ENHANCING STUDENT LEARNING: A MODEL FOR TECHNOLOGY-ENABLED INQUIRY WITH THE SUPPORT OF A VIRTUAL MENTORSHIP PROGRAM

By

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ABSTRACT

Research is starting to show that an inquiry-based approach can positively impact student learning. In this paper, the author propose a model of inquiry-based learning with the support of virtual mentorship. They identify the key players involved, define each of their responsibilities and explain how they work collaboratively to develop curriculum-related programs tailored for individual classrooms. They then describe how this model was implemented in an urban school with the support of advanced technology including videoconferencing. This model provides a new direction for introducing inquiry and integrating advanced technology in schools.

Keywords: Inquiry-based Learning, Virtual Mentoring, Videoconferencing, Math and Science Learning.

INTRODUCTION

Although inquiry is not a new idea, it was not until the 1980's that people started to realize the value of inquiry-based learning. Rooted in constructivism, inquiry-based learning focuses on promoting student learning "through guided and increasingly, independent investigation of complex questions, problems, and issues, often for which there is no single answer" (Lee, 2004, p. 1). The current enthusiasm in inquiry has resulted in a flurry of research studies, each with its own definition and understanding of the term. Some focus on learning activities, while others emphasize inquiry as a teaching technique (Colburn, 2000). Regardless of its focus, it is commonly accepted that inquiry can embrace different approaches ranging from structured inquiry, to guided inquiry, to open inquiry. In this paper, the author define inquiry as "an approach to learning that involves a process of exploring the world, and that leads to asking questions, making discoveries, and rigorously testing those discoveries in the search for new understanding"

Inquiry-based learning has been used to teach various subjects, ranging from mathematics and science, to language arts, or to health education (Amaral et al., 2002; Kleiman, 2005; Mahony et al., 2003). A growing body of research is starting to provide evidence that inquiry-based learning can have a positive impact on student learning. This is reflected in not only their ability to solve problems but also in their academic achievements (Amaral et al., 2002; Elmore, 2000; Newmann et al., 2001). In fact, many current standards, such as the National Council of Teachers of Mathematics Standards (National Council of Teachers of Mathematics [NCTM], 2000, 1989) and the National Science Education Standards (National Research Council, 1996), are theoretically grounded in constructivism. Consequently, examples of successful standard-based instruction are often characterized as inquiry-based (Carter, 2004; Colburn, 2000).

Technology, on the other hand, has undergone dramatic developments and drastically changed our society. Schools are increasingly investing in technology and using it in various ways. Researchers, educators, and policy makers alike are exploring best ways to integrate technology in schools to enhance teaching and learning. Many educators advocate the potentials of enhancing learning with technologies (Grabe & Grabe, 2001; Pedretti et al., 1998).

The value of technology in education, however, often links to teaching approaches that are inquiry-based and student-centered (Jonassen et al., 2003; Papert, 1993). Although inquiry is the central tenet of many standards, the majority of teachers in North America have not embraced this approach for various reasons (National Research Council, 2001; Weiss, 1997). One such common reason is that there is a lack of concrete examples to demonstrate successful inquiry programs that can adequately prepare our teachers.

In this paper, the author argue that inquiry-based learning approach, with the support of appropriate technology, can make positive impact on student learning. They propose a model of inquiry-based learning with the support of virtual mentorship that promotes collaboration between teachers and experts in different disciplines (we call them "mentors" hereafter). They then describe how this model was implemented in an urban school with the support of advanced technology including video conferencing.

The Model

The model, namely inquiry-based learning with virtual visitation, has three important key players: teachers, students, and mentors. Figure 1 provides a graphic representation of this model with each component represented by a rectangle. The primary contributions from and benefits to each key player are listed on the left and right-hand sides of their respective box. It is also necessary to have a participant act as a catalyst to take on a leadership role in program implementation.

For students, learning subject matters through inquiry projects with the support of virtual mentorship provides authentic experiences that connect school learning with the real world. In addition, through interactions with role models, their confidence can be increased and their interest in learning the subjects can be sustained.

For teachers, immersion in this environment provides a professional development opportunity that is authentic and timely. In this process, teachers learn collaboratively and acquire first-hand experience with the support of educators. They gain knowledge of inquiry-based approaches and ways advanced technology can be seamlessly integrated. This also deepens their understanding of the subjects they are teaching (e.g. mathematics and science). Another benefit is that teachers are able to network with a broader community.

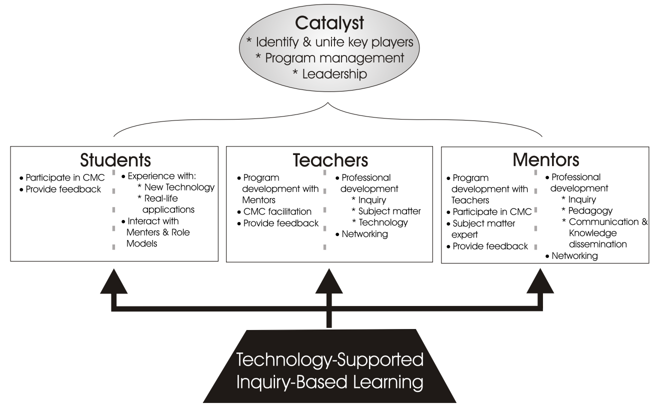

Figure 1. Technology-Supported Teaching and Learning Model of Equity

For mentors, this experience allows them not only to gain pedagogical knowledge, but also to reach out to school students and teachers. This gives them experience disseminating high level knowledge and expertise at a level that students and non-experts would comprehend. Additionally this gives students and teachers access to groundbreaking ideas and research that may not be readily accessible to the general public. Further, the opportunities to network with educational communities can significantly benefit them in both their professional and personal development.

The role of the catalyst is to unite the key players and provide leadership. This begins with identifying participants and then facilitating program development for the duration of the project. This role can be played by an additional participant such as a researcher, however it could also be assumed by a teacher or a school administrator.

All these components, as indicated in the model, need to be sustained by the technology-supported inquiry-based learning (as represented by the trapezoid) which provides the theoretical foundation for this research.

What would it look like?

How would the model look in practice? The study proposed the following technology-supported learning environment that provides one possible pragmatic way to implement this model. In this learning environment, teachers work collaboratively with students and mentors. Teacher educators or researchers may also be invited to contribute their expertise and experience.

In the k-12 classrooms, throughout the semester, role models interact with students using e-mail, instant messenger, web forums or any other form of computer-mediated communication (CMC). Depending on the curriculum, 3-5 videoconferencing sessions are scheduled for the semester. The learning process follows these procedures:

- The week before each videoconference session, students have discussions about the topic amongst themselves, with their teachers and with role models. These exchanges are communicated through face-to-face and CMC interaction.
- During the one-hour videoconference session, students virtually visit mentors.
- The week after each videoconference session, students again interact face-to-face and via CMC amongst themselves, with teachers and with role models, sharing their reflections and insights.

Teachers and teacher educators invite and involve mentors into this program through various activities. For example, the teachers, the role models, and the teacher educators might work collaboratively to design a series of class activities for the videoconferencing sessions as well as sessions before and after those video conferences. Teachers and teacher educators will also participate in the videoconferencing sessions, face-to-face or via online interaction. From their observations, interaction with the students and personal reflections, teachers can inform program development participants to further enhance the activities. This feedback can also be incorporated into the design and development of subsequent learning activities for students.

Key players

To establish the program, the catalyst needs to first identify several key players who are interested in being involved and can foresee the benefit of inquiry-based learning with the support of a virtual mentorship program. The catalyst role can be assumed by a school administrator, teacher educator or researcher, or by a teacher themselves. As previously established, the primary players are: mentors; teachers and educators. Enthusiastic involvement by all three groups of participants is tantamount to the successful implementation of a technology-supported inquiry-based virtual mentorship program.

The first requirement is to find one or more virtual mentors who serve as role models. The virtual mentor plays a significant role because student virtual interaction with the expert is one of the most important aspects of this model. The virtual mentor's responsibilities include: interacting with students and remotely leading virtual conferencing sessions; participation in program development; and providing ongoing feedback for the program.

An ideal role model, based on our research, should possess the following characteristics:

- is an expert in the specific subject area,
- relatively young so that students can easily relate to him or her, and
- posesses good communication skills, both orally and in writing.

Previous research has shown that same sex role models can significantly change students' views about the subject matter and can also influence their learning outcomes. It is desirable, therefore, to have role models that identify with the under-represented gender of the population. For example, since females are seriously under-represented in areas like math and science, it is ideal to choose female role models for the learning programs developed for these subjects. Although the benefit of choosing role models who come from the under-represented population is apparent, it can also pose a significant logistical challenge. That is, it is often very difficult to find such people because they may also represent a minority population within their own fields of expertise. When potential candidates are found, they are often already wearing several different hats (e.g. scientist/historian, mom/dad, researcher/professor, wife/husband, administrator) and consequently, they are usually excessively busy. Therefore, in order to find suitable candidates to wear the role model hat, the authors have found that it is useful to take advantage of contacts from interdisciplinary collaborations and to be well-informed of existing networks of students, researchers or area-expert personnel.

The next key players are enthusiastic teachers who are willing to try new ideas and can see the advantages of such an approach. This poses several challenges. First, if inquiry-based learning is not or has not been a part of their educational beliefs or background, teachers may be unaware of the benefits that this approach can bring to their teaching practices. On the other hand, teachers may be aware of this pedagogical approach but may fail to see the value of implementing a virtual program of this nature. Second, many teachers prefer to host classroom visitors in person as opposed to inviting virtual guests, however, face-to-face visits are limited by time and geographical constrains. Next, teachers may be apprehensive about integrating advanced technological tools in their teaching practices. Finally, young and new teachers are often busy learning and adjusting to an unfamiliar system and the curriculum. In addition to finding time to incorporate novel programs, they usually lack the confidence to try innovative ideas.

The final key players are the students. The level of participation from the students depends on the student population with which the program is implemented. There are two types of student populations that this type of program can reach: traditional and non-traditional. The first group is the traditional school model with students regularly attending classroom activities. In the traditional school classroom, the virtual mentorship program is introduced by the classroom teachers who would encourage active participation. Despite this, the onus is still on the student to interact with the mentor. For the latter type of participant population, educational models are tailored to the individual students such as with home schooling, distance learning, or online education. In these models, much of the work can be done at the students' own pace making group programs a challenge to organize because they impose extra time commitment. This highlights the significance of integrating the inquiry-based virtual mentorship program into the required curriculum in order to implement an effective program.

Although not key players, school administrators play a significant role for successful implementation of such model and may also act as the catalyst that initiates it. Their support is necessary for acquiring the required technology and infrastructure as well as any essential personnel. Administrators must also be willing to take risks both financially and pedagogically. They must invest in new technology and create an environment that is open to and supportive of innovative pedagogical approaches such as inquiry-based learning.

Another challenge is whether or not the technology is in place for the purpose of the work. It is often the case that although there are enthusiastic teachers and administrators, the new or required technology and infrastructure may not be available. As this program is grounded on computer-mediated communication (cmc), students must have access to computers to be able to communicate electronically with the mentors. Furthermore, videoconferencing equipment and reliable broad-band communication technology must be available for virtual sessions.

Testing the Model

To test our model, we conducted a study in an urban school. In the following section, they describe this project, focusing on the lessons they have learned in the process of implementation. It is important to note that in this project, a researcher played a significant role in the process of program design and implementation and in this case acted as the catalyst.

The project

Our project focused on enhancing secondary students' learning of mathematics and science. Because math and science have traditionally been dominated by males, the author sought to increase students', particularly female students', interest and confidence in learning these subjects. Consequently, they wanted to present female scientists and/or mathematicians as role models.

The research has shown that this project had important effects on students' learning. The pre- and post-tests demonstrated a significant gain in students' math and science. More importantly, the follow up email survey also showed a long-term effect of this project on students' achievement. Another long term effect on students included not only their increased interest and confidence and decreased anxiety level in learning math and science. The authors have discussed these results elsewhere (Li, 2007; Li et al., 2008; Mok & Li, 2007) and in this paper, they focus their attention on the designing and implementation processes.

Background

For this project, two grade 9 classes in an urban school participated in the program for a duration of six months. The school is an all-girl school with students from grade 4 to 9. Three teachers of the grade 9 classes, two math and science teachers and a humanities teacher, participated in this program. The lessons for both classes were planned collaboratively; however, math and science instruction in each class was done by different teachers. There were a total of 46 student participants (with 23 students in each class). A follow-up email was also sent to the classes two year after the project finished and 18 students responded to this final email survey (Appendix 1).

Implementing the Project

One unique aspect of this program is the adaptation of a design-based approach where teachers, mentors, and teacher educators, worked collaboratively to design and develop program activities. According to Dede (2005), “Design experiments bring together two critical pieces in order to guide us to better educational refinement: a design focus and assessment of critical design element” (p. 5). Although many definitions of design-based research exist (Design-Based Research Collective, 2003), most people share some assumptions:

- There is a value in demonstrating powerful learning environments;
- We need better ties between theory and practice; and
- Learning is complex and inherently contextual … [so] design-based research provides a useful framework for developing technology-enhanced learning environments and better pedagogical theory.

Designed-based research offers new ways for thinking about mixing research methods, dealing with complexity in learning environments and accounting for the role of the researcher in educational technology research. (Squire, 2005, p.9)

Rather than distancing themselves from the experiment to prevent tainting the research environment, in a design-based approach, researchers “tinker with both a design and theory to better match their observations with what they had expected to see” (Squire, 2005, p.13). Practitioners, students, and researchers work together on the project. Student voice, in particular, is an important component in examining innovative instructional approaches (Cooper & McIntyre, 1996).

Design-based research offers an excellent research paradigm to link theory to practice, and is particularly useful in understanding how learning theories can be transformed into effective learning in real life (Design-Based Research Collective, 2003). These elements match the goals of this project. In this study, the authors used a “design-intensive and iterative redesign approach to developing the … curriculum activities” (Pea, 2002, p. 6). Following design-based research principles, students' honest opinions and suggestions about the project provided an important knowledge-base. The recursive design of activities and students' emergent behaviour in response to the activities drove the redesign, development, and refinement of the curriculum activities (Design-Based Research Collective, 2003).

In this section the study describe the development of an inquiry-based virtual mentorship program, beginning with a description of general program design and videoconferencing experiences. This is followed by the discussion of how recursive design was used to shape further development of this program.

Initial Program Design

Once the key players were identified, a series of meetings was held to design the program. It was important to ensure that the curriculum required objectives for the school would be met and that there was an overall consensus amongst teachers, mentors, and teacher educators, with respect to the learning outcomes. It was also vital to find connections between the mentors' expertise and the curriculum. This was achieved by exploring the mentors' expertise and finding links that were relevant to the curriculum. Further, teachers identified particular challenges students had with specific topics, for example, learning 2D and 3D shapes. The authors then intentionally designed specific learning activities that focused on these topics using several different approaches. In some cases, the mentor introduced a challenging topic and the teachers offered activities in support of the ideas to further enhance their understanding. In other cases, challenging topics introduced by teachers were built on in the videoconferencing presentations and discussions to solidify students' comprehension. In both cases, effort was made to connect student learning with real life experiences and applications in an attempt to increase student interest and understanding of mathematics and science. This model was unique because it allowed for individualized lesson design that was tailored to these particular classrooms.

In this case, the mentor is an expert in geomatics engineering who studies applications of Global Positioning System (GPS) technology. The initial planning sessions, with the teachers and researchers, identified several key curriculum topics that formed the basis of the first inquiry project. The authors decided that the primary focus for introducing GPS theory would revolve around the use of this technology for grizzly bears in the Rocky Mountains. This decision was reached based on our observation that grizzly bears were a recurring current event theme in the media at that time. The background GPS theory provided an introduction to topics such as mapping, remote sensing, and signal propagation. Although these topics directly correlated to math and science curriculum ideas such as 2D/3D geometry and statistics, choosing bears as the context of their inquiry project piqued students' interest in the learning of the concepts. To encompass the humanities curriculum, they designed inquiry activities to use students' math and science knowledge to discuss economical, political, ethical, and educational issues surrounding grizzly bears.

VC Sessions

In the initial design, a total of four VC sessions were planned. We held these one hour sessions approximately every four or five weeks. The teachers introduced related topics in class before each session and the session spacing allowed time for students to consolidate their ideas, to work on inquiry projects, and to reflect on their experiences. The authors encouraged students to prepare questions and discussion topics for the upcoming VC session. They also promoted interaction between students and the mentor via CMC (e.g. email) for the duration of the project.

The virtual mentor led the videoconferencing sessions remotely, however they soon realized there were several differences that made online facilitation more challenging than face-to-face interaction. The presentation dynamics were limited by what the students viewed on their screen since they could only see one field at a time. For example, if the mentor was switching between the camera view and the laptop or projector view, eye contact between the mentor and students was lost while the laptop or projector images were shown. When the students were not watching the presenter, their attention was prone to wane. Therefore, it was important for the mentor to design future presentations such that they could maximize the face time with the students.

From the mentor's perspective, there were also limitations imposed by the field of view of the camera in the student's classroom. Students were not always visible in the camera's field of view or the image resolution limited the detail visible to the mentor. In many cases, this made body language difficult to gauge and limited the efficacy of eye-contact. These two communication techniques are widely used to assess an audience's level of understanding and interest, but in the case of virtual facilitation, their usefulness is diminished. This highlighted the importance of having an on-site facilitator that would encourage student participation, moderate questions and discussion, and keep order during the session. In our case, a teacher adopted the facilitator's role but this could also be performed by aides or other classroom volunteers.

Recursive Design

Following the design-based research principles, the authors created program components using a recursive process. They used different techniques to collect input from all key players and incorporated the feedback into the design of the program as it progressed. This included interviewing participants before, during, and after the project; verbal and written reflections from teachers, students, and the mentor; as well as observations of student behaviors. They held regular meetings to assess the progress of the program and to plan further activities.

For example, the study observed that initially the interaction between the mentor and the students was primarily dominated by the mentor since students were hesitant to participate in discussions. The students seemed more interested in the new technology making it difficult to fully engage them in the lesson since they would participate primarily in order to try out the buttons associated with the VC equipment. As the initial novelty of the new technology (e.g. VC) wore off, it became even more difficult to engage student. After identifying this issue from the feedback collected, the authors actively searched for solutions to rekindle their interest and involvement in the sessions. One solution they found was to assign small group research projects on specific topics which included student presentation components in VC sessions. This, in effect, reversed the role of students. Rather than passively learning by sitting in classrooms or VC sessions, they were now actively researching and sharing their newly acquired knowledge. This empowered them to lead the discussions amongst their peers as well as with the virtual mentor. This increased not only the interaction between students and the mentor, but also student interest and confidence in the curriculum material. Further, it provided students opportunities to develop leadership and presentation skills. In all of these, the technology progressed from an initial distraction to a transparent learning and communication tool.

Stemming from discussion on ecological and social perspectives surrounding grizzly bears, the student began to develop awareness of the relationships between the school subjects and the real world. This also enhanced their understanding of the roles they could play in shaping their own environment. To highlight this development, the students initiated a letter writing campaign to the provincial government to voice their concern about grizzly bear habitat issues. In addition to class discussions, the authors used VC sessions to demonstrate the importance of using scientific research to justify their environmental concerns and to add substance to their arguments. The responses received by the students from government officials, including the Premier, were a high point of this learning experience (Appendix 2 and 3).

After two VC sessions, students' feedback revealed that their interest in grizzly bears started to diminish. Following their curriculum and the mentor's expertise in geology, they designed another inquiry project focusing on gemstones incorporating chemistry topics and 3D geometry. For the humanities perspective, topics such as economics, history, and social perceptions were interwoven into the project. The authors intentionally selected gemstones because the topic appealed to female students. The project was designed to encourage students to take charge of their learning and culminated with student presentations. Each small group of students was responsible for researching a particular gemstone and sharing their knowledge with others. Several groups were also invited to lead discussions on their gemstone projects during the VC session. The presentations were not constrained by strict guidelines and students were able to choose the presentation mode they found most appropriate, ranging from strictly oral presentations to a combination of oral and multimedia content. It was significant that the latter presentations were particularly rich in technology and that the students could seamlessly incorporate and use these tools in a meaningful way to enhance their learning. Teacher feedback and student reflection indicated that the students were not only grasping the immediate advantages of using VC technology as a means of learning but they were also starting to envision its use in a global sense. The students inquired about communicating with other scientists, artists, musicians, and students in other countries. The inquiry approach enabled the students to take ownership of their learning. This learning went beyond their understanding of the subject content presented and allowed them to realize greater possibilities for the new technology.

Conclusion

The primary purpose of this study was to propose and test a model for inquiry-based learning with the support of virtual mentorship that promotes collaboration between teachers and experts in different disciplines. The implementation of this study demonstrated that this can be an effective and meaningful way to connect experts from anywhere around the world directly to the classroom. With the development of broadband technology and reduced infrastructure cost, bringing a virtual world to the classroom is becoming a pedagogical reality.

A unique aspect of our program is the adoption of a design-based research paradigm where the program was collaboratively developed by all key players: teachers, students, and the mentors. This is the primary strength of this program because it draws on the input and expertise of each key player. The teachers ensure that close ties are maintained between the provincial curriculum and the program projects. Further, the teachers' solid understanding of their students allowed the program to be tailored to the level of the specific classroom. In combination with students' reflections and feedback, this process serves to stimulate students' interest in curriculum topics as well as enhance their confidence in and comprehension of the material. The mentors' contribution to the program development establishes direct connection between curriculum and ongoing research and real world applications. It also draws on the in-depth expertise and experience of the mentors. In the case study presented here, the researcher acted as the catalyst to identify the key players and spur the model implementation. Practically, a researcher may not be available to assume this role, however, it can be filled by a teacher or a school administrator.

Although this model was successfully implemented in a classroom setting, its true strength lies in its flexibility and multifaceted input from the key players. This allows the program to be adjusted appropriately for different environments without imposing a one-size-fits-all approach. Immersed in a technology-enabled, inquiry-based learning environment, the students' curiosity about the subjects was piqued and their understanding of the curriculum was increased. Most importantly, the multidisciplinary links the students made developed into broader views of their place in the world. Rather than passively learning the schools subjects, they became active participants of and positive contributors to society.

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Appendix 1

Questions asked in the email interview of students 2 years after the project concluded.

1. Based on your VC project, how did your impressions, interest and/or performance in math and science change? (You can share your grade 10 mark if you like. How do you feel about yourself as a mathematician or scientist?)

2. What did the projects (e.g. bear project) teach you about understanding and analyzing data? How has this helped you in current school projects? How might it help you in future studies?

3. How did the video-conferencing project change, if any, your:
   a) career goals?
   b) plans for college or university?

Appendix 2
Response letter from the Premier

LEGISLATIVE ASSEMBLY
ALBERTA

HONOURABLE RALPH KLEIN, MLA
Calgary-Elbow Constituency

March 23, 2006

Dear Students:

Thank you very much for your thoughtful letters regarding grizzly bear conservation in Alberta. I am always pleased to see young Albertans take an interest in matters that are important to them, and your comments are welcome.

The Alberta government recognizes there is a problem with wildlife vehicle collisions along the Trans Canada Highway and its toll on wildlife populations. Highway impacts on wildlife have usually been viewed as road mortality and threats to selected populations of animals; however, it is now viewed from a landscape ecology perspective. Highways have the potential to cause the fragmentation of wildlife populations, restriction of wildlife movements, and the disruption of gene flow in a breeding population.

One solution, as some of you point out, is to build fences, underpasses, and overpasses to try to reduce these collisions and provide travel corridors for wildlife. The fence in Banff National Park has reduced ungulate wildlife road kill by 96 per cent. Monitoring movement of animals through the crossing structures has demonstrated that both ungulates and carnivores are using them, and wildlife managers are still learning how to make overpasses and underpasses more effective.

It is expected that present overpasses will be more efficient as new vegetation grows on overpasses and the animals will no longer see the highway as they approach or travel on the overpass, and they will be less bothered by traffic noise. The program of fencing and providing movement corridors is continuing along the Bow Corridor outside of Banff National Park as funding becomes available. New structures will take into account the things learned from the original structures and should be better in providing wildlife movement corridors. For more specifics of what is happening in Banff National Park, I encourage you to contact park services by writing to them at Box 90, Banff, Alberta, T1L 1K2.

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Legislative Office: 307 Legislature Building, Edmonton, AB T5K 2B7 Telephone: (780) 427-2251 Fax: (780) 427-1349
Constituency Office: #128, 5737 Elbow Drive S.W., Calgary, AB T2V 0E3 Telephone (403) 252-0346 Fax: (403) 252-0520
calgary.elbow@assembly.ab.ca www.assembly.ab.ca

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Additionally, you may be interested to know, the Alberta government recently announced that we are suspending the spring grizzly bear hunt until DNA census data has been collected throughout the province, which is expected to continue over the next few years. In addition to suspending the hunt, and as part of its precautionary approach to sustainable management, the government has renewed its commitment to a number of other proactive actions including:

- habitat mapping and continuing DNA census to establish baseline data on population estimates;
- education programs for Albertans and industries operating in bear ranges to reduce the occurrence of conflicts with bears, including bringing the BearSmart program into communities; and
- on-the-ground bear aversion, vegetation management, emergency response, access management to increase public safety, and reduce bear encounters.

These are just some of the actions government is taking in grizzly bear conservation. For additional information on grizzly bear management in Alberta, you may want to visit our website at http://www3.gov.ab.ca/srd/fw/bear_management/index.html.

Thank you again for writing. Best wishes for success in your studies.

Sincerely yours,

Ralph Klein

RK/hp

cc: Honourable David Coutts
Minister of Sustainable Resource Development

Appendix 3:
Letter from Minister Coutis

ALBERTA SUSTAINABLE RESOURCE DEVELOPMENT

Office of the Minister

FEB 17 2006

AR11364

Dear Ms. Saleh:

Honourable Guy Boutilier, Minister of Environment, has forwarded a copy of your recent letter regarding grizzly bear management in Alberta for response. As Minister of Sustainable Resource Development, I appreciate the opportunity to respond on behalf of the Alberta government.

The status of the Alberta grizzly bear population was evaluated by the Alberta Endangered Species Conservation Committee. The scientific sub-committee of the Endangered Species Conservation Committee recommended that the appropriate Alberta status rank for the species was Threatened, mainly because of concerns over total population size and continuing habitat degradation. However, it is important to note that the scientific sub-committee concluded that there was no current evidence to suggest Alberta's grizzly bear population was in decline and noted that the recent legal harvest of grizzly bears was not the primary cause for concern.

The scientific sub-committee of the Endangered Species Conservation Committee recommended, however, that Sustainable Resource Development obtain better information on grizzly population size as the present estimate is scientifically indefensible. To that end, the government initiated an ambitious, DNA-based population inventory for grizzly bears in the province. These inventories have been completed in a number of zones of the province, however a decision on the legal status of the bear will not be made until a province-wide estimate has been obtained.

Your support for grizzly bear conservation in Alberta has been noted.

Yours truly,

David C. Coutts
Minister

cc: Honourable Guy Boutilier
Minister of Environment

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ABOUT THE AUTHOR

Dr. Qing Li, Associate Professor in the Faculty of Education at the University of Calgary. Her research interest includes Educational Technology, Mathematics Education, Technology Integration in math and science, equity, and cyberbullying.