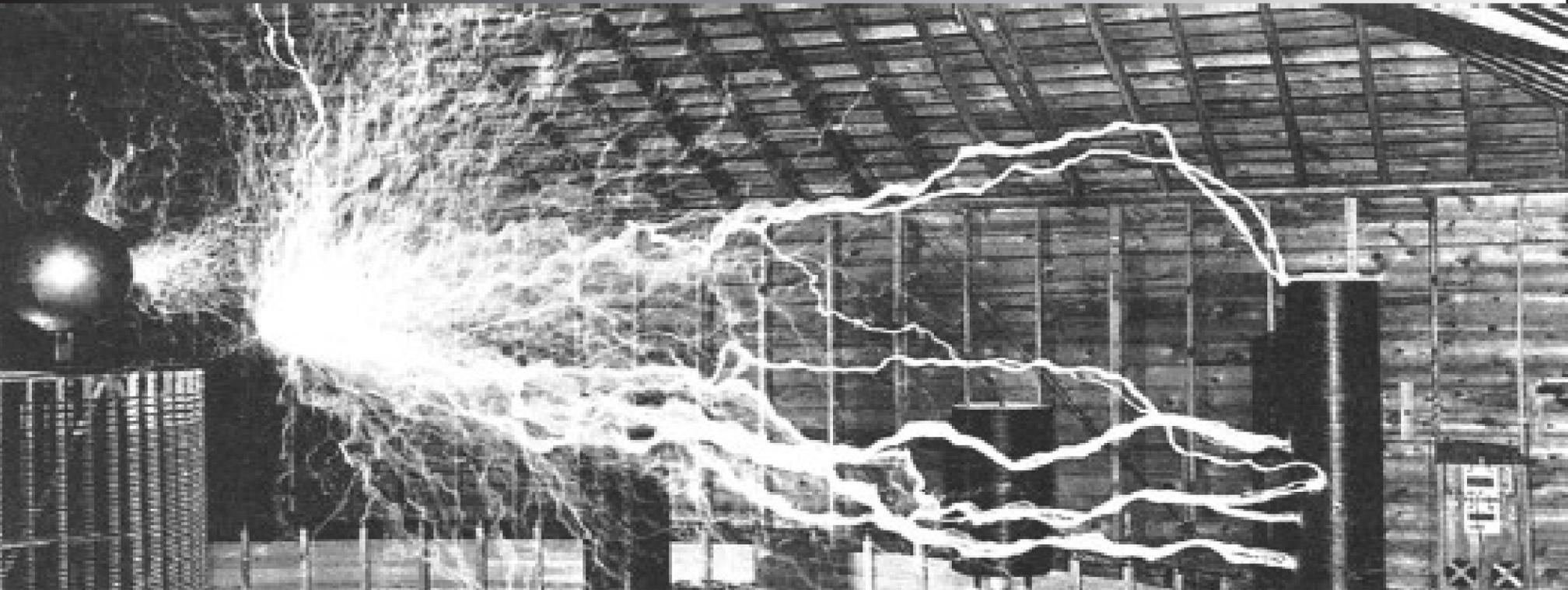


Physics Connections



Physics Connections is a complete High School Physics course modelling the curriculum objectives set by Saskatchewan Education. Following a Connectivist approach, Physics Connections affords high level interactions with students, authentic content, traditional aboriginal knowledge, interactive web-based tools and Physics specialists from around the world.

Learn more and experience the course at <http://swils00.viviti.com/>

Visual Cube Analysis of Physics Connections

Public Schools (K - 12)	Higher Education	Training Needs (Apprentice, Corporate, Consumer)	Services (Consult, Design, Evaluate, Custom Development, etc.)	Content (Pre-packaged, can include blended services)	Infrastructure (Learning Management, Content Management, Virtual Classroom, etc.)	Learner Buys Personally Typical of Training	Learning Bought Nationally Open to Regions Local Guide Offers to Learner Typical of K-12	Learning Bought for Learner Typical of Higher Ed. Learning Bought Centrally Local Guide Offers to Learner
Wired Anglophone Countries Canada, USA, Australia, UK, Ireland, NZ "European" Countries with Language Skills Scandinavia, Benelux, Switzerland, Germany, South Africa "European" Countries Requiring Translation France, Italy, Eastern Europe, Spain, Portugal, Latin America "Asian" Countries with Quality Internet Japan, Taiwan, Coastal China, India, Rep. of Korea, etc. Other Regions with Restricted or Poor Quality Internet Service Special Situations: Military, Maritime, Antarctica, etc.			Market Only Supports Custom Work or Indigenous Suppliers	Market Supports Export Oriented eLearning and Substitution of Imports	Market Does Not Support ELearning	Market Supports Import of Content and Infrastructure	eLearning Works With A Well-Developed Learning System eLearning Substitutes for Other Forms of Learning eLearning is Imposed and Competes with Existing Learning Systems	

Photo Credit:

Colette, Vincent. 2008. Image taken from Physics Connections - page 427. Copyright 2008. Physics Curriculum & Instruction. Lakeville, MN.

Aboriginal Inclusion

Aboriginal education is important in Saskatchewan. In her presentation to the Saskatchewan Aboriginal Literacy Network Community Outreach (October, 2007), Dr. Lillian Dyck quoted statistics from the 2001 report by Stats Canada; 14 per cent of Saskatchewan's population is aboriginal compared to 3 per cent of Canada's population. At this time, almost 60 per cent of aboriginals living off the reserves were under 25 years of age compared to under 35 per cent of non-aboriginals.

According to the 2006 Canadian census, 50.6 per cent of Saskatchewan aboriginal people, aged 15 and over, has an educational qualification like high school graduation or its equivalent, with 22.0 per cent having a high-school diploma. Comparatively, 72.4 per cent of the non-aboriginal population has attained the same educational standing with 27.5 per cent having a high-school diploma. Comparing those with completed postsecondary education is equally alarming; 28.6 per cent of the aboriginal population and 44.9 per cent of the non-aboriginal population.

Given the fact that aboriginal and non-aboriginal children receive the same public education in Saskatchewan, the statistics show an alarming difference in educational completion rates. This inequity will come to have an even greater impact on our province as the aboriginal population continues to grow. Senator Dyck projects that by the year 2045, 50 per cent of Saskatchewan's population will be aboriginal. In subsequent slides,

References:
Battiste, Marie. Enabling the Autumn Seed: Toward a Decolonized Approach to Aboriginal Knowledge, Language, and Education. "Canadian Journal of Native Education", University of Alberta and University of British Columbia, Volume 22, No. 1, Creating Power in the Land of the Eagle pp.16-27, 1998.] Retrieved November 23, 2008 from <http://mrc.uccb.ns.ca/battiste1.html>

References:
Siemens, George. Description of Connectivism. Retrieved November 23, 2008 from <http://www.connectivism.ca/about.html>
Siemens, George. December 12, 2004. Connectivism: A Learning Theory for the Digital Age. Retrieved November 23 from <http://www.elearnspace.org/Articles/connectivism.htm>.

Connectivism

George Siemens describes Connectivism as a learning theory for the digital age. He contends that Behaviourism, Cognitivism, and Constructivism do not provide for the technology-rich learning environments of the 21st century.

Physics Connections applies a Connectivist approach in that it integrates cognitions and emotions in meaning-making, allowing for interaction among instructors, learners, technology and content. In Physics Connections, students have an end-goal of being able to apply physics to their lives. They are given opportunity to reflect on their knowledge and on the knowledge of other participants.

Physics Connections uses authentic information sources available in our connected world by integrating Web 2.0 applications in an open, yet secure manner. Students are encouraged and guided in learning how to integrate their learning with technology.

In Physics, we can never know all, we will never know enough, we can only know where to find the information, how it applies to our lives, how it applies to the lives of others who share our world and how we can live in harmony with nature.

she states that it will take 26 years for aboriginals to catch up to non-aboriginals in terms of the education gap and that 70 of aboriginals living on reserves will not complete high school.

While all areas of aboriginal education face difficulties, it is the purpose of this paper to focus on improvements specific to aboriginal Science and Math education in Saskatchewan. The Canadian Council on Learning (2007) states that aboriginal children

are under-represented in science and engineering occupations. Dr. Edward Doolittle, Head of the Department of Science at the First Nations University of Canada in Regina, is quoted in the article "Aboriginal Arithmetic" (Eggertson, 2004) as saying that aboriginal children have a great deal of difficulty in learning math. In the same article, Corinne Mount Pleasant-Jetté, an Assistant Professor of Engineering and Computer Science at Montreal's Concordia University, offers that of the approximately 165 thousand professional Canadian engineers, only about 150 are of aboriginal descent.

In Enabling the Autumn Seed (Battiste, 1998), Marie Battiste explains that "Without Aboriginal languages and knowledge, Aboriginal communities can do little to recover their losses or transform their nations using their legitimate knowledge and languages". Physics Connections allows for the integration of local aboriginal content. The interface is open to adaptation by any registered teacher user. These changes are only applied to the application being



used by the teacher at the time, but they are recorded in a content repository and accessible to other registered teacher users.

Current technologies allow for integration of Elder knowledge and language through use of webcasts, podcasts, and the unique Secure-Blog interface.

Students of Physics Connections are presented with problem situations that draw on traditional knowledge. Aboriginal students are able to connect and share with other aboriginal students both within and outside of their community.

The affordance of ICT-based learning environments allows for the incorporation of Aboriginal expert advice and mentorship.

Since, as Marie Battiste says, "...societal practices and customs are passed from one generation to the next by means of oral description and actual demonstrations", the affordance of authentic aboriginal connections in a multi-media environment is vital to the success of aboriginal students in science and math classes.

