's personality and work environment profiles. Participants will receive a set of Saskatchewan Explore For More career profile cards.</p> <p>Tables, Projector</p>		
<p>TEACHING STRATEGIES FOR ENVIRONMENTAL SCIENCE 20 Phil Langford and Lyle Benko</p> <p>During this 70 minute workshop, teachers will be introduced to a number of strategies, projects, research ideas, and resources that can be utilized for teaching the new Environmental Science 20 course.</p>		
<p>TEACHING FORENSIC SCIENCE Phil Langford, PVSD and Carla Cooper, PVSD</p> <p>This workshop will contain activities that can be taught to students in a variety of courses, including Forensic Science 30. This will be largely a station-based, hands-on session for teachers to explore items to incorporate into the courses they teach.</p>		
<p>Bring Environmental Science Lessons to Life in Your Classroom Corey Zeigler, McGraw Hill</p> <p>Recognizing we can make a difference is the key to understanding today's environmental systems and challenges. Join us for an invigorating and engaging workshop to see demos and classroom activities to share with your students to enable them to learn from real-life issues to find real-life solutions.</p>		

<p>A course correlation will also be included that discusses how and where the textbook will enhance teaching Saskatchewan's environmental science course outcomes.</p> <p>Projector, classroom</p>		
<p>Making Connections Between University Researchers and High Schools Len Brhelle, Regina Public SD; Dr. Bjoern Wissel, University of Regina; Dr. Nader Mobed, University of Regina</p> <p>Discussion about ongoing discussions the University of Regina, the Ministry of Education, and school division consultants to find ways to connect Regina area teachers and students in a meaningful way with researchers at the U of R. Given secondary science curriculum renewal, developing these types of partnerships seems to be a natural progression.</p> <p>Several researchers at the U of R have stated their interest in working with secondary teachers and their students. The Regina area school division science consultants also believe it to be a good idea. This session will act as a forum for people to get together to discuss possibilities for it to happen</p> <p>Classroom, Projector</p>		
<p>Identify Patient Zero of a Zombie Apocalypse With the Power of an ELISA! Amanda Richards, BioRad</p> <p>Are your students interested in the Zombie Apocalypse? Using Bio-Rad's ELISA Immuno Explorer Kit your students can track a zombie pathogen outbreak. You can also use this kit to teach your students about how ELISA is a powerful antibody-based bio-detection tool used to detect human immunodeficiency virus (HIV), bird flu, mad cow disease, genetically modified organisms, and the molecular markers of cancer, pregnancy, or drug use. This kit facilitates teaching about immune system functions and about the unique properties of antibodies that</p>		

<p>have revolutionized medicine, epidemiology, and life science research. Science is fascinating and when paired with a fun fictional story (zombies), or a relevant, real-world topic (HIV), your students will not only be interested, they will learn more while staying engaged with the scientific world around them.</p> <p>Lab, projector</p>		
<p>Bio-Rad. Engineer the Tools for Inquiry of Candy Food Dyes Amanda Richards</p> <p>What's in your candy? Extract colourful food dyes from candy and separate them on a do-it-yourself agarose electrophoresis box to identify what dyes make them so appealing. This inquiry based activity is a great skills lab by teaching pipetting, gel electrophoresis and making solutions with stunning results. Turn this into a complete STEM activity by building your own horizontal electrophoresis box so your students can investigate the science and engineering behind a workhorse in the biotech lab.</p> <p>Lab, projector</p>		
<p>Natural Resources of Saskatchewan Bernadette Slager, Saskatchewan Forestry Association</p> <p>During this workshop session participants will join in on some hands on activities that help young people understand more about the environment they live in. These activities are taken from lessons developed for teachers of students in all grade levels. The activities are usually used as attention grabbers to get students interested in the coming lesson. They are anywhere from two to five minutes each.</p> <p>We will also include an introduction to the Focus on Forests – First Nations Lessons that were created to help teach about the forests using some storytelling, talking stick and sacred circle methods.</p>		

<p>At the end of the sessions participants will be introduced to the website where they will have access to all the material we cover.</p> <p>Projector, Internet</p>		
<p>The Saskatchewan Cradleboard Initiative Sandra Bonny, University of Saskatchewan</p> <p>The Saskatchewan Cradleboard Initiative links STEM learning across educational and cultural contexts in support of our renewed, multi-vocal K-9 Science curriculum. In this session participants will be introduced to hands-on science activities and online resources developed by University of Saskatchewan students working with Aboriginal educators and community resources – How did Metis women practice solution chemistry? Why do fish scales make great glue? Where did the Dakota flute come from and how do they work? The SCI is affiliated with Buffy Sainte-Marie’s Nihewin Foundation (Canada) supporting the success of all students through celebratory cross-cultural learning within core studies.</p> <p>Projector, Large room</p>		
<p>Re-Developing your field trip Julie Fisowich, Saskatchewan Science Centre</p> <p>Field trips are an exciting event for both you and your students, but how do you make the most out of your excursion? This workshop will be your chance to experience the hands on learning that takes place at the Saskatchewan Science Centre. We will take you through materials you can add to your field trips to make it the best possible learning experience outside the classroom. Inquiry learning techniques will be used as we explore the free choice learning environment of a science centre.</p> <p>Projector, tables</p>		
<p>Water Education in Secondary Science Leah Japp (Saskoutdoors)</p> <p>Water, a controversial, necessary, finite aspect of life. Come learn how Project WET can support</p>		

<p>that new science 20 curricula by experiencing some hands on water education activities.</p> <p>Tables,</p>		
<p>Student-Directed Study Topics for Environmental Science 20 Stephen Cheng, University of Regina</p> <p>Stephen Cheng will share the photos captured in some of his recent trips and address the interesting topics that can be discussed and explored in Environmental Science 20.</p> <ul style="list-style-type: none"> • When Iceland was first settled over a thousand years ago, it was covered by trees. However, the trees found on the island today are not native; most were planted in the past few decades. What caused the native trees to disappear? • Iceland gets most of the heating and electricity generation from renewable sources. Is it possible for the rest of the world to get its energy from renewable sources? • The Great Smog of 1952 killed thousands of people in London. Since then, smog has become less common in the Capital of the UK. What has been done? How can we prevent the disaster happen again? • Comparing the Amazon and the Prairie, what are the roles of agriculture and human impact on the natural ecosystem? • Green roofs have been used in Norway for hundreds of years. Are we re-inventing the green roofs? What can we learn from Norway? <p>Projector</p>		
<p>Engaging Saskatchewan High School Students with the National High Altitude Balloon Experiment David Gerhard, University of Regina; Nicole Anderson, Regina Catholic SD; Stephen Cheng, University of Regina</p> <p>The National High Altitude Balloon Experiment program is the first Canada-wide experiment</p>		

<p>carried out by universities, colleges, high schools and science centres to study the stratosphere, gather environmental data, take photographs, share their findings, and create scholarly research. In this presentation, an overview of the low-cost balloon kit developed by the University of Regina team will be provided. Data collected and video captured in recent launches will be described. Details of how the balloon experiment can be integrated with the new Saskatchewan Environmental Science 20 curriculum will be discussed. Participants will also learn how the turnkey solution may be used to engage students in mathematics and science.</p> <p>Projector</p>		
<p>Using Energy Audits to Encourage Inquiry in Science Pam Belcher, Saskatchewan Environmental Society</p> <p>Focusing on grades 5-8 these projects explain and demonstrate how to use energy, water and waste audits. We use these in our programs to help students figure out what the conservation issues in their school (and home) are, and show them how to use the results to plan action projects that make changes. They include a lot of math that can be adapted by teachers to fit appropriate outcomes. The energy audits also work well in themed projects where teachers are integrating subjects like science, social studies, health education and English language arts. This method is being used extensively in a City of Saskatoon run inquiry education program called Student Action for a Sustainable Future.</p> <p>Projector,</p>		
<p>Environmental Resources for the New high School Sciences Pam Belcher, Destination Conservation Saskatchewan</p> <p>The SES has power point and video resources around oil sands, uranium development and climate change. We also have developed some</p>		

<p>environmental education programs which may be of interest to teachers around the province (Boreal Watershed Monitoring Program, Smarter Science Better Buildings, Destination Conservation Saskatchewan) Also, I would recommend sources outside of the SES who are creating excellent and balanced materials around the issues related to resource development and climate change.</p> <p>Projector,</p>		
<p>Gale – Dynamic Databases to Promote Inquiry and Support the New Sask Secondary Science Curriculum Brendan O’Dacre, Nelson Education</p> <p>This session will offer an overview of multiple Gale online database resources that directly assist in instruction of the new secondary science curriculum. A walkthrough of functionality and recent upgrades to these resources will give both beginners and advanced users of Gale research resources something new to take to their classrooms. While focusing on instructional multimedia content that directly aligns to curriculum outcomes, participants will see how online educational databases can assist in directing inquiry. Participants will also have the opportunity to drill down into some of the backend supports for teachers looking to better use technology in their classroom to engage students.</p> <p>Projector,</p>		
<p>The Expanding Universe Patrick A. Kossmann, Perimeter Institute of Theoretical Physics</p> <p>We are part of an incredibly amazing universe. Students will be able to complete activities focused on different aspects of the cosmos from the Big Bang, to the Cosmic Microwave Background (CMB), to the expanding universe. This grade 7-12 classroom kit provides teachers with print and digital resources to inspire students and aid with understanding of the</p>		

<p>universe using activities based on these topics that are easily adapted to any curriculum.</p>		
<p>Health Professions Education: how the new Health Science course interfaces with post-secondary opportunities Lynda Kushnir Pekrul, Saskatchewan Polytechnic</p> <p>The School of Health Sciences and the School of Animal and BioScience have a host of programs that high school teachers and students might want to explore and consider as part of the “career explorations” section in the new Health Science 20 curriculum. Programs at Saskatchewan Polytechnic are demanding and very different from traditional university offerings. Come and hear about what Sask Polytech has to offer! Bring your questions as we review options, opportunities and the realities of a health science education for your students.</p>		
<p>Health Science 20 Carla Cooper, Tina Rioux, Amy Lafontaine</p> <p>As curriculum writers and pilot teachers, Tina, Amy and Carla have established a deep understanding of the HS20 curriculum. Based on this experience, they have developed various activities that have been shared across the province throughout the HS20 pilot process. This workshop will focus on showcasing these activities, as well as newly developed activities, that you can implement into your Health Science 20 course.</p> <p>Projector, Classroom</p>		
<p>Equilibrium, moving forward (or backwards)? Larry Mossing</p> <p>Outline: Equilibrium continues to be a major part of Chemistry 30 and a challenging concept to teach. Several illustrations of this concept will be discussed while making reference to a comprehensive module that will be available to participants.</p> <p>Projector, classroom</p>		
<p>Find Your Superpower! Cassie Hawrysh</p>		

<p>Go behind the scenes of the world's fastest sport on ice with Canadian National Team Skeleton Racer, Canadian Champion & World Cup medalist: Cassie Hawrysh. Discover what it takes to challenge the physics of motion, employ unique geometric and mechanical innovations, weather pattern data, and the chemistry of sport specific nutrition - real superpowers via science & math - all in the pursuit of passion!</p> <p>Projector, Classroom, Mic and Audio</p>		
<p>The Study of Aquatic Systems in (and out) of the High School Classroom Kristen Simonson & Rhonda Phillips</p> <p>This seminar will look at how to actively study aquatic systems in senior science....the focus will be on determining the health of a local watershed by using an in-depth riparian assessment (place-based learning), an assessment of the bio-indicators from that watershed (such as the identification of macro-invertebrates) and by providing access to quality resources and adaptations that would be suitable for the new environmental science 20. Participants should bring a flash drive, and will have the opportunity to purchase Rhonda's manual on aquatic explorations.</p> <p>Projector, Sink, Tables</p>		
<p>Saskatchewan Science Safety Workshop James Palcik</p> <p>Flinn Scientific Canada is a recognized leader in science lab safety. This is an extraordinary opportunity to attend a comprehensive workshop facilitated by Canada's science safety experts. Plenty of free resources and awareness about your own science program provided. Must-attend session to prevent accidents from occurring in the classroom / prep room.</p>		
<p>Physical Science 20 – Equipment for Labs and Activities Annette Enns-Wind,</p>		

<p>Are you a chemistry teacher, wondering about physics equipment? Or are you a physics teacher wondering about chemistry materials to teach the new Physical Science 20? Be prepared to try out some equipment and learn about the course from a curriculum writer who has experienced teaching this new course.</p> <p>Projector, Lab Space</p>		
<p>Personalization and Customization of Your Core Science Resource Lionel Sanders</p> <p>How are you going to build your new science program? With a core text? With a binder of photocopied ideas? With information from the Internet? And more importantly where will you find the time to do all this work? In this workshop we'll explore how to combine both print and digital resources to make your own customized high quality, low cost print resource. And, we'll explore how other teachers are using this model to make the transition to integrating technological solutions into their teaching practice. This session will focus on grades 11 and 12.</p>		
<p>Literacy & Science: Together is Better Lionel Sanders</p> <p>“Tell me and I forget, Show me and I remember, Involve me and I understand”</p> <p>This practical, hands-on workshop will engage participants in a variety of activities inspired by the cross-curricular integration of skills and habits of mind present in both literacy and science. Ready to use lesson ideas and activities will spark and scaffold student inquiry while building a literacy rich environment in your classroom as students observe, question, predict and infer in a variety of contexts. See how literacy and science can support each other and foster creative and innovative thinking that can be easily transferred to other content areas. It won't matter which comes first or where you place these ideas and activities in your day as students</p>		

<p>will deepen and extend their thinking and understanding in meaningful contexts full of opportunity for reading, writing and vocabulary development while having fun! This session focuses on grades 4 to 10.</p>		
<p>Marvelous Microbes - Microbiology activities for the new curriculum. Michelle Wall</p> <p>Whether you're a new teacher with no experience working with bacteria, or a seasoned pro with plenty of know-how, the new curriculum will have us all scrambling for ideas. Microbiology, with its broad application in the real world, is an excellent springboard from which to launch a variety of activities. The new Health and Environmental Science 20 courses provide ample opportunity to bring bacteria into the classroom. Learn how to work safely with microorganisms, while opening your students' eyes to this unseen realm.</p> <p>A projector and Smartboard</p>		
<p>Biotechnology for Grade 9 Science Leah Hermanson or Susan Jorgensen</p> <p>Learn about biotechnology in agriculture from an agricultural scientist and the connection to Grade 9 science! As the world population grows, so too does the importance of science and technology in feeding, clothing and fuelling the world. Biotechnology has a key role in this. Our invited scientist will review the processes of biotechnology and it's applications in agriculture. This will be followed by an introduction to the Biotechnology Kit for Grade 9 science: DNA Extraction and Food Dye Electrophoresis. In this kit students will isolate DNA from wheat germ as well as perform electrophoresis on comparative food dye samples. The kit is closely coordinated with the provincial curriculum and will provide students the opportunity to use scientific methods, design and conduct investigations, as well as gather, analyze and interpret data.</p> <p>Projector, Tables</p>		
<p>Biotechnology for Grades 11 and 12</p>		

Leah Hermanson or Susan Jorgensen

Learn about biotechnology in agriculture from an agricultural scientist and the connection to Health Sciences 20 and Biology 30! As the world population grows, so too does the importance of science and technology in feeding, clothing and fuelling the world. Biotechnology has a key role in this. Our invited scientist will review the processes of biotechnology and it's applications in agriculture. The scientist will review the processes of biotechnology and it's applications in agriculture. This will be followed by an introduction to the two Biotechnology Kits developed for Health Sciences 20 and Biology 30. The Bacterial Transformation kit includes materials to transform bacterial cells by adding a plasmid. The Bovine Spongiform Encephalopathy (BSE) Gel Electrophoresis kit includes materials required for students to use electrophoresis techniques to identify the contaminated food source responsible for BSE in a herd of cattle. Both kits are closely coordinated with provincial curriculum. These kits will help students to use appropriate tools and techniques to gather, analyze, and interpret data by designing and conducting a scientific investigation.

Projector, Tables

**Physical Science 20 – Reductionist or Holistic
Rory Bergemann**

Are you anxious about teaching this class for the first time this fall? Are you stressed about how to fit all of these outcomes into one semester? Relax. Come and listen to one of the curriculum writers share how to make your Physical Science 20 class a fun & engaging holistic experience for students. We believe in working smarter, not harder by doing activities that lead to a deeper interconnection.

Computer (PC laptop), Projector, Smartboard, place to hang poster, Whiteboard and markers