In June, the first cohort of Bachelor of Health Sciences (Honours) Program alumni returned to McMaster for a 10 year Class reunion. We had the great pleasure of spending time with a group that has been enormously successful, personally and professionally. I think I could say the same thing about each cohort that has come through the program. We now have more than 1,700 alumni and we are getting ready to welcome 195 first year students in September.

At the same time that we are welcoming a new cohort, we are starting the program review process as required for University programs, every seven years. It is perhaps useful to think about the changes that have occurred since the inception of the program in year 2000. We started with approximately 30 courses and now have more than 80. The program has developed three specializations that reflect the original program goals, Biomedical Sciences, Child Health and Global Health. Specializations have successfully addressed the learning needs of twenty percent of students, but the majority of students have preferred the richness of the core program. We now offer five level one courses, inquiry, psychobiology, cell biology, immunology and biochemistry. The last two were developed as an opportunity for students from many faculties to engage with real research problems as described by several highly accomplished faculty members. You may read more about these courses in the following pages.

If we had published a newsletter in 2000 or 2004 it would have looked very much like this one. The intensity and success of the program are a direct reflection of the academic offerings and the enormous dedication of students, alumni, staff and faculty to the health sciences environment. You may read about some of the successes here, in their words.

Thank You to All!

Del Harnish
3M Fellow
Assistant Dean, BHS (Honours) Program
THE FULL CIRCLE: WHY COMPLETE A FOURTH YEAR?  
By Julia Shen, BHSc (Honours), Class of 2016

Completing a fourth year in the BHSc (Honours) Program conveys a sense of coming full circle. Fourth year is associated with giving back to the BHSc community in various capacities: evaluating supplementary applications, peer tutoring, and developing HTH SCI X003 (Peer Tutoring and Collaboration) initiatives. Current fourth year students and alumni shared their opinions on the benefits of completing a fourth year; the following is a compilation of their summarized responses.

Fourth year offers more elective space for students to cater courses to their research and academic goals. Many students are able to take electives that they were not previously able to take. Students appreciate the diversity and uniqueness of the courses available to Health Sciences students. This flexibility extends into the thesis projects that students are able to pursue, allowing them to tailor their research endeavors to their interests. It is also an ideal time for self-reflection. Students feel that they have the opportunity to reflect on their growth, evaluate their strengths & weaknesses, and decide upon their desired paths. Students are introduced to new options and have more time to determine a career that is best suited for them. Moreover, fourth year encourages students to contribute to the community through various initiatives. Past examples include decorating the lounge, personalizing messages to incoming first years, and organizing potlucks. Peer tutoring is another highlight as students are enthusiastic to help facilitate learning for the younger cohorts, just as they were guided.

Bernard’s passion for working with youth led him to volunteer work with at-risk youth in grades one to eight. Bernard helps the students with their schoolwork and encourages them to develop their math and reading skills through educational activities. The primary objective of the LAF Program is to emphasize the importance of education, and to develop skills necessary for their future.

Ryan currently serves as a facilitator for Community Volunteer Action (CVA). This McMaster organization coordinates more than 10,000 hours of volunteer work for students within the Hamilton community each year. One of the most rewarding volunteer experiences Ryan has encountered is his role as a mentor for at-risk elementary school children. Ryan also participates in the LAF Program and hopes to encourage other students to join him in the rewarding experience of volunteering in the Hamilton community.

THE CORE: THE HEART OF THE BHSC PROGRAM  
By Sabrina Lue Tam, BHSc (Honours), Class of 2015

The BHSc (Honours) program CORE offers students an unique problem-based, collaborative learning approach with a wide breadth of courses to their research and academic goals. This flexibility extends into the thesis projects that students are able to pursue, allowing them to tailor their research endeavors to their interests. It is also an ideal time for self-reflection. Students feel that they have the opportunity to reflect on their growth, evaluate their strengths & weaknesses, and decide upon their desired paths. Students are introduced to new options and have more time to determine a career that is best suited for them. Moreover, fourth year encourages students to contribute to the community through various initiatives. Past examples include decorating the lounge, personalizing messages to incoming first years, and organizing potlucks. Peer tutoring is another highlight as students are enthusiastic to help facilitate learning for the younger cohorts, just as they were guided.

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The Child Health Specialization (CHS) began in 2012/2013 to meet student interest in a specialization which focuses on child health and development. CHS offers a unique integration of education, research, and opportunities to apply learning in various settings. The innovative and active approach to learning allows students to pursue their own learning experience throughout their three years in the specialization. When current CHS students are asked why they chose this specialization, its unique Inquiry-based framework is the popular answer. Shvini Patel, Class of 2016, states that she really enjoys the inquiry nature of the course; however, “it can be quite challenging because of the way the course is structured. It is also an opportunity for us to grow as an individual.”CHS, Class of 2015, explained “there are definitely challenges associated with being the first cohort, and the fact that we are the first cohort and the most rewarding part of the whole experience. There is no prototype, there is no example to build from, there are no upper-year students who have been through it who can offer advice. However, the uncertainty comes with another invaluable side to it. It means that our future in the specialization is not bound by anything except our own interests and expectations. We are definitely all learning as we go, but it makes for a community that relies on open communication and flexibility - which is a pretty cool environment in which to learn.”

The third year CHS curriculum is structured to provide students with the learning opportunity to take place so that students can apply their acquired knowledge and gain an opportunity to observe the effects of their work in real life settings. Placement offers include:

- Evidence Based Practice and Service Team (EBST), Hamilton-Wentworth District School Board
- Niether Starn Preschool, preschool specifically for Aboriginal children from Hamilton
- Child Health, Children’s Health, Hamilton
- Oxford Centre for Child Studies

The TRIPSE: A process oriented exam – thoughts and discussion

By Mark Mansour, BHSc (Honours), Class of 2016

In the early years of the BHSc program, first year students were required to take a general biology class shared with students in other faculties. The need for a more specialized introductory course, focusing on health, became evident. Cellular and Molecular Biology (HTH SCI 1106) was thus created to engage students in pertinent discussions, and also in the process by which scientific knowledge is gathered and constructed. One evaluation method used in the course, the Tri-partite Problem Solving Exercise (TRIPSE), best exemplifies the manner in which the course exercises (TRIPSE), best exemplifies the manner in which the course

The TRIPSE is an essay-style examination based on the scientific process that challenges students to understand novel clinical scenarios. The TRIPSE was initially used in the Biology-Pharmacology Co-op Program in the early 90’s and was a variation of the Triple Jumps exercise used in the MD Program during its early years. In HTH SCI 1106, practical examples of cellular communication and gene expression are taught; however, students are made aware that the framework governing these processes can be used to understand any unfamiliar situation that they may encounter. Students are then expected to use these fundamental concepts in cellular and molecular biology to make observations on a given scenario, generate hypotheses, and devise experiments to validate them.

“The fundamentals of science are largely constructivist,” Rangachari elaborates. “Scientists notice discrepancies and dissonance and they ask themselves how they can learn from it, how they can use this as information to generate hypotheses to explain their observations. The TRIPSE allows students to engage in this scientific process early in their education.”

Given the open-ended nature of the TRIPSE, students’ answers vary greatly. That is why, in contrast to more traditional testing methods used in other courses, TRIPSEs have no single correct answer, but rather, the group TRIPSE encourages students to understand that the framework governing these processes can be used to understand any unfamiliar situation that they may encounter. Students are then expected to use these fundamental concepts in cellular and molecular biology to make observations of a given scenario, generate hypotheses, and devise experiments to validate them.

“The fundamentals of science are largely constructivist,” Rangachari elaborates. “Scientists notice discrepancies and dissonance and they ask themselves how they can learn from it, how they can use this as information to generate hypotheses to explain their observations. The TRIPSE allows students to engage in this scientific process early in their education.”
I recently had the pleasure of interviewing Carl DeLottville on his publication in the journal of Teaching in Higher Education in 2013, “Evaluating the use of reflective practice in a nonprofessional, undergraduate clinical communication skills course”. Carl is an instructor for the HTH SCI 303 Communications Skills course and has several publications investigating the various components of the course. As a BHSc student, we are no strangers to writing reflections, but what makes a truly meaningful reflection? I asked Carl to share his thoughts on the different facets of reflective practice.

What sparked your interest in researching reflective practice?

Reflective practice is one of the elements that we injected into the communications skills course. First, we wanted to see if anyone else was using it, and we discovered that no one else has used it or at least written about it in the teaching of communications skills. Second, we wanted to see whether introducing it has made a difference in students’ learning—did it add anything to the course? We also interviewed the instructors to see if reflective practice was helpful to them.

This is definitely a very interesting and relevant topic to many students. Could you tell us about what reflective practice is?

Reflective practice is one of the elements that we injected into the communications skills course. It is a lifelong skill. Reflective practice can be divided into three levels or stages. The first is the what we call the content stage, where learners talk about mostly the information that they have learned such as describing the experiences or scenarios. Next is the process stage where students are at the content and process level, universally the study showed that a significant number of students found reflections valuable, having the ability to go back and rethink what was happening during the sessions. As instructors, we weren’t necessarily discouraged by the findings. We find that reflections are useful not only in understanding what each individual student may be struggling with, or the successes that they are having, but also helping us put a general gauge in the curriculum. It helps us understand where the students are at, particularly if we get certain themes, and they may help us determine whether any adjustments need to be made. You may say that reflection is a curriculum barometer.

What audience are you hoping to reach with this publication?

The target audience would be other instructors who use reflective practice, particularly in the professional schools. Professional reflective practice is seen as a powerful learning tool, which will help practitioners develop good learning habits once they are in solo practice. Reflective skills will enable them to have the tools to reassess their own practice on a regular basis, because many of them are using the tool very infrequently. We are hoping to eventually publish an instructor’s guide to the course. It will be a detailed curriculum guide to help new instructors teach the communications course.

What are some interesting results that you found?

We’ve been studying various components of the communications skills course, and this is the second of three publications. We’ve looked at the use of our final assignment format, the objective structured video exam, and that was the first publication in 2012. Currently, we are doing a follow-up study to get feedback from the graduates of this program, to find out what components of this course including reflections are useful to them in their current education. We are looking at a four-year period and about 700 graduates. Another aspect I’m hoping is that other instructors, not just in communications, will find something useful in this particular subject, because it is not one that’s been well researched. We are hoping to eventually publish an instructor’s guide to the course. It will be a detailed curriculum guide to help new instructors teach and structure the communications course.

Interview by Lynn Zeng, BHSc (Honours), Class of 2015
The course allows students to pursue current topics in integrative medicine and publishes each year a full set of papers successful through peer review, one on the use of Intravenous Vitamin C in conjunction with chemotherapy for cancer treatment and the second on the role of balance and risk of osteoporosis. Both papers were successful through peer review, and published in the Integrated Healthcare Practitioners Journal in 2013.

My advice, stay for all four years. I graduated after three years of BHSc. When I look back on why, it had much to do with being part of the second cohort. There were very few elective courses in the BHSc Program, and a perception of fewer thesis opportunities beyond lab work. Looking at the program now, after more than 10 years of development, it is amazing to see the opportunities that you can have within the program before you leave, rather than taking those risks when the stakes are higher after graduation. Stay. Explore. Work with different people on different projects. There is absolutely no rush to get into professional settings. They are not the same as BHSc nothing is.

As a child I wanted to grow up to “be” a lot of things - a seamstress or astronaut were just a few of my aspirations. I had spent much of my time being ‘me’ - rather than being a fish swimming along a stream. This was important because by the time I was ready to apply for professional schools, I had no exposure to allied health care as a student, and while I was in school, I realized that most of the courses on critical care, patient centered care, and preventive medicine. I was curious how a Naturopathic Doctor (ND) could spend an hour working with a patient on their health, and found this to be much more in line with my personality and strengths.

When I was in my third year of BHSc, I began exploring careers outside of conventional medicine. I looked into many career paths including midwifery, physiotherapy, paramedicine and chiropractic. When I discovered Naturopathic Medicine (which was really by accident) I found it aligned with the Integrative Healthcare Practitioners Journal. Jordan has also facilitated first year Inquiry for four years.

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While in BHSc I had the opportunity to continue to explore other areas of interest besides school. I continued to participate in competitive sports and explored my interest in teaching through project courses such as HJ03. By the time I was finished my degree, I had spent much of my time being ‘me’ - rather than being a fish swimming along a stream. This was important because by the time I was ready to apply for professional schools, I had no exposure to allied health care as a student, and while I was in school, I realized that most of the courses on critical care, patient centered care, and preventive medicine. I was curious how a Naturopathic Doctor (ND) could spend an hour working with a patient on their health, and found this to be much more in line with my personality and strengths.

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What were your initial goals after graduating from BHSc? Have they changed since graduating?

Heading to medical school, I was intent on keeping an open mind. I knew of a researcher at Harvard who I wanted to connect with, as the lab was creating some outside-the-box medical innovations. After various lab projects, I quickly found that while they came from incredibly interesting fields, my true passion was making useful tools for the mass clinical health sector to use and straddling the interface between academics and industry. Developing financially self-sustaining projects meant that I didn’t have to rely solely on outside grants. Now, when I do clinical/academic work, I am more prepared and know what to do with a new idea and how best to implement it in the real world. My goals have changed from positioning myself entirely in academia to creating ideas in the clinic and executing them in industry.

What is the Vascular Medicine Glove? How did you come up with the idea?

The general concept of using a glove with sensors to ascertain medical information is not new. The key is to leverage the advantages of a glove to creatively integrate sensors and improve the user’s abilities, which, though obvious, is often overlooked in an effort to force technologies into an “interesting” form factor. I was recruited by a friend to advise and develop the medical technology for one of these teams working on a glove capable of detecting force of palpation and temperature/hand position. But there were roadblocks as the main data collected (force) was not particularly useful unless and special cost-prohibitive sensors/video were used to detect things like tissue lumps/cancerous nodes. What was useful, however, was the platform – I started thinking of a defined group of health metrics relevant to a large population, from the perspective of a radiologist, which would be easier to collect if we used some yet-to-be known sensors in a glove form factor. I was recruited by a friend to advise and develop the medical technology for one of these teams working on a glove capable of detecting force of palpation and temperature/hand position. But there were roadblocks as the main data collected (force) was not particularly useful unless and special cost-prohibitive sensors/video were used to detect things like tissue lumps/cancerous nodes. What was useful, however, was the platform – I started thinking of a defined group of health metrics relevant to a large population, from the perspective of a radiologist, which would be easier to collect if we used some yet-to-be known sensors in a glove form factor.

What are your initial goals after graduating from BHSc? Have they changed since graduating?

My initial goals after graduating from the BHSc Program were to pursue graduate studies in global governance and diplomacy. Unlike my peers in the Global Health Specialization (GHS), I did my ELE in vascular catheter placement in radiology procedures. Remembering this experience, an idea popped into my head. Dopper for this use was anticipated (in tech years) so there was a huge challenge that we could improve it by leveraging the glove form factor, and at a cost exponentially less than advanced technology like 2D/microfluidic arrays. Allowing the provider to have this on their fingertips would provide extra swiss-knife utility to aid in vascular procedures. However, in order to have mass market appeal (i.e. home consumers), we would need to extract more blood flow…so that’s when I designed the sensor plan and various integrations between sensors that would work with Doppler in a novel way to obtain more data than any one sensor individually. Blood Flow, Syntolic Blood Pressure, Blood Oxygen, and Heart Rate. I filed the patents and we made the prototype in preparation to receive funding.

We thought this Vascular Medicine Glove had potential after we won the MIT award. As an outcome we launched a new company. I was asked to take on the role of Chief Medical Officer and Chief Operating Officer. There are still trials required for FDA approval, but we are hopeful that in a few years the technology will impact the field of medicine and data acquisition.

How did BHSc prepare you for your subsequent education and career path?

Three things, the program really is what you make of it. For me, it fostered skills in self-reflection and self-directed learning that I think are crucial to be able to conceive and execute ideas. It forced me to reflect and refine more on really the only thing that matters in any field – not just science…the skills of creative problem solving, leadership, management, teamwork, and execution. Regardless of what field you build a career in, these skills are constants, while the variable is the specific knowledge set of the respective subject. If I have to attack a business problem, I am not interested in the 1% of the problem. Rather, I am confident because I know how to deconstruct the problem and, if needed, who to ask with expertise for additional guidance.

Do you have any advice to give current BHSc students in terms of choosing their future career paths?

I think advice should be tailored to your individual goals, but in general remembering the following helped me navigate this particular path thus far.

First, do what you want, not what your parents, mentors or friends want you to do. You can only do one thing wrong when you’re young, and that is subscribing to dogma without reflection and critical thinking.

Second, don’t fall into the trap of thinking that all you need is a good idea, and you can hand it over to a team and they will take care of the rest. Not only do you need the idea but you need to be constantly iterating the project with your goals in mind – you need the skills of execution as much as creation to solve problems.

Lastly, you will fail and this will make you uncomfortable, but it is exactly where you want to be. When I am too comfortable for too many days in a row, I know I am not taking enough risks to experience the anxiety, fear and thrill of failure, so I take a risk.

I maintain an active interest in better understanding governance processes in global health, but I am also concentrating on ways to deliver health impact at national and sub-national levels. Rather than focusing on learning for my personal enrichment, I’m excited about contributing to collective action that spans across health and non-health sectors, and engage with individuals who are results-driven.

How has the BHSc Global Health Specialization influenced your decision to pursue graduate studies in global health?

My embedded learning experience (ELE) and senior global health courses on governance and advocacy certainly influenced my decision to pursue graduate studies in global health and diplomacy. Unlike my peers in the Global Health Specialization (GHS), I did my ELE in a high-income country and felt the first-hand frustration of trying...
specific disease areas like HIV/AIDS, malaria or tuberculosis. For example, funding is poured into the technological development of new tools at the expense of urgent outcomes and integration efforts. We may have great new diagnostic tools, drugs and vaccines, but without means to effectively deliver them, they won’t do much good. We are working to produce a decision-making framework that enables policymakers and donors sitting through competing R&D priorities.

I was interested in the effectiveness of international law as a tool to address the global health worker migration crisis whereby health workers from low-income “source” countries are actively recruited to work in high-income “destination” countries, leaving health workers from low-income “source” countries are actively recruited to work in high-income “destination” countries, leaving health systems critically understaffed in countries with many health systems critically understaffed in countries with large mobilizing factors for me to pursue my graduate studies in international development, diplomacy, and political science.

You have recently published a paper in the journal, Globalization and Health, evaluating the WHO Global Code of Practice on the International Recruitment of Health Personnel. Could you elaborate on this paper and describe how you became involved in this project?

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On March 3rd, a group of Health Sciences students had the opportunity to meet with McMaster University President and Vice-Chancellor, Dr. Patrick Deane during his visit to the Offord Centre for Child Studies. The students had the pleasure of participating in a round table discussion with him that many revere as the students’ Dean. The discussion featured BHSc students, Masters and PhD students, post-doctoral fellows, along with medical residents. A very honest and constructive discussion was held regarding the need for greater knowledge translation on the efforts of the researchers at the centre; this was a topic many students found important to highlight based on their individual projects and research experience at the Offord Centre. Students commented on how the research being done at the Centre could make an even larger impact on the general population if it was put into lay language that parents, teachers, and child health workers could understand. President Deane was engaged in a constructive discussion with the students and was enthusiastic about forging a stronger relationship between both institutions, suggesting the potential for relocating the Offord Centre to the McMaster campus. This rearrangement would help scientists, research staff, students, and study participants overcome transportation barriers between the McMaster and Chedoke sites. A strongly supported idea by many individuals present, such a move could potentially foster the integration of child health education and research at McMaster.

The follow-up poster session involved investigators at the Centre sharing their research efforts in the field of Child Health and Development. Although President Deane was only able to spend a short time at each poster presentation, he was quick to grasp the importance and implications of the research being done. Some of the posters introduced work from the 2014 Ontario Child Health Study, the Province of Ontario Neurodevelopmental Disorders Network, and current research on autism, school readiness, immigrant and refugee children. The students in attendance were exposed to a wide variety of research projects conducted at the Centre and had a chance to talk to researchers and ask questions about the different projects.

Through a poster dedicated specifically to the education and training efforts at the Offord Centre, the students also had the opportunity of introducing President Deane to the Child Health Specialization in the BHSc Program. President Deane was intrigued by the concept of the three pillars of Child Health: education, research and experiential learning. Conversations focused around the breadth of experiences students received from their child health practicum course in third year and the potential for expansion of the program to target areas of high needs for our local community. Additionally, students shared their experiences on the inquiry and team-based learning approach that the specialization is based on.

At the end of the day, it seemed that both President Deane and the students had learned a lot from the interaction; both parties are looking forward to continuing their efforts on establishing stronger ties between the Offord Centre and McMaster University and thus integrating undergraduate education and research within our academic institution.

By Karen Chen, Alex Sapa, Danusha Vinoraj, BHSc (Honours), Class of 2015 and Mark Lee, Class of 2013

Community Research

BHSC CHILD HEALTH STUDENTS MEET WITH PRESIDENT PATRICK DEANE AT THE OFFORD CENTRE FOR CHILD STUDIES

It’s 8:30 in the morning on yet another cold and gray winter day, but in the ITR AB102 classroom the atmosphere is warm and inviting as 1st year HTH SCI 1P3 students are busily settling in for another chalk talk discussion session. The classroom is buzzing with the constant humming of voices as students huddle together and immerse themselves in their group discussions. Today’s discussion topic follows the talk on oncolytic viruses. As the course coordinator, I settle into my own routine of facilitating the group discussions by going from one group to another and peeking in on their conversations (BEST JOB EVER).

“Can we really re-program an oncolytic virus to specifically target and destroy a cancer cell?”, asks one of the students. “I think it would be difficult to do given that we need to evade our own immune system ..., not to mention specifically target cancer not healthy cells”, replies another student in the group. “Felicia, what, do you think?” I smile for a brief moment as pride swells up inside me at the mere mention of these wonderfully insightful research questions. Just put this in perspective: these are 1st year students from any program in McMaster University and at the beginning of this course many of them did NOT know each other. “Well, this is a great point. Why don’t you put it on the board for everyone to share your insight?” I then go on to discuss this further with the group. “But if you would like to know what we discussed you’ll just have to attend the next Chalk Talk session”, I say.

So how can 1st year students take to research so fast? They don’t have organic chemistry, some don’t even have biology, so why can they speak the researcher’s language? The answer is simple: they enjoy what they are learning ... and I’m not talking just about the subject matter. We believe that teaching and learning come from enjoyable interactions and so we try to create a relaxing and engaging environment that is conducive for both the researcher and the students. So far it has been rather successful as many of these 1st year students can elect to specialize in our Biochemistry program in their second year (BHSc Biomedical Sciences specialization). By third year students enter the researcher’s labs through the HTH SCI 3R06 course and the real fun begins. This course is research intensive and allows the students to work alongside the very researchers they initially met in HTH SCI 1P3 ... only this time they are the ones conducting the experiments and helping the researchers further their scientific goals. All in all, I think this course has been a resoundingly successful experiment and I am truly proud to be part of it.
methods provide an opportunity for students to develop important lifelong skills, such as collaboration, research, and communication.

It must be noted that PBL and Inquiry are NOT examples of minimally guided learning, as the facilitator plays a major role in scaffolding and guiding the students’ learning. However, compared to a traditional didactic course, it certainly is less guided.

Another important component is that these methods also involve a psychosocial aspect. They help develop essential skills for the learner, such as collaboration. Also, the framework of PBL and Inquiry provides a natural path for the maturing of the student, as described in William Perry’s Intellectual Scheme Intellectual and Moral Development. Perry states that college students mature intellectually by moving through different stages which represent their view of knowledge in the world. It starts with the belief that there is an objective truth, which they learn from their teacher. Then, they progress to understanding subjectivity; there are many viewpoints about a subject, and none of them are objectively the "best". Finally, the student learns how to choose, support, and justify one particular viewpoint that appeals to them.

Despite being based on similar ideologies, there are a few key differences between Inquiry and PBL. In PBL, the facilitator’s role is to develop problems that students will attempt to solve, while in Inquiry, the facilitator is more of a learning guide that facilitates their learning such as by providing feedback.

One major difference is their scope and what settings they are mainly used in. PBL was originally developed for the McMaster medical school curriculum, so it is mainly adopted and implemented in professional school settings, quickly becoming a staple in medical, engineering, and business schools. On the other hand, Inquiry is more associated with the general science curriculum as its process closely emulates research. It also is considered to have a broader scope, as it is not focused solely on the problem.

In conclusion, both PBL and Inquiry are important parts of the educational doctrine of BHSc. Hopefully, this article will have clarified some of the misconceptions you may have had about these educational styles.

The amount of biomedical information available is increasing rapidly. As an example, 82,000 research papers were published and indexed in the largest biomedical database, Medline (now Pubmed) in 1955. This contrasts greatly with the year 2012 which saw an indexing of about 1,000,000 papers. A scientist working on mechanisms of scar tissue or "fibrosis" could most likely read all 89 papers on that topic in 1950, while it would be challenging for anyone to read all 10,197 papers published on "fibrosis" in 2012 – not to mention the total of over 158,000 manuscripts published since 1950 – should one elect to review all information.

The main objective of the 4DM3 Demystifying Medicine course is to bring useful biomedical knowledge to the public and patients. In the course, we want our students to think critically about the questions and statements above, and generate what they think is understandable and useful information for the larger public. The general outline of the course is relatively simple and more information can be found on our website (http://demystifyingmedicine.ca). Our students work in cross-disciplinary teams (Biochemistry, Arts and Science, Bachelors of Health Sciences, BSc in Science) in groups of 4 or 5. Different tasks are assigned to the groups, for example: to create a patient education resource for a specific disease, or generate educational material that will help patients and the public understand clinical or scientific processes related to their topic. The students participating are encouraged to reach out to physicians, scientists, patients and other interest groups to capture what these different groups think about the specific disease or research topic. At the end of the course, we celebrate the work with a dissemination event where we invite local high-school students to McMaster University to see and judge what our students have created. To create a memory of our efforts, we record our presentations and add them to our YouTube channel (https://plus.google.com/u/0/+MacDemystMed+and+Google+https://plus.google.com/u/0/+MacDemyStMed4DM3) channels. This will allow us to evaluate in a larger setting which educational strategies are more effective than others.
THE GRAND RIVER EXPERIENCE
By Margaret Secord, First Year Inquiry Coordinator and Facilitator, BHSc (Honours) Program

As BHSc students begin their first year of university with expectations, anxieties and excitement, the BHSc Program offers a fun-filled day, which provides each student an opportunity to meet their classmates, enthusiastic and welcoming upper year students known as Pathogens, facilitators and staff. Together, in a fleet of canoes and rafts, everyone embarks on their journey. ‘Fly’ down the Grand River and into first year. Throughout the day, there are endless photo opportunities and new friendships begin to emerge.

In their final year, the students’ experience in BHSc comes full circle, as once again, they visit the Grand River with their peers, facilitators and staff sharing another fun-filled adventure. This is an opportunity to reflect on the knowledge, skills and relationships during their time in BHSc that began three years earlier on the same river. The canoe trips become memorable moments of their BHSc journey.

BEING INSPIRED BY HTH SCI 4X03
By Ling (Selina) Zeng, BHSc (Honours), Class of 2015

I remember seeing the course name HTH SCI 4X03 on LearnLink for the first time in my first year, and thinking how distant it would be. Although the general meeting in second year provided us with the background information, it was not until third year that I began to appreciate its essence. The 4X03 course spans beyond just setting goals and giving feedback. “Be dedicated to your own learning and experiences,” said Rebecca Steptita, Class of 2014. With the freedom to follow our passion and to construct our ideas into reality, while building a sense of community and partnership, 4X03 provides us with the opportunity to grow as an individual and as a team. This spirit of collaboration and community involvement are reflected in various current fourth year initiatives. Listed below are examples of some 4X03 initiatives that can serve as inspirations for future projects:

Beyond Mac: To encourage McMaster students to explore beyond the university campus, an interactive blog named Beyond Mac is designed to provide students with information about the hidden and known gems of Hamilton. Blog posts span a range of categories including nature trails, restaurants, shopping, attractions, festivals, and night clubs/bars, with public transport routes detailing the accessibility from the McMaster campus itself. Beyond Mac can be accessed via http://beyondmac.wordpress.com/

Bond, Hear, Share, Connect (B.H.S.c.)
The purpose of this event is to allow students and professors to connect on a more personal level beyond the walls of the classroom. This will enhance the BHSc environment by fostering a more personal connection between faculty, staff, and students. BHSc professors and staff are encouraged to share funny, inspirational, or any other personal experiences. This year, Hartley Jafine, Jordan Robertson, and Bruce Wainman were invited to share their stories with students at Bridges Cafe.

Cookbook
Due to the lack of cooking experience and a heavy workload, undergraduate students often rely on rushed, store-bought meals that may not be very nutritious. A cookbook filled with easy-to-make, healthy, and affordable recipes documented with photographs is being created to provide greater support and resources.

Letters to First Years: Personalized hand-written letters will be given to the incoming Class of 2018, with the hope of building a more welcoming atmosphere for new BHSc students while offering some words of wisdom and support. This will help students feel valued as unique individuals from the moment of entry into the program.

Other interesting ideas include the creation of a travel guide written with personal experiences, the gratitude project where students express their appreciation to the BHSc faculty members, a charity casino night to raise money for the BHSc Scholarship, and a book drive for underprivileged families of the Hamilton community.

Nicole Jedzicki, Class of 2014, reflects, “The 4X03 fourth year portfolio is the perfect ending to BHSc. It reminds me of how our cyclical growth can be, reflecting on the past four years with the wisdom of experience in BHSc, but also with the apprehensive perception for what comes next. I feel like we will always go through these growth processes, and I hope I never feel like I’ve ‘made it’ in life. In 30 years, the portfolio will be a great reminder of our time in BHSc, and by then I hope to truly understand what it meant for my growth.”

It is clear that students are truly taking the 4X03 course philosophy to heart.

“Learning is enhanced when it is more like a team effort than a solo race. Good learning, like good work, is collaborative and social, not competitive and isolated. Working with others often increases involvement in learning. Sharing one’s ideas and responding to others’ improves thinking and deepens understanding.”

Arthur W. Chickering & Zelda F. Gamson

WHICH WORD BEST DESCRIBES THE BHSC (HONOURS) PROGRAM?
Compiled by Carolyn Tan, BHSc (Honours) Program, Class of 2016

Compiled by Carolyn Tan, BHSc (Honours) Program, Class of 2016
BHSC CHARITY FASHION SHOW 2014
By BHSc Charity Fashion Show Co-Chairs: Faith Fangzhou Xu, BHSc (Honours), Class of 2014, Belle Cao and Ashley Yu, BHSc (Honours), Class of 2015

The BHSc Charity Fashion Show began in 2004 as a HTH SCI 4X03 initiative, and has since grown into a large production integrating the diverse talents of students within the BHSc and McMaster University communities. With opportunities to model, choreograph, fundraise, and design, the Fashion Show provides an outlet for creativity. The 9th annual BHSc Charity Fashion Show, “Cosmica”, was hosted on Saturday, March 22nd, 2014 in the CIBC Hall of McMaster University Student Center. As one of the program’s largest student initiatives, the success of the show lies in the hard work and dedication of over 250 McMaster University students. All proceeds from the show and year-long fundraising initiatives were donated to the BHSc Scholarship and Camp Trillium, in support of cystic fibrosis, breaking records for Health Sciences in addition to all other McMaster faculties.

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First Years
A shared passion for learning and ambition to succeed helped us unite as first year Health Sciences students despite our differences in personalities, learning styles, and academic backgrounds. Writing the first Psychobiology (HTH SCI 1G03) group essay was one of the opportunities when we really had to put aside our differences, realize our strengths and weaknesses, and learn to compromise. The frustration that came along with group work, such as never-ending group meetings, is one thing that comes to mind when students look back on their first year of university in BHSc. At the time, those frustrations seemed to be the bane of our existence, but looking at it in retrospect those frustrating experiences challanged us and helped us acquire the skills necessary for efficient group work.

In second semester, first year students further honed their group work skills as they worked in groups of up to ten students to complete a semester-long Cell Biology (HTH SCI 1H04) project. Their task was to design a drug that would cure one of four “deadly sins” - wrath, lust, sloth, or gluttony. Unlike projects in traditional biology courses, this was a project that required great levels of divergent thinking. Textbooks were of little help. Instead, students made use of databases such as PubMed to gather information that would help them design their drug. At the end of the term, students had the opportunity to represent their group in a debate, explaining to faculty and fellow students why their drug was the best. Overall, first year Cell Biology served as a catalyst, improving many of our developing skills, such as research, group work, and communication skills, just to name a few.

Another common experience shared by first year students was the Inquiry course. The Inquiry course is unique to BHSc in its aim to introduce first year students to the concept of evaluating and valuing inquiry as it relates to the health professions. This course, named Inquiry into the Nature of Science (HTH SCI 1G03) and Health Policy (HTH SCI 1G02), is traditionally offered in the fall of first year. The course is unique and introduced many of us to the type of problem solving we would face in the future. Some of us found the Inquiry course challenging, but many found it to be one of the most enjoyable and valuable aspects of their first year. During this course, students are introduced to the concepts of evidence-based practice and critical thinking, which are key skills in the health professions. Students also learn about the importance of communication skills, such as research, group work, and communication skills, just to name a few.

Second Years
Many BHSc students entered their second year with the thought that it is going to be extremely difficult. We heard this from our peers, and we assumed this based on our courses, and often we let the insecurities overwhelm us. This feeling of apprehension and intimidation that many of us expected to feel pushed us to work harder, manage our time more carefully, and learn how to take care of ourselves better.

A lot of trial and error, of course.

All jokes aside, the second year experience taught us what hard work could accomplish. It taught us that we could achieve the goals that we put our mind to, and if we didn’t meet our goals it was never a reason to give up. Second year was an exercise in perseverance and determination and it definitely taught many of us to appreciate a nice long nap! Regardless of how difficult or confusing we get in the paths of preparing for anatomy bellingers or deciphering statistics, we weathered the ups and downs with a strong system of support for each other. Hence, second year showed us exactly who we could turn to for help, support, and encouragement, and it gave us a much better idea of the type of person we would like to become.

While some of us would prefer never to go through second year again, we are definitely grateful for it. It showed us that stress can be overwhelming but we’re stronger than we thought and most importantly, there are people here to help us see the light when we dip too deep into our stress. Your friends and their support will make second year beautiful. You always know that you are not alone and someone will be there for you to turn to.

Third Years
Third year: the drifting phase. Defining the third year experience is challenging, largely because there isn’t one construct it fits perfectly. The days where the BHSc experience was new, unexplored territory is behind us. Yet, the days of certainty regarding where one is heading lie on the horizon. It is this very uncertainty that characterizes the third year experience as such a unique learning opportunity, allowing us to explore ourselves and what truly makes us tick as individuals. Following what might have been a challenging second year, many of us step outside of the comfort of the traditional BHSc curriculum in our third year to take varying courses within the program as well as beyond. Whether to complete prerequisite requirements for post-BHSc programs or to try something new, these experiences allow us to explore the world beyond the academic Inquiry setting, applying many of the skills we gained in our earlier undergraduate years on a daily basis.

Fourth Years
As a BHSc fourth year, you couldn’t ask for a better conclusion. For some students, fourth year can be filled with anxiety and excitement as they work hard completing requirements for postgraduate and graduate schools. Fan Yang, Class of 2013, says, “the idea of no longer being able to sit in the same classroom and be inspired by all the motivated individuals in the program made me realise the time I had left even more.” Throughout the four years in BHSc, many of us become more comfortable with ourselves and each other in our close-knit community. There is comfort in knowing that our worries about the uncertainty of what our future holds for us. Many of us did not appreciate the value of giving back to their BHSc community by offering advice and feedback to first years or by presenting their research findings on Poster Day. Lauren Talic, Class of 2015, says, “I realized my undergraduate career had gone full circle. Not only was I able to offer guidance to incoming students through situations that I once faced, but I also drew upon skills and knowledge that I had developed over the past four years to conduct and present research findings that have a profound effect on medical clinical practices. These experiences, many of my peers shared, were not only rewarding, but very humbling as well and will mean the world to me as I travel through this journey called life.”

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Methods BHSc Students Use in Their Daily Life to Relax and De-Stress

Compiled by Jennifer Landicho, Instructional Assistant, BHSc (Honours) Program

Taking mental breaks by participating in activities that you enjoy can go a long way in managing your stress, whether through music or physical activity, as this allows you to return to your rejuvenated self. Communicating with your friends and family is also a great option to get advice on means to handle stress.

**Oscar Chan, Class of 2014**

Many of my preferred methods for de-stressing were developed out of HTH SCI 2J03. For me, regular exercise and being in the moment are important on a day-to-day basis. Also, working hard needs to be balanced with playing hard and that means spending lots of time with friends.

**Kai Chen, Class of 2014**

Well, to de-stress......naturally I would say eat a bar of chocolate and watch some HGTV, if I’m really stressed, make it two chocolate bars!!!

**Alexa Mordhorst, Class of 2015**

Running is my stress relief, my high, my addiction. It is a way for me to channel my emotions, recollect my thoughts, and push myself in the never-ending competition against myself. Nothing can beat that sort of exhilaration!

**Navneet Natt, Class of 2015**

One of my favourite methods of relaxing is, oddly enough, running. I let the tension and anxiety in my body fuel a more constructive activity.

**Beatrice Preti, Class of 2015**

The days that I regret the most are the days that I did not laugh.

**Andrew Perrella, Class of 2015**

I think that the most useful way to de-stress is to re-organize yourself and pencil in some down-time. Sure, you may have three or four deadlines each week, but it’s good to take an hour a day to focus on something other than school, even if it means buying groceries, doing laundry, or planning out the rest of your week. It always helps me re-prioritize and make plans to tackle the important tasks efficiently.

**Andrew Soave, Class of 2014**

Cooking a nice dinner after a long day of classes and meetings helps me wind down and recharge.

**Nicholas Timmerman, Class of 2014**

I like to go outside and explore Hamilton’s trails and waterfalls. The city is surrounded by nature - it’s beautiful, and the fresh air is therapeutic.

**Jasmine Waslowski, Class of 2015**

Work is work, play is play. Set dedicated time for both. In between all that, find time to slow down, whether it’s through a journal or meditation. You’ll find the work easier and the play more fun.

**Mike Xu, Class of 2015**