

Le Prix Alan Blizzard

Un prix qui récompense les projets en collaboration
pour l'amélioration de l'apprentissage des étudiants
Présenté à l'université Saskatchewan, Saskatoon, SK
juin 2011

The Alan Blizzard Award

An Award for Collaborative Projects that
Improve Student Learning
Presented at the University of Saskatchewan, Saskatoon, SK
June 2011

Sponsored by



STLHE SAPES

Society for Teaching and Learning in Higher Education
La société pour l'avancement de la pédagogie dans l'enseignement supérieur



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Introduction from John Thompson, Alan Blizzard Award Coordinator

LE PRIX ALAN BLIZZARD



ALAN BLIZZARD AWARD

The Alan Blizzard Award was created by the Society for Teaching and Learning in Higher Education (STLHE/SAPES) to honour its past President, Alan Blizzard (1987-1995), on his retirement, for his significant contributions to the Society. Designed to recognize and stimulate collaborative efforts to strengthen and give greater visibility to effective university teaching and learning, the Award encourages and disseminates scholarship in exemplary collaborative teaching and learning. Each year, the team whose project is selected for the Alan Blizzard Award makes a plenary presentation at the Society's annual June conference. A monograph, describing the annual Alan Blizzard Award collaborative project, is circulated to all attending the annual June conference, and to VP Academics of all Canadian universities in the fall.

The concept for the Alan Blizzard Award was developed by a committee including Chris Knapper (President, 1982-1987), Alan Blizzard (President, 1987-1995), Pat Rogers (President, 1995-2000), and Dale Roy (Coordinator, 3M National Teaching Fellowships Program). The Award is sponsored by McGraw-Hill Ryerson's Higher Education Division. The Society is particularly grateful to Marlene Luscombe of McGraw-Hill Ryerson, for advice in the conceptual stages of the design of the Award and for McGraw-Hill Ryerson's ongoing support of this significant program through Patrick Ferrier, President of the Higher Education Division. McGraw-Hill Ryerson supports this Award as part of its continuing commitment to student learning and faculty teaching.

<http://www.mcgrawhill.ca/highereducation/educators/>

This year six applications were received from six Canadian universities. This monograph presents the 2011 Alan Blizzard Award project submission: **"Saskatchewan Interprofessional Problem-based Learning project."** The collaboration began in 2000 and now involves a 12-member faculty team in Health Care at the University of Saskatchewan (U of S), the University of Regina (U of R), and the Saskatchewan Institute of Applied Science and Technology (SIAST). The team members are: Peggy Proctor (submission coordinator) and Arlis McQuarrie (School of Physical Therapy, U of S); Marcel D'Eon, Nora McKee, and Krista Trinder (College of Medicine, U of S); Peggy MacLeod and Pat Wall (College of Nursing, U of S); Jane Cassidy and Doreen Walker (College of Pharmacy and Nutrition, U of S); Megan O'Connell (College of Arts and Science, U of S, Clinical Psychology); Erin Beckwell (U of R); and Darlene Scott (SIAST).

A second team and project, **CMPUT 250: Computers & Games**, University of Alberta, was awarded the 2011 Alan Blizzard Honourable Mention Award for second place. Begun in 2004, this collaborative multi-disciplinary project, with industrial partners, has been organized by the Department of Computing Science. The immediate team is comprised of five U of A faculty—Sean Gouglas (submission coordinator), Michael Bowling, Vadim Bulitko, Jim Hoover, Jonathan Schaeffer at the University of Alberta—and Nathan Sturtevant a University of Denver faculty member.

I thank Arshad Ahmad, STLHE President, Denise Stockley, STLHE Chair, Teaching Awards, Angie Thompson, STLHE VP Partnerships, Sylvia Avery, STLHE Administrator, and the six members of the 2011 Selection Committee: Alan Blizzard, David Dunne (Rotman), Susan McCahan (University of Toronto), Dana Paramskas (University of Guelph), Lynda Weaver (Bryùre Continuing Care, University of Ottawa), and Pierre Zundel (University of Sudbury). Their attention, care, and candid deliberations represent the

ideal and practice of collaboration and scholarship informing the Alan Blizzard Award and the outstanding collaborative projects of the previous eleven Alan Blizzard Award recipients.

For more information and guidelines for submitting a nomination for the 2012 Alan Blizzard Award, visit the STLHE website at http://www.stlhe.ca/en/awards/alan_blizzard/index.php

A handwritten signature in black ink that reads "John Thompson". The signature is written in a cursive, flowing style.

John Thompson, Alan Blizzard Award Coordinator

Introduction—John Thompson, Coordonnateur, prix Alan Blizzard

LE PRIX ALAN BLIZZARD



ALAN BLIZZARD AWARD

Le prix Alan Blizzard a été créé par la Société pour l'avancement de la pédagogie dans l'enseignement supérieur (SAPES) pour rendre honneur à son ancien président, Alan Blizzard (1987-1995), au moment de sa retraite, et reconnaître son immense contribution à la SAPES. Conçu pour souligner et encourager la collaboration visant à améliorer et à valoriser l'enseignement et l'apprentissage universitaire, le prix Alan Blizzard a également pour objet de faire connaître le travail de collaboration exemplaire dans le domaine de l'enseignement universitaire. Chaque année, l'équipe ayant remporté le prix Alan Blizzard présente son projet en séance plénière à l'occasion de la conférence annuelle de la SAPES. Une monographie décrivant le projet primé est distribuée à toutes les personnes qui assistent à la conférence annuelle, et à l'automne, aux vice-présidents à l'enseignement de toutes les universités canadiennes.

Le concept du prix Alan Blizzard a été développé par un comité formé de Chris Knapper (président, 1982-1987), Alan Blizzard (président, 1987-1995), Pat Rogers (président, 1995-2000) et Dale Roy (coordonnateur, Programme de prix d'excellence en enseignement 3M). Le prix est financé par la Division de l'enseignement supérieur de McGraw-Hill Ryerson. La Société est tout particulièrement reconnaissante à Marlene Luscombe de McGraw-Hill Ryerson pour ses conseils dans les étapes de conception du prix. La Société remercie également McGraw-Hill Ryerson pour son soutien continu à cet important programme par l'intermédiaire de Patrick Ferrier, président de la Division de l'enseignement supérieur. McGraw-Hill Ryerson finance ce prix dans le cadre de son engagement continu envers l'apprentissage et l'enseignement universitaire. Pour obtenir de plus amples renseignements, veuillez consulter le site de la maison d'édition à l'adresse suivante : <http://www.mcgrawhill.ca/highereducation/educators/>.

Cette année, nous avons reçu des dossiers de candidature provenant de six universités canadiennes. La présente monographie décrit le projet ayant reçu le prix Alan Blizzard 2011 intitulé « **Saskatchewan Interprofessional Problem-based Learning project** ». Lancé en 2000, ce projet de collaboration compte maintenant une équipe de 12 membres du corps professoral dans le domaine des soins de la santé de l'Université de la Saskatchewan, de l'Université de Regina et du Saskatchewan Institute of Applied Science and Technology (SIASST), à savoir Peggy Proctor (coordonnatrice) et Arlis McQuarrie (école de physiothérapie, Université de la Saskatchewan); Marcel D'Eon, Nora McKee et Krista Trinder (école de médecine, Université de la Saskatchewan); Peggy MacLeod et Pat Wall (école de sciences infirmières, Université de la Saskatchewan); Jane Cassidy et Doreen Walker (école de pharmacie et de nutrition, Université de la Saskatchewan); Megan O'Connell (école des arts et des sciences, Université de la Saskatchewan, psychologie clinique); Erin Beckwell (Université de Regina); et Darlene Scott (SIASST).

Une équipe de l'Université de l'Alberta est arrivée en deuxième place et a reçu une mention honorable pour le projet « **CMPUT 250: Computers & Games** ». Lancé en 2004, ce projet de collaboration pluridisciplinaire comportant des partenaires industriels a été organisé par le département d'informatique. L'équipe dirigeante est composée de cinq membres du corps professoral de l'Université de l'Alberta, à savoir Sean Gouglas (coordonnateur), Michael Bowling,

Vadim Bulitko, Jim Hoover et Jonathan Schaeffer, et de Nathan Sturtevanta, membre du corps professoral de l'Université de Denver.

Je remercie Arshad Ahmad, président de la SAPES, Denise Stockley, présidente du comité des prix de la SAPES, Sylvia Avery, administratrice de la SAPES et les six membres du comité de sélection de 2011, à savoir Alan Blizzard, David Dunne (Rotman), Susan McCahan (Université de Toronto), Dana Paramskas (Université de Guelph), Lynda Weaver (Soins continus Bruyère, Université d'Ottawa) et Pierre Zundel (Université de Sudbury). Grâce à l'attention et au soin qu'elles portent à remplir leur mandat et à leurs franches délibérations, ces personnes mettent en pratique et honorent l'idéal de collaboration qui sous-tend le prix Alan Blizzard et qui influence les remarquables projets de collaboration des onze lauréats précédents du prix Alan Blizzard.

Pour obtenir de plus amples renseignements et pour prendre connaissance des directives relatives à la présentation d'une candidature pour le prix Alan Blizzard de 2012, veuillez consulter le site Web de la SAPES à l'adresse suivante : http://www.stlhc.ca/en/awards/alan_blizzard/index.php.



John Thompson, coordonnateur du prix Alan Blizzard

2011 Alan Blizzard Award Recipients—Photo

The Saskatchewan Interprofessional Problem-based Learning Project Team



Back row (left to right)

Krista Trinder: College of Medicine, U of S; Megan O’Connell: Clinical Psychology, Arts & Sciences, U of S; Peggy MacLeod: College of Nursing, U of S; Erin Beckwell: Faculty of Social Work, U of Regina; Arlis McQuarrie: School of Physical Therapy, U of S

Front row (left to right)

Doreen Walker: Division of Nutrition, College of Pharmacy & Nutrition, U of S; Peggy Proctor: School of Physical Therapy, U of S; Nora McKee: College of Medicine, U of S; Marcel D’Eon: College of Medicine, U of S; Darlene Scott: Nursing Education Program of Saskatchewan, SIAST; Pat Wall: College of Nursing, U of S; Jane Cassidy: Division of Pharmacy, College of Pharmacy & Nutrition, U of S

Section A—Collaborating Team

Name	Academic Status	Unit/Department Institution
Peggy Proctor	Clinical Assistant Professor	School of Physical Therapy, University of Saskatchewan
Marcel D'Eon	Professor	College of Medicine, University of Saskatchewan
Arlis McQuarrie	Clinical Associate Professor	School of Physical Therapy, University of Saskatchewan
Jane Cassidy	Professional Skills Coordinator (Pharmacy)	College of Pharmacy and Nutrition, University of Saskatchewan
Doreen Walker	Professional Practice Coordinator (Nutrition)	College of Pharmacy and Nutrition, University of Saskatchewan
Nora McKee	Assistant Professor	Academic Family Medicine, University of Saskatchewan
Pat Wall	Associate Professor	College of Nursing, University of Saskatchewan
Mary M. Peggy MacLeod	Associate Professor	College of Nursing, University of Saskatchewan
Darlene Scott	Faculty and Clinical Placement Coordinator	Nursing Division, Saskatchewan Institute of Applied Science and Technology, Kelsey Campus
Erin Beckwell	Field Education Coordinator	Faculty of Social Work, University of Regina, Saskatoon Campus
Megan O'Connell	Assistant Professor	Clinical Psychology, University of Saskatchewan
Krista Trinder	Research Coordinator	Educational Support & Development, College of Medicine, University of Saskatchewan

Section B—Nature and Features of Collaboration

Collaboration between two programs at the University of Saskatchewan has grown into the “Interprofessional Problem-Based Learning (iPBL) Project” boasting many successful iPBL modules for hundreds and hundreds of students from seven different programs and three post-secondary educational institutions over several years.

In 2004-05, Medical students joined Physical Therapy students and in 2005-06 Pharmacy students were added. A new iPBL case on Palliative Care was developed in 2006-07, and representatives from Nursing and Nutrition joined in. Buoyed by positive feedback from students and tutors, Clinical Psychology and Social Work accepted our invitation to participate in 2007.

In case development, module scheduling, program evaluation, research, and logistics, close and collegial collaboration has been essential. (1) Each time a new program joined the Multi iPBL project, faculty members were invited to modify the cases to make them relevant to students from their program. The Team demonstrated flexibility and understanding in accommodating the needs and perspectives of “new-comers.” (2) Finding times for iPBL that fit with diverse program schedules took great equanimity and perseverance. We adopted a democratic decision making approach that helped generate solutions when time conflicts seemed irresolvable. (3) The logistical challenges involved in mounting iPBL modules have been significant. We depend on each other for timely communication and cooperation in planning the modules, recruiting tutors, forwarding class lists, informing students, finalizing research instruments, attending meetings, managing funds, and reviewing cases.

Since 2004, the steady growth and development of our iPBL Project Team and the work we have accomplished together has been enjoyable and rewarding. We continue to celebrate our successes, remain good friends and colleagues, and have not lost a member or program from the project. The values of our Team include friendly and open communication; egalitarian perspective where academic credentials do not privilege power; consensus-based decision-making; respect; and shared leadership.

Section C—Abstract

Since 2004, collaboration between two professional programs at the University of Saskatchewan – Physical Therapy and Medicine – has grown into the “Multi Interprofessional Problem-based Learning (iPBL) Project.” Our iPBL faculty leadership team has successfully delivered many iPBL modules for hundreds and hundreds of health science students from seven different programs and three post-secondary educational institutions over several years.

Initially Physical Therapy students participated in uniprofessional PBL modules on Aboriginal Health and HIV/AIDS. Each PBL module consists of two or three small group tutorial sessions, each of two hours duration, spaced a week apart and using a process of progressive disclosure regarding the case (or ‘problem’). The PT students were joined first by Medical and then Pharmacy students. Nutrition and Nursing students were asked to join as partners in a large “Multi iPBL Project” for 2006-07 which now included three PBL modules (Aboriginal, HIV/AIDS, and Palliative Care). The growing iPBL project added Clinical Psychology and Social Work (University of Regina) students in 2007-08.

Since PBL fosters a motivational environment and facilitates collegial group work, PBL is considered to be a key vehicle for effective Interprofessional Education (IPE). PBL involves active learning; it is easier to accommodate within multiple curricula compared to case discussions; and elements of cooperative and experiential learning are intrinsic to the process.

Students work in small interprofessional groups guided by a trained PBL tutor. Due to skyrocketing demand, five experienced tutors (three of them from our Team) made the commitment to become tutor trainers. Since 2005, approximately 200 iPBL tutors have been trained. To enhance the tutor training workshop experience, we produced a video to illustrate key elements of a PBL tutorial. Tutor trainers and experienced tutors also offer support, guidance and mentorship for tutors before and after each iPBL tutorial session. Facilitators report that they feel well prepared, and students have reported facilitation as generally being very good.

Using a validated survey, our data over several years indicate that students find iPBL modules engaging, valuable, and cooperative. Students comment that they are satisfied with the iPBL process and facilitation, and also offer suggestions for improvement.

Student retrospective self-assessments show a considerable amount of learning about the content of the iPBL modules and about roles of other professions. Tutors also report observing many exciting group interactions and a strong sense of learning.

We are committed to ongoing research in this emerging area. We have already learned that group size and interprofessional composition had no appreciable effect on group functioning or student satisfaction and/or learning. To our surprise we have learned that tutors do not report additional challenges related to the interprofessional nature of these iPBL groups. We are currently developing an instrument to quantify the experiences of iPBL tutors. In the future, as per our regular process, we will continue to adapt in response to student and tutor feedback, and to re-evaluate. We have published journal articles and made conference presentations, and will continue to engage in scholarly work pertaining to our interprofessional PBL endeavors.

Section D—Project Description

Institutional Context

The University of Saskatchewan (U of S) in Saskatoon is home to several health professional education programs including Clinical Psychology, Medicine, Nursing, Nutrition, Pharmacy and Physical Therapy. At the U of S, the College of Medicine includes the School of Physical Therapy, there is a separate College of Pharmacy and Nutrition, and Clinical Psychology is housed in the College of Arts and Science. The Nursing Education Program of Saskatchewan (NEPS) is a partnership between SIAST (Saskatchewan Institute of Science and Technology) and U of S and is delivered in a conjoint fashion. The Social Work program is offered through the University of Regina (U of R), with a satellite in Saskatoon.

In general, the pedagogical design of these programs is conventional in nature – delivered using lectures, small group discussions and exercises, skills laboratory work, and various patient and clinical experiences. Despite their geographical proximity, these programs had traditionally been delivered in their own “silos” without formal Interprofessional Education (IPE) opportunities prior to 2004.

Our collaboration began when educators in Physical Therapy (PP and AM) teamed up with an educational consultant in Medicine (MD) to deliver PBL as a new educational method. As interprofessional PBL emerged as an exciting learning opportunity for students, our Multi iPBL team morphed to include colleagues from Pharmacy (JC), Nutrition (DW), Family Medicine (NM), Nursing (PM, DS, PW), Social Work (EB) and Clinical Psychology (MC). These individuals, members of our Multi iPBL project team, facilitate collaboration between programs and are a powerful and cohesive interprofessional group of colleagues.

In the late 1990's, concept of Problem-based Learning (Barrows and Tamblin, 1980) was introduced at the U of S. Faculty members from Physical Therapy attended the first PBL workshops, and became enthused about implementing this educational method. Consulting with clinicians and community partners, two PBL cases (or ‘problems’) were developed for physical therapy students: 1) A case exploring the interface of traditional Aboriginal culture and beliefs with the modern health care system; and 2) A case exploring the interface of HIV disease, poverty and drug addiction with the modern health care system. The vision for these cases was that they ultimately be undertaken by interprofessional teams of students working together.

The original work began (2000-2004) without dedicated resources. In 2005-06, a small \$3 000* grant was obtained to fund evaluation of the interprofessional HIV/AIDS problem-based learning module that had grown to involve students and tutors from Medicine, Pharmacy, and Physical Therapy. Another small \$3 000* grant was obtained to pilot a new interprofessional PBL module on Palliative Care with nine students from Medicine, Pharmacy, and Nursing. In 2006-07, a \$20 000* grant helped fund the Multi iPBL project (by now involving Physical Therapy, Medicine, Pharmacy, Nursing and Nutrition), and in 2007-08 the project again secured \$20 000* to implement a larger Multi iPBL project with Physical Therapy, Medicine, Pharmacy, Nursing, Nutrition, Social Work and Clinical Psychology. In kind resources (time, creativity and energy!) have been invested in the project by each program partner through the progressive evolution of our very effective working team. Since 2008, the College of Medicine and College of Pharmacy and Nutrition have provided funding.

In 2010, our iPBL Team received the Provost's Prize for Innovative Practice in Teaching and Learning from the University of Saskatchewan. This prize included a \$5 000 grant.

* Note: These grants were obtained from the Saskatchewan P-CITE Project (Patient Centered Interprofessional Team Experiences)

Goals of the Project

1. introduce PBL experiences as an innovative new way for students to learn;
2. make PBL experiences interprofessional using a 'health care team' of students working together to address the patient 'problem' and encourage collaborative patient-centered care;
3. work collaboratively as an interprofessional team of educators; and
4. engage in research and evaluation related to interprofessional PBL

At present, our goals have been achieved as follows:

1. Problem-based Learning modules have been successfully integrated as mandatory components of several health science program curricula
2. Students and tutors alike consistently report enjoyment and benefit from the interprofessional nature of PBL modules
3. Students and tutors alike report new learning in terms of Aboriginal Culture, Health and Healing; HIV/AIDS; and Palliative Care
4. Original research on teaching and learning has been undertaken

Project Description

This project provides an example of transformation through collaboration in university teaching and learning. The collaboration between two programs at the University of Saskatchewan (U of S), the School of Physical Therapy and the College of Medicine, has grown to include the College of Pharmacy and Nutrition, Department of Clinical Psychology in the College of Arts and Science, the Nursing Education Program of Saskatchewan (NEPS), and the Faculty of Social Work (University of Regina).

The transformation started with one Problem-based Learning (PBL) case in one program and evolved over nine years into our “Multi iPBL Project” with successful implementation of many mandatory iPBL modules for hundreds and hundreds of health science students from seven different programs and three post-secondary educational institutions consistently over several years.

In 2004-05, Medical students first joined Physical Therapy students in the HIV/AIDS and Aboriginal PBL modules. Around this time, Physical Therapy was also persuading Pharmacy to join interprofessional PBL and soon 84 of their students came on board (2005-06). Simultaneously, a new Palliative Care PBL case was being developed and tested, with the goal of implementing a third interprofessional PBL module.

Each PBL module consists of two or three small group tutorial sessions, each of two hours duration, spaced about a week apart and using a process of progressive disclosure regarding the case (or ‘problem’). Students work in interprofessional small groups of 9-11, comprised of students from a variety of disciplines, and each group has a trained PBL tutor to facilitate the process. The students learn by discussing the case, generating learning issues related to the case, researching learning issues between sessions, and teaching each other.

During this initial time period (2004-2006) a common theme was emerging from student feedback on the interprofessional PBL modules: “Where are the students from the other health professions? ...we need them at the table to help figure out the best possible care for this patient!”

MD, PP, AM, JC and NM invited representatives from Nursing and Nutrition to discuss the concept of a large “Multi Interprofessional PBL Project” for the academic year of 2006-07 that would include all three iPBL modules (Aboriginal, HIV/AIDS, and Palliative Care) and students from five programs: Physical Therapy, Medicine, Pharmacy, Nutrition, and Nursing. This

idea was met with great enthusiasm and was successfully implemented. Buoyed by the overwhelmingly positive feedback from hundreds of students and tutors over three years, the team invited the Faculty of Social Work (U of R) and the Department of Clinical Psychology (U of S) to participate in the iPBL modules. Both programs were intrigued by this exciting IPE opportunity, and agreed to join for 2007-08.

The steady growth and development of our Multi iPBL Project Team has been fun and rewarding.

The values of our project team include:

- Friendly, collegial and open communication
- Egalitarian perspective; academic credentials do not wield power
- Consensus based decision making
- Shared leadership

Why PBL?

Some researchers (Dolmans & Schmidt, 2006) believe that PBL fosters a motivational environment that enhances the attainment of disciplinary knowledge and facilitates collegial group work, and that PBL strengths include an emphasis on constructive, self-directed, collaborative, and contextual learning processes (Dolmans et al, 2005). Other research indicates that students and tutors enjoy the learning experience (Vernon et al, 1993). PBL is also considered to be a key vehicle for effective IPE (Freeth et al, 2005). There are a number of theoretical strengths specific to PBL that relate to interprofessional education: 1) PBL involves active learning centered on a relevant case (D'Eon, 2004); 2) it is easier to accommodate PBL within multiple curricula compared to case discussions; 3) the five elements of cooperative learning (Johnson, et al, 1998) are built-in; and 4) the cycle of experiential learning (Kolb, 1984) is part of the problem-based learning process.

In developing our iPBL cases, new partners were invited to review and modify the case, learning objectives, and tutor probes as they joined each respective iPBL module. These case revisions incorporated profession-specific information designed to help students see their professional role in that specific case. Each program was required to find (creative) ways to involve their students and make the scheduling arrangements so they could participate. Each program embedded iPBL modules in their own courses / curriculum in the manner which best suited their needs. Students from participating programs were enrolled in various mandatory

program-specific courses, making iPBL participation mandatory for all students, since it was embedded within their own respective professional program. This flexible approach has been instrumental to our success in allowing the various programs to incorporate iPBL into their own curricula. Details of student involvement by program are found in Tables 1, 2, and 3.

Table 1: Palliative Care module iPBL Participants (2007-2010)

Year	Program	# of Students
2007	Nutrition	26
	Medicine	62
	Pharmacy	90
	Physical Therapy	31
	Total	209
2008	Nutrition	26
	Medicine	59
	Pharmacy	81
	Social Work	50
	Clinical Psychology	1
	Total	217
2009 Jan	Pharmacy	91
	Medicine	29
	Nutrition	15
	Nursing	81
	Social Work	24
	Total	213
2009 June	Physical Therapy	39
	Nursing	52
	Total	91
2010 Jan	Pharmacy	86
	Medicine	73
	Nutrition	23
	Total	170
2010 June	Physical Therapy	40
	Nursing	44
	Total	84

Table 2: Aboriginal Culture and Health module iPBL Participants (2005-2010)

Year	Program	# of Students
2005	Physical Therapy	27
	Medicine	30
	Total	57
2006	Physical Therapy	30
	Medicine	63
	Pharmacy	84
	Total	177
2007	Physical Therapy	31
	Medicine	60
	Pharmacy	84
	Nutrition	26
	Total	201
2008	Physical Therapy	40
	Medicine	60
	Pharmacy	90
	Nutrition	52
	Nursing SIAST	92
	Clinical Psychology	6
	Total	340
2009	Pharmacy	92
	Medicine	71
	Nutrition	20
	Physical Therapy	38
	Total	221
2010	Pharmacy	84
	Medicine	73
	Nutrition	22
	Physical Therapy	40
	Social Work	35
	Total	255

Table 3: HIV / AIDS module iPBL Participants (2004-2010)

Year	Program	# of Students
2004	Medicine	30
	Physical Therapy	30
	Total	60
2005	Medicine	39
	Pharmacy	74
	Physical Therapy	27
	Total	140
2006	Medicine	10
	Pharmacy	84
	Nursing	60
	Nutrition	26
	Physical Therapy	30
	Total	210
2007	Medicine	61
	Pharmacy	88
	Nutrition	26
	Nursing	62
	Social Work	35
	Clinical Psychology	5
	Total	277
2008	Medicine	70
	Pharmacy	81
	Nutrition	23
	Nursing	50
	Social Work	30
	Clinical Psychology	4
Total	258	
2009	Medicine	56
	Pharmacy	91
	Nutrition	21
	Nursing	26
	Social Work	22

	Clinical Psychology	5
	Total	221
2010	Medicine	51
	Pharmacy	79
	Nutrition	22
	Nursing	40
	Social Work	21
	Clinical Psychology	3
	Total	216

PBL Tutors and Tutor Training

MD has been offering PBL tutor training workshops since 1998. These workshops incorporated many of the elements of effective workshops (Steinert et al., 2006; Steinert & Mann, 2006) including pre-reading on the process and rationale of PBL, and an eight-hour workshop delivered over two half-days. During the workshop, participants engaged in discussions about the material and observed an actual tutorial group facilitated by a workshop leader (a “fishbowl” exercise).

Workshop participants indicated satisfaction with their training as tutors (See Table 4).

Table 4: PBL Tutor Training Workshop Evaluation Results (August 2006 - September 2007)

Question	Number of respondents	Mean (Scale 1-10)	Mode
a. The pre-reading package was helpful.	46	8.34	9
b. The workshop was well organized.	52	9.21	10
c. The workshop was facilitated very well.	50	9.40	10
d. The environment was conducive to learning.	51	9.01	9
e. I learned a lot from the other participants.	48	8.85	9
f. Overall, I was satisfied with the workshop.	51	9.17	10

From 1998-2004, most PBL trained tutors were from Physical Therapy or Medicine. When Pharmacy indicated their interest in joining the PBL project with 84 students, the project team collectively developed a policy for interprofessional PBL: 1) all facilitators must take the

training in order to tutor an interprofessional PBL group; and 2) each participating program must supply one trained tutor for every 10 student participants.

With increased demand for interprofessional PBL student experiences, we needed more than one PBL tutor trainer. Five experienced tutors, including three from our project team, made the commitment of extra time and training to become PBL tutor trainers. Since 2005, approximately 200 PBL tutors have been trained (clinicians, faculty members, and grad students from various professional backgrounds). As more PBL tutors were being trained, we realized that an audio-visual representation would help supplement the pre-reading package. Subsequently, we produced a video that illustrated key elements of a PBL tutorial in process. This DVD is now a regular part of the tutor training package, and has been adapted for use in orienting students to the interprofessional PBL process. During the modules, we also offer short informal sessions for tutors before and after each PBL tutorial to provide support, guidance and mentorship. A tutor trainer and other experienced tutors attend these sessions as resource people.

Impact on Student Learning

With each of the three modules that we have been running there are two primary objectives. The first is related to content. We expect that students will learn more about the content area: the care and management of persons with HIV infection and AIDS, those needing Palliative Care services, and culture and health of Aboriginal Peoples. The second objective is about gaining knowledge and understanding of other professions. We expect that students will learn more about what other health care providers can do in the situations that we study. We also want the learning to be motivating and engaging and for students to become more self-directed and self-reliant in their learning.

We collected quantitative student satisfaction data using a previously validated instrument developed at the University of Saskatchewan for the PBL modules when they were first introduced. For the HIV/AIDS module conducted in the fall of 2007 we collected pre-test and post-test data, which was coded by objective raters.

Three factors were created from the student survey data by using factor analysis: Usefulness (they found what they learned to be useful), Enjoyment (they enjoyed the group interaction and learned from the others in the group), and Facilitator effectiveness. The items that were used for each factor are listed in Appendix A.

From Table 5 we see that students found that the interprofessional HIV/AIDS PBL module was useful and enjoyable, with effective facilitation. (Please note that a rating of 4.5 on the scale would fall between “Neutral” (3) and “Strongly Agree” (6) and so can be interpreted as support for the module on that item or factor.)

Table 5: HIV/AIDS Interprofessional Module

Year	Usefulness*		Enjoyment		Facilitator Effectiveness	
	M	(SD)	M	(SD)	M	(SD)
2005 (Physical Therapy, Medicine, Pharmacy)	4.43	(.71)	5.24	(.66)	-	
2006 (Physical Therapy, Medicine, Pharmacy, Nutrition, Nursing)	4.57	(.67)	5.25	(.63)	-	
2007 (Physical Therapy, Medicine, Pharmacy, Nutrition, Nursing, Clinical Psychology, Social Work)	4.17	(.95)	5.19	(.75)	4.81	(1.18)

2008 (Medicine, Pharmacy, Nutrition, Nursing, Social Work)	4.17 (.93)	5.02 (.70)	4.83 (1.34)
2009 (Medicine, Pharmacy, Nutrition, Nursing, Social Work, Clinical Psychology)	4.46 (.83)	5.17 (.94)	4.84 (1.35)
2010 (Medicine, Pharmacy, Nutrition, Nursing, Social Work, Clinical Psychology)	4.44 (.73)	5.22 (.71)	5.10 (1.14)
Total	4.36 (.83)	5.19 (.75)	4.89 (1.24)

*6-point scale with higher scores reflecting greater satisfaction

ANOVA

*F(5,1096) = 7.64, $p < .001$

Post Hoc

2005-2007, $p = .028$

2006-2007, $p < .001$

2006-2008, $p = .001$

2007-2009, $p = .002$

2007-2010, $p = .004$

2008-2009, $p = .033$

As for the Aboriginal Health module the results from the student surveys were similar to those for the HIV/AIDS modules: students found that the modules were useful, very enjoyable, and effectively facilitated.

Table 6: Aboriginal Health Interprofessional Module

Year	Usefulness*	Enjoyment	Facilitator Effectiveness**
	M (SD)	M (SD)	M (SD)
2006 (Physical Therapy, Medicine, Pharmacy)	4.22 (.76)	5.31 (.77)	-
2007 (Physical Therapy, Medicine, Pharmacy, Nutrition)	4.32 (.80)	5.26 (.68)	-
2008 (Medicine, Pharmacy, Physical Therapy, Nutrition, Nursing, Clinical Psych)	4.29 (.82)	5.24 (.74)	4.85 (1.31)
2009 (Medicine, Pharmacy, Physical Therapy, Nutrition)	4.23 (.92)	5.28 (.65)	5.20 (1.00)
2010 (Medicine, Pharmacy, Nutrition, Physical Therapy, Social Work)	4.46 (.86)	5.38 (.69)	5.37 (.84)
Total	4.32 (.84)	5.30 (.70)	5.11 (1.12)

*6-point scale with higher scores reflecting greater satisfaction

ANOVA

* F(5, 1146) = 2.39, $p = .036$

** F(5, 795) = 16.82, $p < .000$

Post Hoc

2009 – 2010, $p = .034$

2008 – 2009, $p = .001$

- 2010, $p < .001$

The results of the Palliative Care module evaluation are similar to the other two modules (see Table 7).

Table 7: Palliative Care Interprofessional Module

Year	Usefulness*		Enjoyment**		Facilitator Effectiveness***	
	M	(SD)	M	(SD)	M	(SD)
2007 (Physical Therapy, Medicine, Pharmacy, Nutrition)	4.51	(.54)	5.35	(.61)	5.19	(.86)
2008 (Medicine, Pharmacy, Nutrition, Social Work, Clinical Psych.)	4.32	(.83)	5.27	(.54)	5.22	(1.11)
2009 (Medicine, Pharmacy, Nutrition, Nursing, Social Work)	4.59	(.66)	5.25	(.66)	5.27	(.87)
2009 Summer (Physical Therapy, Nursing)	4.09	(.82)	5.09	(.57)	4.79	(1.13)
2010 (Medicine, Pharmacy, Nutrition)	4.35	(.85)	5.37	(.72)	5.35	(.97)
2010 Summer (Physical Therapy, Nursing)	3.88	(.93)	4.98	(.85)	5.03	(1.11)
Total	4.36	(.79)	5.26	(.68)	5.19	(1.00)

*6-point scale with higher scores reflecting greater satisfaction

ANOVA

* F(914) = 14.07, $p < .001$

Post Hoc

2009 – 2008, $p = .004$

- 2010, $p = .025$

2009 Summer – 2007, $p = .000$

- 2009, $p = .000$

2010 Summer – 2007, $p = .000$

- 2008, $p = .000$

- 2009, $p = .000$

- 2010, $p = .000$

** F(914) = 5.50, $p < .001$

2009 Summer – 2007, $p = .033$

- 2010, $p = .019$

2010 Summer – 2007, $p = .001$

- 2008, $p = .012$

- 2009, $p = .022$

- 2010, $p = .000$

*** F(910) = 4.68, $p < .001$

2009 Summer – 2007, $p = .022$

- 2008, $p = .006$

- 2009, $p = .002$

- 2010, $p = .000$

As part of the student survey there is space and encouragement for open-ended comments. Students write that they were satisfied with the PBL process and the facilitation but

also offer suggestions for improvement and critiques of the process. The Team carefully considers and acts upon input by students and tutors.

To help determine the effectiveness of the modules we have used retrospective self-assessments of learning both about the content and about other professions. This approach, though not yet widely used, has been studied and reported in the literature most recently by D'Eon et al (2008). Evaluators should have confidence in the use of these self-reports because (1) they have been obtained using a validated instrument, (2) the results span several years and three different modules, and (3) there is evidence in the literature that aggregated self-assessments can be dependable proxy measures for third party objective observations of actual subject learning (D'Eon et al, 2008).

Students report a considerable amount of learning about the content of the PBL module (see Table 8). At the end of each module we asked them to report how much they knew before the module (retrospectively) considering what they knew after the module to be “10.” When we report that students learned 6.02 we mean that they reported before the PBL module that they only knew 4 out of 10 and they increased their knowledge by 6 out of 10. This is a very large amount of learning about the content of the module. This finding needs to be qualified by two facts. First the HIV/AIDS and Palliative Care modules consist of three sessions of about two hours each and the Aboriginal Health module is two sessions of about two hours each and that some students reported using the comments section on the surveys and in focus group interviews that PBL was not always as efficient a way to learn compared to other methods like lectures. Second, we chose these three content areas because they are not generally addressed in the curricula and would have been relatively novel areas of learning for most of the students.

Table 8: Amount learned about module “content” by program and overall (out of 10)

	PT	Med.	Pharm	Nutr	Nurs	C/Psych	Soc. Wk.	Overall
HIV/AIDS 2009	--	4.16	5.55	6.20	4.30	2.14	4.91	4.96
HIV/AIDS 2010	--	4.80	5.90	6.38	5.65	6.67	4.29	5.49
Aboriginal. Health 2010	4.22	3.89	4.95	5.23	--	--	3.00	4.30
Palliative Care 2010	--	4.54	5.79	5.37	--	--	--	5.37

The students' perceived gains in knowledge about HIV are supported by the objective measure given in 2007. The objective pre and post-tests indicated that the students' knowledge

of HIV/AIDS increased from the pre ($M = 2.81, SD = .66$) to post-tests ($M = 3.02, SD = .82$), which was statistically significant ($t(259)=19.68, p < .001$).

In Table 9 we see that students also learned much about other professions: overall about 4 out of 10, which is quite a bit even though it is less than what they reported learning about the academic content of the modules.

Table 9: Amount learned about “other professions” by program and overall (out of 10)

	PT	Med	Pharm	Nutr	Nurs	C/Psych	Soc. Wk.	Overall
HIV/AIDS 2009	--	3.54	3.72	4.35	3.69	3.57	4.73	3.83
HIV/AIDS 2010	--	3.56	4.20	4.86	3.71	5.00	3.50	3.97
Abor. Health 2010	3.05	3.13	3.65	3.64	--	--	3.56	3.40
Palliative Care 2010	--	3.51	4.54	3.70	--	--	--	3.97

Finally, as evidence of student engagement and learning we have experiences shared by iPBL tutors, which we gathered via focus groups and evaluation forms. Tutors report many more enjoyable aspects of the PBL modules than challenges, such as having great group interactions and seeing students really learn with, from about each other.

In conclusion, we have found that students were engaged during these interprofessional PBL modules and that they found the learning experiences to be valuable and cooperative. These conclusions are based on years of student satisfaction data, self-assessments, student comments, focus group interviews, and facilitator observations.

In addition to the collection and analysis of student survey data, our project team has also undertaken a number of research projects. Ethics approval has been obtained from the Behavioural Research Ethics Board, U of S. We have made presentations locally (eg. seminars at U of S), nationally (eg. poster at Canadian Medical Education conference), and internationally (eg. podium at World Congress of Physiotherapy) about our project.

We have also published two articles in a peer-reviewed journal (D'Eon, Proctor, Cassidy et al., 2010; D'Eon, Proctor, Bassendowski et al., 2010) and submitted another (McKee et al.).

Research Questions 2006-07

1. How does group size and interprofessional composition influence the quality of the interprofessional PBL educational experience and the amount learned?
2. How does students' amount of prior content knowledge influence the amount of learning and satisfaction associated with PBL?
3. What are the challenges associated with facilitating an interprofessional PBL in terms of tutor development?
4. How do the "group process evaluation cards" affect PBL group functioning and student satisfaction?

We learned that group size (6 vs. 12-13 in a group) had no appreciable effect on group functioning or student satisfaction. We discovered the same with group composition though students expressed an interest in having as many of the relevant professions in the group as possible. We also found that prior exposure to PBL and amount they said they had learned did not affect their rating of the PBL process. To our surprise we learned that tutors did not experience any additional challenges related to the interprofessional nature of the PBL groups. And finally we found that students did not like the evaluation cards we were using, so we replaced their function with alternate approach.

Research Questions 2007-08

1. What is the change in student content knowledge regarding HIV/AIDS and its management as a result of the PBL module? (pre- and post- test measurement)
2. What is the experience of Interprofessional PBL tutors?
3. Do the two different processes evaluating PBL group functioning ("the cards" vs. open-ended discussion) create different learning experiences and outcomes for the students?
4. How will a short concluding case discussion affect the experience of students and their learning of content knowledge and the roles of other professionals?

In 2008, we created a pre- and post-test of content knowledge for the HIV/AIDS module. The results from the objective pre and post-tests indicated that students' knowledge of other professions increased from pre ($M = 7.13, SD = 2.31$) to post-tests ($M = 8.68, SD = 2.12$) and was statistically significant ($t(259) = 12.30, p < .001$).

We also developed an instrument to quantify the experiences of interprofessional tutors. Finally, to enhance the learning experience, we have created a concluding “mini-case” to consolidate student learning about palliative care and the roles of health care team members, and will be evaluating its effectiveness.

Future Developments

We have built tremendous capacity and commitment to interprofessional PBL over the past seven years. Everyone – from students to Deans – is convinced that this is a valuable learning experience. We anticipate that students will be more prepared for collaborative practice, and those who have enjoyed the PBL experience will go on to become PBL champions of the future. We plan to continue enhancing the learning experience by responding to student and tutor feedback (satisfaction and dissatisfaction). We now have others registering for our PBL tutor training workshops, such as program directors from the U of S Centre for Teaching Effectiveness, and faculty from other Colleges (e.g. Agriculture). The concept of interprofessional PBL can be adopted in a wide variety of educational programs and sectors. We have journal articles published and in progress, and will continue our scholarly work by promoting and disseminating information about our exciting interprofessional PBL approach.

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Additional Documentation

Appendix A: Student Survey Items

1) Student survey items that constitute the three factors:

Usefulness:

- I was motivated to seek information between sessions.
- Finding the information to solve the problem was rewarding.
- What I learned is pertinent to my future career.
- It was challenging to find the information needed.
- This PBL process required me to apply what I knew about the practice of my chosen profession.
- As a result of this exercise, my understanding of (insert module content) has increased.
- The PBL experience with other programs was worthwhile.

Enjoyment:

- I was pleased with what the other students contributed.
- I enjoyed working with students from other programs.
- I was comfortable working with students from the other programs.
- The PBL experience was one of mutual respect and collaboration among the students from the various Health Science programs.
- Please rate the overall group process.

Facilitator Effectiveness:

- My group facilitator was skillful in guiding the group process.
- Overall, my group facilitator was effective.

2) Items used to elicit retrospective self-assessments from students

Consider the extent of your **CURRENT knowledge of (insert module “content”) and the services available in Saskatoon to support people in this situation** to be 10/10. Indicate using a number between 1 and 10 what your knowledge level was before beginning this interprofessional PBL module (where a 10 would mean that you knew everything already and a 1 would mean that you hardly knew anything before).

Consider the extent of your **CURRENT knowledge of what other disciplines can bring to the care of (insert module “content”) patients/clients** to be 10/10. Indicate using a number between 1 and 10 what your knowledge level was before beginning this inter-professional PBL module.