



## *"Making Science Fun"*

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January 21, 2013

Re: Praxis and Operation Minerva

To Whom It May Concern:

Few people would question the importance of ensuring that today's students acquire a level of scientific literacy and understanding to function competently in the world in which they live, work and play. However, science proficiency assessment tests for students identify that in fact Canadian teens understand less of the science that they are being taught than they did in 1999 (Globe and Mail, 16/06/05). Alberta students stand out amongst this group - understanding the science behind issues such as climate change, biotechnology and natural resource limitations are issues that affect us now – and will become even more important to the future scientists, educators, business leaders and citizens of Alberta.



For many years, the Praxis Society has offered a program called Operation Minerva in Medicine Hat. Operation Minerva was conceived by the Alberta Women in Science Network (AWSN) as a means of promoting Science, Technology, Engineering and Mathematics (the STEM subjects); to adolescent girls. Each year Operation Minerva (named after the goddess of wisdom who was a mathematician, teacher and inventor) brings young women together with female mentors in the hopes of encouraging young women to choose the STEM areas as fields of study. Peer pressure, the image of scientists as "nerds," few role models, lack of knowledge about local career opportunities, competitive rather than collaborative teaching methods and failure to take sufficient classes in high school have been cited as contributing factors to the lower numbers of girls enrolling in scientific fields of study.

While the proportion of women in the STEM areas is increasing, it remains much lower than that of other fields of study. Studies have shown that Grades 8 & 9 are a critical time in a girl's development, and that during this period many girls lose interest in the STEM subjects. In 2001, just 20% of professionals in the STEM areas were women. Without intervention and support it is unlikely that female representation in these occupations will increase in the near future, because women continue to account for relatively small shares of total university enrolment in these fields. (Statistics Canada.)

This year Praxis is hoping to link 60 young women with 35 women in South East Alberta who are involved in careers that have as their basis Science, Technology, Engineering and Mathematics. The young women job-shadow volunteers in the morning, participate in workshops in the afternoon and discuss what steps they should take to achieve a particular career or study goal. Connecting with a woman who has been down the path that these girls are about to tread helps boost the girls' confidence and opens their eyes to future possibilities. The involvement of Praxis in this initiative broadens opportunities for these young women.

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### Goals of Operation Minerva:

- To inform parents, educators and public regarding the small numbers of girls choosing Science, Technology, Engineering and Mathematics (STEM) courses and careers.
- To increase the interest of adolescent girls in the STEM fields of study.
- To increase support from educational institutions, government and the private sector for women's involvement in the STEM areas.
- To educate the general public and the media of the need to involve girls in science and technology.
- To dispel, in the minds of students the "scientists" myths and "geek" stereotypes.
- To showcase the importance that women in South East Alberta currently play in Science, Technology, Engineering and Mathematics (the STEM areas) the career opportunities available to them.
- To provide girls with the opportunity to meet positive female role models and possible mentors in scientific and technological fields.
- To foster network building among young female students to encourage a positive environment supporting achievement in the math and sciences.
- To demonstrate through direct experience (job shadowing and hands-on workshops) that the STEM areas can be challenging, interesting and exciting.
- To provide positive and stimulating experiences for young adolescent girls so they can experience "fun" in an effort to enhance and foster positive attitudes towards courses and careers choices in the STEM areas.
- To provide an experiential base to assist the girls in their decision making when planning their high school and post secondary educational programs.
- To increase the numbers of girls pursuing STEM area career paths.
- To increase media exposure for the STEM areas resulting in greater public understanding of the impact of science and technology in society.

### What are the benefits?

- We will inspire some students to consider pursuing careers in Science, Technology, Engineering, or Mathematics (the STEM areas).
- We will expose students to the skills that will prepare them for attaining employment.
- We will boost their confidence in their ability to be Scientists, Technologists, Engineers and Mathematicians.



### In the long term ...

- We will inspire these students to bring back to the community their learned skills.
- We will promote community support for women in the STEM areas.

*There is no substitute for a role model and a mentor," explains Joyce Luethy, past AWSN's Executive Director. "The student becomes familiar with the science, engineering or IT workplace, the tools and teamwork of the job and the educational background of the mentor.*

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*As well, they see how their mentor balances work and lifestyle and may have overcome obstacles in the workplace."*

I would like to take this opportunity to thank you for considering being a mentor for these students. You never know when an experience like this will result in someone taking of a different path in their future career.

We ask that the mentors show the girl(s) what their career entails and how it relates to Science, Technology, Engineering or Mathematics. That it is important to take these courses in school if they wish to pursue a related career. It is not always possible for the students to have 'hands-on' experiences but where possible this is always a good tool to use.

The other critical area of support would be as a host site for large group tours (the group of 60 is split into two groups of 30 students) or possibly as an afternoon workshop presenter. Both would be about 40 minutes in length. The site visit demonstrates real world applications while the workshop exposes small groups of students (8 to 15 students) to an application of one or more STEM related activities in their area of expertise. The career choice that you have made offers a great opportunity to share your experiences with the students so that they might be able to gain the confidence and understanding to pursue such a career.

If you are a mentor, the girl(s) would arrive at your place of work at approximately 9:30 a.m. on the morning of March 15, 2013. They will job shadow until approximately 11:30 a. m., at which time they will return to our Conference location.

Thank you for your anticipated consideration,

A handwritten signature in black ink that reads "Lorne A Cooper".

Lorne Cooper, Regional Executive Director  
Praxis Society



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